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The Impact of COVID-19 on the Food System



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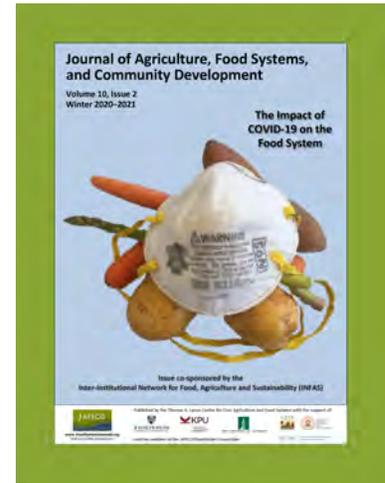
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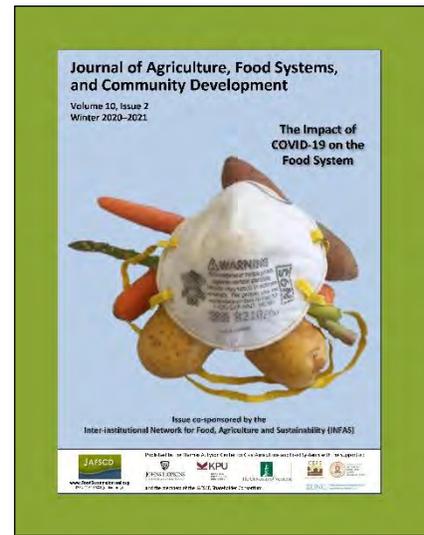
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IN THIS ISSUE
DUNCAN HILCHEY

The impact of COVID-19 on the food system



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In April 2020, the world was at the beginning of what would become the worst pandemic since the emergence of HIV/AIDS. One year later we have lost nearly 3 million souls to COVID-19. Disproportionately impacted have been lower-income families and individuals who provide the backbone of the global food system—farmworkers, processing-plant workers, food-service and restaurant workers, and many others who provide life-sustaining food for all of us.

Over the last year, organizations and governments have worked feverishly to maintain food supply chains, and—after some adjustment—alternative food networks throughout the world came to our rescue. We are not out of the woods yet, and new variants of the coronavirus are evolving that appear to be stalling our return to normalcy. Yet, with a year of experience under our belt, we now know more about maintaining food supplies during a pandemic, and what we need to do to prepare for the inevitable future crises. Researchers and organizations around the world managed to collect data during the first year of the pandemic, through interviews, surveys, secondary data analysis, and observation, to learn more about impacts and coping strategies.

Indeed, the response to our call for commentaries and papers on the topic of “the Impact of COVID-19 on the Food System” was overwhelming—so much so that we are having to publish commentaries and papers over three issues (fall 2020, winter 2020–2021, and spring 2021)—and likely beyond. In the current winter issue (our largest issue ever), we present applied research papers and commentaries reflecting a broad sweep of these initiatives related to COVID-19, along with a collection of open call papers covering a wide range of food system and community development topics.

We begin this issue with the Economic Pamphleteer. In his column *Realities of regenerative agriculture*, **John Ikerd** implores us to immediately confront the challenges of transitioning from our industrial-based food

system to one that is more “authentically sustainable,” and not merely half measures with slogans.

Following this column, we present 14 papers in response to our special topic call on the Impact of COVID-19 on the Food System (writ large).

In their paper *Dedication, innovation, and collaboration: A mixed-methods analysis of school meals in Connecticut during COVID-19*, **Katherine Connolly, Molly Babbin, Sarah McKee, Kevin McGinn, Juliana Cohen, Sandra Chafouleas, and Marlene Schwartz** explore how food service workers managed to continue feeding children after school closures during the pandemic.

Next, **Dana James, Evan Bowness, Tabitha Robin, Angela McIntyre, Colin Dring, Annette Aurélie Desmarais, and Hannah Wittman** draw on both the general food sovereignty and Indigenous food sovereignty movements to reconfigure our food system after its weaknesses were exposed, in *Dismantling and rebuilding the food system after COVID-19: Ten principles for redistribution and regeneration*.

In *Food hubs play an essential role in the COVID-19 response in Hawai'i*, **Saleh Azizi Fardkhales and Noa Kekuewa Lincoln** report on the performance of food hubs in Hawai'i that initially struggled but quickly adapted to the pandemic.

This is followed by **Catherine Campbell**, who identifies the need for more training for public officials in the value of local food during a public health crisis in *the impact of COVID-19 on local government stakeholders' perspectives on local food production*.

Nurcan Atalan-Helicke and Bürge Abiral then provide case studies of two Turkish alternative farm networks as they responded to not only the pandemic but also new public health requirements in *Alternative food distribution networks, resilience, and urban food security in Turkey amid the COVID-19 pandemic*.

Next, in *Lockdown farmers markets in Bengaluru: Direct marketing activities and potentials for rural-urban linkages in the food system*, **Neda Yousefian, Soubadra Devy, K. Geetha, and Christoph Dittrich** identify the barriers to increasing direct supply chains between farmers and consumers during a public health crisis.

This is followed by *Introducing an innovative design to examine human-environment dynamics of food deserts responding to COVID-19*, by **Chyi-Lyi (Kathleen) Liang, Lyubov Kurkalova, Leila Hashemi Beni, Timothy Mulrooney, Manoj Jha, Haoran Miao, and Gregory Monty**, who present a framework for food system planning in order to respond to future public health crises.

Brittney Cavaliere, Carson Drew, and Katie Martin reflect on their involvement in the development of a creative food distribution system in *Food bank drive-through distribution during COVID-19: A reflective essay*.

In *SNAP participants' purchasing patterns at a food co-op during the COVID-19 pandemic: A preliminary analysis*, **Molly Parker, Valisa Hedrick, Sam Hedges, Elizabeth Borst, Meredith Ledlie Johnson, Maureen McNamara Best, and Sarah Misyak** explore how a food co-op coped with and minimized the impact of declines in patronage during the pandemic.

This is followed by *Media coverage of a pandemic's impacts on farmers and implications for agricultural resilience and adaptation* by **Douglas Jackson-Smith and Hadi Veisi**, who find that news outlets largely focus on the negative impacts of the crisis, rather than on the potential for a long-term transformation to a more resilient food system.

In *Cass Clay Food Partners: A networked response to COVID-19*, **Noelle Harden, Robert Bertsch, Kayla Carlson, Megan Myrdal, Irena Bobicic, Abby Gold, Kim Lipetzky, and Tim Hiller** present a reflective essay on a county's coordinated strategies (including social network analysis) to cope with the pandemic.

Next up, **Indra Noyes and Nicola Lyle** share how a school nutrition program in Ontario, Canada, was able to transition to a more general food security support program for families in *COVID-19 and school food: The impact of the early stages of the coronavirus pandemic on student nutrition programs in Ontario*.

Alessandros Glaros, Chloe Alexander, Jodi Koberinski, Steffanie Scott, Stephen Quilley, and

Zhenzhong Si then explore household- and community-level COVID coping strategies in Canada in *A systems approach to navigating food security during COVID-19: Gaps, opportunities, and policy supports*.

In our final paper in this special issue, *Missouri's specialty crop beginning farmers cultivate resilience during COVID-19*, authors **Amy Patillo, James Curtis Millsap, Patrick Byers, Jamie Gundel, Katherine Peregoy, Amy Lake, Sarah Denkler, Eric Meusch, and David Burton** explore the efficacy of digital/online training that needed to replace more tradition in-person farm visiting and one-to-one engagement.

Our research papers are followed by commentaries from NGOs, extension educators, and others who share their experiences during the pandemic.

COVID-19 COMMENTARIES

1. *Perspectives from the front line: The post-pandemic emergency food system in North Carolina*, by **Amanda Hege, Nikki McCormick, Peggy Robinson, Kina Charles, Jan Jones, and Eric Aft**.
2. *Farming in the time of pandemic: Small farms demonstrate flexibility, innovation, and hope*, by **Nora White**.
3. *A collaborative response to equitable food access during COVID-19: Building from Mass in Motion practices*, by **Kim Etingoff and Jessica del Rosario**.
4. *Activating the local food system in emergency food response*, by **Andy Ollove and Samiha Hamdi**.
5. *Immediate impacts of COVID-19 measures on bean production, distribution, and food security in Eastern Africa*, by **Eileen Nchanji, Cosmas Kweyu Lutomia, and David Karanja**.
6. *Nimble in a pandemic: Lessons learned from Concrete Jungle's grocery delivery program*, by **Rachel Blacher and Nichole Fields-Kyle**.
7. *The impact of COVID-19 on food security and income of women farmers in South and Southeast Asia*, by **Neha and Kaustubh Kumar**.
8. *Case study of a food relief grocery model: The Neighborhood Pop-Up Grocery Project*, by **Hallie Casey, Jenifer DeAtley, Carissa Rodriguez Eckle, Mia Burger, Jarred Maxwell, and Eric de Valpine**.
9. *A food nonprofit's response to COVID-19: The Common Market leans on its mission to serve*, by **Caitlin Honan**.
10. *Walking the nutrition talk: The impact of a community-engaged nonprofit in Selma, Alabama*, by **Susan Raymond and Chad McEachern**.
11. *Cultivating community resilience: How North Carolina's Food Council is facilitating an effective response during COVID-19*, by **Angel Elisa Cruz, Alice Ammerman, Nancy Creamer, Barry Nash, Ethan Phillips, Martha Przysucha, and Amanda Hege**.
12. *A collaborative approach to COVID-19 response: The Center for Environmental Farming Systems community-based food system initiatives*, by **Shorlette Ammons, Sarah Blacklin, Dara Bloom, Shironda Brown, Marcello Cappellazzi, Nancy Creamer, Angel Cruz, Janie Hynson, Gini Knight, Laura Lauffer, Kathleen Liang, Lee Menius, Abbey Piner, Arneisha Smallwood, Robyn Stout, Caroline Stover, Tessa Thraves, and Bevelyn Ukah**.
13. *A global food systems framework for pandemic prevention, response, and recovery*, by **Anastasia Lambrou, Isha Berry, Amelie Hecht, and Alain Labrique**.
14. *New survey shows COVID-19's impacts on South Carolina oyster farmers and offers hope for recovery*, by **Steven Richards and Marzieh Motallebi**.

VOICES FROM THE GRASSROOTS

In addition to the above commentaries, we offer one Voices from the Grassroots essay: *Food access initiatives: An integral piece of the Revere, Massachusetts, COVID-19 response*, by **Molly Babbini, Rachel M. Zack, Jean Granick, and Kathleen Betts**.

OPEN CALL PAPERS

Our open call papers in this issue lead off with *Operating principles for collective scholar-activism: Early insights from the Agroecology Research-Action Collective*, by **Maywa Montenegro de Wit, Annie Shattuck, Alastair Iles, Garrett Graddy-Lovelace, Antonio Roman-Alcalá, and Jahi Chappell**, who offer a reflective essay on the development of a research approach that balances the interests of researchers and grassroots collaborators.

Next is *Where do “localphiles” shop? A mixed-methods case study of food-buying habits*, in which **Emily McKee** identifies a gap between the knowledge of local food supporters and their actions and proffers alternative strategies to close the gap.

Saugat Khanal, Pankaj Raj Dhital, and Stephen Christian then present the results of a survey of Nepalese youth, which indicates a general lack of interest in farming as well as barriers to entrance in *Farming the future: Youth enthusiasm and transforming Nepal’s economy through agriculture*.

In *Community engagement and the promotion of sustainable diets: Lessons from a grassroots meat reduction campaign*, **Rebecca Ramsing, Kenjin Bryan Chang, Zoé Mistrale Hendrickson, Zhe Xu, Madison Friel, and Ellen Calves** present the case study of one community’s approach to fostering more environmentally responsible food consumption.

In *Stories as indicators: Lessons learned using the Most Significant Change method to evaluate food systems work in Michigan*, **Lilly Fink Shapiro, Lesli Hoey, and Kathryn Colasanti** reflect on their adaptation of a creative qualitative evaluation approach.

How health-conscious urban gardeners aim to increase vegetable consumption in their community while simultaneously supporting Black entrepreneurship, by **Rachel Soper**, then sheds light on a creative approach to encouraging plant food consumption in a community of color.

Next, **Christian Kelly Scott and Robert Richardson** find that farm-business success relates to the scale and scope of one’s social networks in *Farmer social connectedness and market access: A case study of personal networks among emerging farmers*.

In *A system dynamics approach to examining household food insecurity* by **Kyle Metta, Laura Schmitt Olabisi, and Renee Wallace**, the authors find that multiple, interrelated strategies are more effective than single interventions in promoting food security.

Kaitlyn Harper, Emma Lewis, Lisa Poirier, Bengucan Gunen, Antonio Trujillo, and Joel Gittelsohn explore how small stores can cheaply and effectively identify customer demand in *Application of free-listing in identifying desirable foods and their accessibility in an urban nonprofit supermarket*.

In *Assessing sense of community at farmers markets: A systematic review*, **Jennifer Russomanno and Jennifer Jabson Tree** find that the literature suggests that a market’s success could be linked to how well it provides a sense of belonging to its patrons, especially to people of color living with low incomes.

Nigel Forrest and Arnim Wiek follow this with *Growing a sustainable local grain economy in Arizona: A multidimensional analytical case study of an alternative food network*, in which they explore in great detail the emergence of a regional grain value chain and suggest research using similar techniques in other regions working to relocalize grains.

Next, **Amelie Hecht, Roni Neff, Tam Lynne Kelley, and Keshia Pollack Porter** explore the views of school food-service staff regarding increasing free school meal participation in *Universal free schools meals through the Community Eligibility Provision: Maryland food service provider perspectives*.

Finally, in *Civic agriculture in review: Then, now, and future directions*, **Allison Kaika and Alexis Racelis** identify gaps in understanding of the links between local food systems and social welfare.

We also included one open call commentary: *Agritourism around the globe: Definitions, authenticity, and potential*

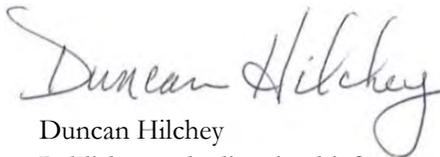
controversy, by **David Lamie, Lisa Chase, Emilio Chiodo, Claudia Schmidt, Sharon Flanigan, Lori Dickes, and Thomas Streifeneder.**

BOOK REVIEWS

We wrap up the issue with six book reviews. We appreciate these reviewers for persevering through the distraction and complications of the pandemic world to share their reviews. We also thank our volunteer book review editors, Lauren Forbes and Matthew Hoffman, for their helpful guidance during this time.

- **Cassandra Hawkins** reviews *Civil Society and Social Movements in Food System Governance*, by Peter Andre, Jill Clark, Charles Levkoe, and Kristen Lowitt.
- **Hannah Lohr** reviews *A Small Farm Future: Making the Case for a Society Built Around Local Economies, Self-Provisioning, Agricultural Diversity, and a Shared Earth*, by Chris Smaje.
- **Robert Kluson** reviews *Stirrings: How Activist New Yorkers Ignited a Movement for Food Justice*, by Lana Dee Povitz.
- **Lauren Forbes** reviews *Black Food Matters : Racial Justice in the Wake of Food Justice*, edited by Hanna Garth and Ashanté Reese.
- **David Kay** reviews *Wealth Creation: A New Framework for Rural Economic and Community Development*, by Shanna Ratner.
- **Emily Duncan** reviews *Local Is Our Future: Steps to an Economics of Happiness*, by Helena Norberg-Hodge.

Again, we wish the JAFSCD community well and hope for some relief from the many negative impacts of the pandemic. Let us not be complacent but continue the discipline and redouble the effort to not only defeat COVID-19, but also to build a more equitable and resilient food system for the future. 



Duncan Hilchey
Publisher and editor in chief



**THE ECONOMIC PAMPHLETEER
 JOHN IKERD**

Realities of regenerative agriculture

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Regenerative agriculture is the latest phrase in the sustainable agriculture movement (Merfield, 2019). Many early advocates have become disenchanted with the concept of sustainable agriculture. Some claim it has been co-opted, misused, and essentially made useless by the defenders of industrial agriculture. However, regenerative agriculture faces the same risks if it is not defined in terms that ensure agricultural sustainability.

Others claim that sustainability is “not

enough”—that we need better farming systems than we have today. They fail to recognize that farm systems that are not “good enough” are not sustainable. *Authentic* sustainability is the ability to meet the needs of the present without diminishing opportunities for the future (Ikerd, 2011). An agriculture that does not meet the needs of the present is not good enough—for present or future generations.

The concept of regenerative agriculture is cer-

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*Why an **Economic Pamphleteer**? In his historic pamphlet *Common Sense*, written in 1775–1776, Thomas Paine wrote of the necessity of people to form governments to moderate their individual self-interest. In our government today, the pursuit of economic self-interest reigns supreme. Rural America has been recolonized, economically, by corporate industrial agriculture. I hope my “pamphlets” will help awaken Americans to a new revolution—to create a sustainable agri-food economy, revitalize rural communities, and reclaim our democracy. The collected *Economic Pamphleteer* columns (2010–2017) are at <https://bit.ly/ikerd-collection>*

tainly not new. The Rodale Institute in Pennsylvania has been researching and advocating *regenerative* organic farming practices since the 1980s (Rodale Institute, n.d.). Like sustainable farming, regenerative farming does not have a single, precise definition. In the United States, regenerative farming is typically defined as an integrated set of land management practices that utilizes plant photosynthesis to sequester carbon, restore soil health, increase crop resilience, and restore the nutrient density of foods (The Carbon Underground & Regenerative Agriculture Initiative, 2017). Lists of practices typically include reduced reliance on tillage and the use of synthetic fertilizers and pesticides, and increased adoption of cover crops, the rotation of diverse crops, and management-intensive grazing.

Internationally, regenerative farming is more likely to be defined as a system of production guided by common principles, rather than practices, toward multiple social, economic, and ecological objectives. For example, Terra Genesis International defines regenerative agriculture as “a system of farming principles and practices that increases biodiversity, enriches soils, improves watersheds, and enhances ecosystem services. . . . Regenerative Agriculture aims to reverse global climate change. At the same time, it offers increased yields, resilience to climate instability, and higher health and vitality for farming communities” (Terra Genesis International, n.d., p. 2).

As with sustainable agriculture, regenerative agriculture must not only meet the needs of people as consumers but also as producers/farmers and members of civil society. Regenerative farms that fail to meet these needs will not be widely adopted by farmers or sustained by the societies in which they function. A *sustainable* regenerative agriculture must be socially responsible and economically viable as well as ecologically regenerative.

That being said, the concept of regeneration goes to the very core of agricultural sustainability. The regenerative capacity of a farm depends on its ability to transform solar energy into plants, ani-

mals, and other sources of energy that are useful to humans. Energy is essential for life, and solar energy is the only sustainable source of the biological energy essential for human life. Ultimately, the sustainability of any society depends on the regenerative capacity of its farms and food systems.

This is not some esoteric theory but is based on the laws of thermodynamics, which are among the most fundamental laws of science. The first law

of thermodynamics states that energy can be neither created nor destroyed. However, whenever energy is used to do anything useful, which physicists call work, it always changes in form. Specifically, the innate tendency of energy is to change from more useful to less useful forms of energy, which also makes it potentially useful. This is the essence of the second law of thermodynamics—the law of

entropy. No matter how efficiently we use, reuse, or recycle energy, its usefulness to humans is inevitably lost. All energy eventually returns to outer space in the form of heat.

Fortunately, the earth receives a daily inflow of new energy from the sun. Only a few life forms have the capacity to capture and use this new solar energy to counter the evitable loss of useful energy to entropy. The opposite of entropy is called *negentropy* (“Negentropy,” n.d.). Life in general has the potential to be negentropic because living things can convert energy from less useful to more useful forms. Healthy natural ecosystems organize and concentrate solar energy into organisms of progressively higher levels or structure, order, and potential usefulness. Humans also can transform solar energy into more useful electrical energy—using sunlight, wind, or water. However, neither humans nor other animals can transform sunlight into food. Life on earth, including human life, ultimately depends on the ability of plants, algae, and a few other life forms to collect and store solar energy.

The entropic tendencies of energy are continually working against the negentropic tendencies of living systems. Living things inevitably lose energy

**A sustainable regenerative
agriculture must be
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to heat as they grow and renew their physical structures. They also devote a significant portion of their energy to renew, reproduce, and regenerate their species. The living ecosystems we humans depend on for food will ultimately collapse if we fail to leave other life forms with sufficient energy to continually renew, reproduce, and sustain their negentropic capacity. In reality, we humans are a part of the earth's living ecosystem, and our survival as a species depends on its sustainability.

Healthy natural ecosystems have a natural tendency to evolve toward higher levels of energy efficiency and negentropy. However, humans have the ability to either increase or decrease the negentropic capacity of living ecosystems in which they intervene. Humans have intentionality and agency, which means they can act counter to their own natural tendencies. They can choose how they relate to other people and other living and nonliving elements of their environment. Individual relationships can also at least influence how other people and other elements of the natural environment relate to each other. Human interventions and relationships affect the efficiency and regenerative capacity not only of natural ecosystems but also of human organization—farms, businesses, communities, societies. Like other living ecosystems, these organizations can be organized and managed in ways that realize their negentropic potential or can be managed in ways that accelerate the natural tendency toward entropy.

Industrial farming systems are classic examples of human-organized and -managed entropic organizations. They mine and deplete the useful energy collected and stored by negentropic living systems over centuries—not only in fossil fuels but also in fertile living soils. This useful energy is marketed in the form of agricultural commodities for the purpose of maximizing profits for farm owners and managers. The reinvestments essential for energy regeneration might provide an economic return in some future decade, but the economic

value is inherently short-run in nature. In an uncertain market economy, investments that promise future payoffs even a decade in the future have very little economic value today. As long as there is enough topsoil left to provide an inert growing medium and enough fossil energy to produce fertilizers and irrigate crops, industrial farming will continue and will accelerate the tendency toward entropy.

Regenerative farmers must confront these entropic and economic realities of sustainability. Industrial farming is not “good enough,” and it will take decades of reinvestment in soil health and healthy agroecosystems to recreate regenerative farms that are good enough. Even then, there will always be an economic incentive to simply use up the useful energy that has been restored by regenerative farmers over decades or centuries—just

as industrial farmers have done in the past and are doing now. Some of the farmers who have created, and are creating, regenerative farming systems today were confronted with the challenges of restoring productivity to farms “worn out” by industrial farming and no longer responsive to industrial farming practices. These farmers had an economic incentive to change. Society cannot afford to wait for all farms to be worn out to transition from industrial to regenerative agriculture.

Other regenerative farmers have been ethically or socially motivated to make non-economic long-term investments, and, perhaps most important, have been financially able to do so. Unfortunately, this is not the case of most farmers today, in the U.S. or around the world. Some consumers have been willing and able to share the economic costs of restoration by paying premium prices for products produced on regenerative farms. However, markets will never provide adequate economic incentives to create sustainable regenerative systems of farming and food production.

Thoughtful, caring people must come together

**Society cannot afford to
wait for all farms to be
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regenerative agriculture.**

in their local communities and larger societies to make it economically possible for thoughtful, caring farmers to create and sustain regenerative farming systems. This can be done through fundamental changes in local, state, and national farm and food policies. The farm and food policies that currently support industrial agriculture can, and eventually must, be shifted to support and sustain regenerative agriculture.

The regenerative potential of communities and

societies depends on their willingness and ability to make it economically feasible for farmers to create and sustain regenerative farming systems. People can increase the usefulness of energy and transform solar energy into electricity. People can also increase the efficiency of food processing and distribution. But people cannot transform solar energy into food. People, including farmers, must be willing to confront the inconvenient realities of regenerative agriculture.

**Thoughtful, caring people
must come together to make
it economically possible for
thoughtful, caring farmers to
create and sustain
regenerative farming systems.**

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Dedication, innovation, and collaboration: A mixed-methods analysis of school meals in Connecticut during COVID-19

SPECIAL ISSUE COSPONSORED BY INFAS:
 THE IMPACT OF COVID-19 ON FOOD SYSTEMS



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 Food and
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Abstract

When school buildings across the U.S. closed in March 2020 due to the COVID-19 pandemic,

many school districts mobilized to establish emergency school meal programs to operate outside the setting of school cafeterias. The aim of this convergent mixed-methods study is to (a) examine the

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structure and rates of participation in the spring 2020 meal programs in Connecticut, and (b) obtain insight about the challenges, strategies used, and lessons learned during this time by food service leaders. We obtained quantitative data from the Connecticut State Department of Education and district websites, and qualitative data from nine one-hour interviews with school food service leaders. Although the National School Lunch Program provides meals at standard price, reduced-price, or no cost based on student household income, all emergency meals during spring 2020 were provided at no cost following the school closures resulting from the COVID-19 public health emergency declaration. The average number of meals distributed from March to May 2020 was significantly lower than the overall participation rates (i.e., paid, free, and reduced-price meals combined) prior to COVID-19. However, participation rates in April and May 2020 approached those of free and reduced-price meal participation a year earlier. Four key action themes emerged from the interviews: (1) tailor the program to community needs and resources; (2) identify strategies to facilitate participation; (3) develop partnerships to coordinate school, municipal, and community efforts; and (4) establish programs that encourage resiliency. The interviewees also saw this event as an opportunity to improve the perception of school meals. Innovations developed during the spring 2020 school building closures provide a road map for best practices for the 2020–2021 school year and beyond.

Keywords

COVID-19, Pandemic, Emergency Meal Programs, School Meals, School Food Services, School Nutrition Programs, Community Collaboration

Introduction

Prior to the COVID-19 pandemic, one in seven American households with children was food insecure, defined as having limited access to adequate food due to a lack of money and other resources (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2020). A few months after the onset of COVID-19, rates of food insecurity rose to the highest rates in modern U.S. history (Bauer, 2020) and were esti-

mated to have tripled among households with children (Schanzenbach & Pitts, 2020). The U.S. Department of Agriculture's (USDA) federal child nutrition programs are a critical part of the safety net to support child food security, and the largest of these programs, the National School Lunch Program (NSLP), serves roughly 29.6 million students daily (USDA Economic Research Service, n.d.). Based on household income, students are eligible for *paid* (i.e., standard price), *reduced* (i.e., reduced-price), or *free* (i.e., no cost) meals. School meals must meet strong federal nutrition standards (Nutrition Standards in the National School Lunch and School Breakfast Programs, 2012), and participation in the school meal program has been found to reduce children's food insecurity and improve the quality of their diet (Cullen and Chen, 2017; Ralston, Treen, Coleman-Jensen, & Guthrie, 2017).

With the emergence of COVID-19 and the resultant school closures in March 2020, millions of students were at risk of losing access to school meals. Recognizing the importance of providing meals to children whose families depend on the NSLP, many school food authorities shifted their operations from providing meals in cafeterias to distributing meals beyond school buildings. In Connecticut, many districts shifted to one of the USDA's summer meal programs (i.e., Seamless Summer Option [SSO] and Summer Food Service Program [SFSP]) (USDA Food and Nutrition Service, 2013) in order to continue providing meals. Typically, SSO and SFSP provide funding for meals during the summer or on vacation days when schools are closed. There are a variety of regulatory differences between the summer programs and the NSLP, most notably that all meals are served at no cost regardless of family income level (Connecticut State Department of Education, n.d.-a, n.d.-b).

To accommodate the unique challenges created by the pandemic, the USDA offered waivers from some specific meal program regulations. For example, the requirement that districts serve meals to be consumed on site was waived. Other important waivers included the ability to provide multiple meals at once, to distribute children's meals to parents or guardians even if the children were not physically present, and to prepare meals outside the regular meal pattern requirements (Kinsey et al.,

2020; USDA Food and Nutrition Service, n.d.). Although these waivers removed many operational barriers, other challenges remained. For example, food service authorities needed to determine how to maintain social distancing among staff while they prepared and provided meals, identify the best locations for distribution sites, and source appropriate food and supplies (Kinsey et al., 2020).

The aim of this mixed-methods study was to capture information about the process of distributing school meals in the state of Connecticut during the early months of the pandemic. Specifically, we examined the level of meal participation statewide in the spring of 2020 and compared these rates to the previous year. Further, in anticipation of the continued disruption to in-person attendance during the 2020–2021 school year, we gathered information about the challenges food service directors (FSDs) faced, the innovations that were tried, and lessons learned.

Research Methods

This study employed a convergent mixed-methods approach. We supplemented quantitative data on school meal distribution in Connecticut with qualitative data from key informant interviews with district food service leaders. This study was deemed exempt from full review by the University of Connecticut institutional review board (Exemption #X20-0103).

Setting

In Connecticut, 93% of public school districts and local education agencies participate in the NSLP (Connecticut State Department of Education [CSDE], 2019a), reaching over 528,000 kindergarten through twelfth grade (K-12) students in 2019–2020. Statewide, 43% of students qualified for free or reduced-price school meals during the 2019–2020 school year (CSDE, 2019b). However, since Connecticut has large economic disparities (Sommelier & Price, 2018), free or reduced-price meal eligibility rates range from less than 5% to over 80% of students in a district (CSDE, 2019b). At the two ends of this economic spectrum, the state has 11 large urban districts where more than two-thirds of the students are eligible for free or reduced-price meals, and about two dozen districts

where fewer than 15% of students are eligible for free or reduced-price meals.

School Meal Distribution Data

There are 189 NSLP sponsors in Connecticut, including school districts, charter schools, some private schools, and other youth programs. For the purposes of this study, we excluded all single-school and youth program sponsors and identified the school districts that continued to serve meals after March 2020. We searched the website of each program in early June to record information about meal distribution (e.g., days of the week, times open, grab-and-go or delivery, number of sites). Next, we limited the sample to public school districts that continued to serve meals through the end of the school year ($N=121$). We obtained monthly meal counts for lunches served during January–May 2020. We also obtained meal counts for January–May 2019 as a comparison. The final sample included 120 school districts (one district had not submitted all its meal count data for 2020). For each district, we obtained the total enrollment and number of students eligible for free and reduced-price meals for the 2018–2019 and 2019–2020 school years from Connecticut state government websites.

Key Informant Interviews

We conducted a one-hour, semistructured interview with each of the informants via a videoconferencing platform to hear detailed information related to school meal distribution practices. The informants included FSDs ($n=8$) and one superintendent (from a district without a full-time FSD). Two to three members of the research team participated in each interview. The CSDE and the research team selected informants to maximize the demographic diversity of the sampled school districts. The sample included urban, suburban, and rural districts; different sized districts; a range of district free or reduced-price meal eligibility rates; and districts from different regions of the state. We asked open-ended questions about meal distribution, families reached, staff, procurement, preparation, community partners, and lessons learned. The questions used in the interviews are listed in Appendix A.

Quantitative Data Analysis

We used frequencies to analyze the quantitative data obtained from district websites and the CSDE. We examined meal participation in the NSLP during two pre-COVID time periods: January–May 2019, and January through the first two weeks of March 2020. The data were provided per month, except March 2020, when data were divided into (a) the period before school buildings closed and (b) the period after the buildings closed. Only lunch (i.e., not breakfast, snack, or supper) data were included in these analyses.

To assess pre-COVID participation, we made the following calculations for *total* participation: (a) divided the total number of lunches served per month (i.e., free, reduced-price, and paid) by the number of serving days in the month to determine the number of meals served per day, and (b) divided that value by the total enrollment for the district to assess percentage participation per day. To assess the participation rate for only those students eligible for *free or reduced-price* meals, we (a) divided the total number of free or reduced-price lunches served by the number of serving days, and then (b) divided that by the number of students eligible for free or reduced-price meals that year.

Next, we assessed post-COVID participation in 2020 using data from the second two weeks of March through May. Since meals were provided at no cost regardless of the student's free or reduced-price eligibility status, we used the total number of lunches distributed and the total number of days covered for both calculations. First, we calculated overall participation based on total enrollment as the denominator, and second, we calculated free or reduced participation using only the number of students who qualify for free or reduced-price lunches as the denominator. To assess the differences between 2019 and 2020 participation rates each month, we conducted an analysis of variance (ANOVA) accounting for repeated measures within a school district. We adjusted this figure to reflect the average percent of students eligible for free or reduced-price meals.

Qualitative Data Analysis

Key informant interviews were analyzed using the immersion-crystallization approach (Borkan, 1999).

During the immersion process, two researchers conducted an in-depth review of the interview transcripts while taking detailed notes to identify key aspects of emergency school meals programs and select quotes exemplifying those aspects. Then, during the crystallization process, the two researchers developed an initial set of codes based on patterns identified in two interviews, and met with a third researcher for peer debriefing. Based on this meeting, the team established a coding guide. We analyzed the remaining interviews and added additional codes as we found additional patterns. After coding was complete, the team reached consensus on the themes from the interviews. The findings were verified with one of the stakeholders interviewed.

Results

Over three-quarters of school districts statewide served meals after their buildings closed, with all providing lunch, 82% providing breakfast, 4% providing supper, and 1% providing snacks. Key informants discussed how they had integrated their district and school practices with community needs. Themes from the interviewees revealed the following four factors for success: (1) tailor the program to community needs and resources; (2) identify strategies to facilitate participation; (3) develop partnerships to coordinate school, municipal, and community efforts; and (4) establish programs that encourage resiliency. Furthermore, the emergency meal program increased the opportunity to positively influence perceptions of school meals. While the specific wording of these recommendations is our own, the concepts that formed these themes came directly from the key informants.

Theme 1: Tailor Programs to Community Needs and Available Resources

Distribution Processes

The majority (88%) of districts used grab-and-go as their primary distribution method. One interviewee explained that “every meal has a milk, every meal has a fruit or vegetable, every meal has a grain component, and a meat or meat alternate component. They’re packaged up in the brown paper

bags, six out on a table at a time, keeping them on ice, and people come and take them.” Keeping families and staff safe were key considerations, with one FSD stating, “I have the same stump speech every day with [staff] and that is our first priority is to keep you safe, our second priority is to serve food.” This FSD decided to avoid contact between staff by eliminating the assembly line system of bagging meals in the kitchen. Instead, they created a self-service buffet where families selected meal components. Meal components were “color coded as opposed to meal identified, which, if you’re picking up three meals, you’re taking three out of the red box, three out of the blue box, taking six pieces of fruit, taking six milks. They fill up the bag, they leave, and then the next person comes in under the tent.”

Safety concerns also guided decisions regarding the number of days per week that distribution sites were open. In early June, 48% of districts had sites open Monday through Friday to distribute grab-and-go meals; 29% were open 3 days a week; 14% were open 2 days a week, and only 1% were open 1 day a week.

The districts that distributed fewer times per week provided multiple days’ worth of meals at once to “minimize the number of times that people were together.” Some interviewees reported providing extra meals on Fridays to cover the weekend. The quantitative data provided by the CSDE indicated that 4% of the districts provided meals to cover Saturdays, and 24% provided meals to cover both Saturdays and Sundays. Large urban districts serving thousands of meals per day were most likely to distribute food 5 days a week; however, an FSD from a smaller district indicated they “wanted to keep the meals as fresh as we could” and had “plenty of staff members still willing to work.” One FSD noted that daily distribution helped “to keep it as simple as possible” and avoided “having to provide storage instructions and expiration dates.”

Statewide, the number of distribution sites per district ranged from one (60% of districts had a single distribution site) to 38, with five large districts distributing food at over 20 sites each. Interviewees explained that site selection was typically based on where the most families could be

reached, such as schools that were “centrally located in the district.” In addition to schools, sites were placed within the community, “so that every neighborhood had a site close by. . . . If anyone wanted to walk, they can access the site and the meals easily.” One FSD used a district map with income levels to “see what the income levels are and where the kids are” and used this information to add sites where they were needed. Community distribution sites included libraries, fire departments, community centers, housing centers, and daycare centers.

A common challenge cited in the interviews was keeping the meals cold during distribution. Both large and small districts struggled with insufficient space to keep food cold, as well as the need to transport refrigerators. One FSD stated that refrigeration was “a huge issue . . . and once we didn’t have maintenance help anymore, it was a struggle for a few weeks.” When asked for recommendations for the next school year, one FSD stated, “Rent an outdoor refrigerator container because we didn’t have enough refrigeration.”

Bus delivery was the primary distribution strategy for only 12% of the districts. A larger subset ($n=49$) of districts obtained a waiver to allow delivery if necessary. One district that decided to distribute entirely by bus to individual homes noted the large geographic area of the regional district. The superintendent explained that they “felt a lot of people would not want to leave their homes, or that the families that really needed the help the most wouldn’t come get the food . . . and we wanted to keep the bus drivers employed too, as much as possible.” However, delivering food had challenges. Some families forgot to pick up the food from their front door, and long driveways prevented buses from reaching homes. To address this, the district “encouraged people to put out coolers” at their doors or mailboxes to keep the food cold until it could be retrieved. Further, a system was developed to notify families “to the minute” of food delivery times.

Interviewees also shared that districts shifted their distribution processes throughout the closures. Many FSDs reported making alterations based on changes in family participation or to increase the safety or efficiency of the distribution

process. For example, some districts decided to provide breakfast and lunch together instead of at different distribution times. Others changed the time of day or length of time the sites were open based on staff and family feedback.

Menu Development

Most interviewees reported both challenges and creative solutions related to the types of food distributed. Almost all FSDs described their intention initially to use the remaining food in their inventory: “I had each manager go to each kitchen; they took a full inventory. And we knew what we were dealing with ... We started doing our menu planning right from there ... and it worked well because we did not have to get any deliveries in for the first few weeks.” She added that “inventory was so key, because then we were able to start grabbing stuff from other schools if we didn’t have it in that one central location.”

Food service personnel used creativity to produce meals with existing inventory that aligned with USDA meal patterns. Although some districts in the state requested USDA waivers, multiple FSDs noted in their interviews that meeting the meal pattern “wasn’t an issue at all.” Menu items included yogurt parfaits, fruit smoothies, make-your-own pizza, and turkey dinners. One FSD stated that the emergency meal program was “doing menu items that we would do during the year. So, all of the products that we have available, or the recipes that we’re following, are all going to be within those guidelines. So, it’s pretty simple. We don’t really have anything in the kitchen that wouldn’t be part of the reimbursable meal.”

When new inventory was needed, however, meal planning became more challenging due to supply chain problems. In particular, individually packaged items (e.g., baby carrots) were difficult to acquire. One FSD mentioned, “We couldn’t get a carrot to save ourselves. We couldn’t get apple slices to save ourselves.” One solution was to individually wrap produce in-house, with some deciding to buy bag sealing machines to reduce staff labor. It was also important to “make sure that if we run out of something ... we always had something that we can give.” One FSD described keeping a supply of raisins, dried sweetened

cranberries, and graham crackers as quick additions if she was missing a meal component.

Initially, after schools closed many districts reported serving cold meals, such as sandwiches, cereals, and salads. As time went on and they needed to provide multiple meals at once, several described providing refrigerated meals to be reheated at home. These meals included items such as pizzas, macaroni and cheese, tacos, chicken fajitas, cheeseburgers, pasta, and chicken tenders. Heating instructions were included on the packaging. One FSD emphasized the importance of writing on the package that the food was fully cooked and could be eaten cold, in case the family did not have access to heating appliances.

It was difficult initially to obtain the necessary packaging materials for the meals to-go. One FSD described, “In the beginning, I could not get paper bags to save my life. So, I started ordering from Office Depot, 16-pound paper bags. They were outrageously priced, but I needed something.” A key consideration was ensuring that the packaging could withstand the journey home without coming apart. Selecting packaging for foods to be heated at home also required ensuring safety while considering cost. As one FSD described, “I was always nervous in the beginning that if a kid was home, would they take the metal tin and put it in the microwave to try to heat it? So, we started thinking like kids, like okay, if I get this, and my mom is working or dad is working, what the heck am I going to do with this? So, we went into printing out instructions for all the food, how to safely reheat in the microwave.” Later, they continued to provide heating instructions when they “got a little bit braver and ... switched to the tins because they were so much cheaper.”

The waiver that allowed foods to be provided in bulk—particularly milk (e.g., quarts vs. half-pints)—“worked out really well.” One FSD added, “we got really good positive feedback from families on that, because they didn’t get all these little milk containers.” Another FSD mentioned switching to bulk milk made “a huge savings on time.” Many FSDs also described using funds from another USDA program, the Department of Defense (DoD) Fresh Fruit and Vegetable Program (USDA Food and Nutrition Service, 2020b), during this

time. The DoD program specifically supports school purchases of fresh produce. One FSD noted the value of the DoD accounts, adding that “a lot of people were appreciative and I was just happy that something fresh got into the hands of our families that really, really needed it.”

Staffing Practices

A key component of the emergency school meal program involved organizing staff members and production processes. Many FSDs emphasized the need for regular communication with staff to identify emerging problems, find solutions, and increase efficiency. One FSD described, “We were meeting daily ... so we’re able to discuss any issues that arose that particular day, and discuss as a group any adjustments that we had to make. So that’s been helpful. We’ve actually been meeting more than we do during a normal school year.” Another FSD emphasized the need to ask staff about the problems they were seeing and potential solutions: “Try to do the work side by side so you can see what your staff is going through physically, and what their needs are ... talk to the regular staff. They’re going to have good ideas too.” Additionally, one FSD addressed the need to meet with staff “on a daily basis when you’re in a crisis situation like this and you’re doing things you’ve never done before.” Maintaining staff morale was key: “keeping a positive attitude, making it fun ... was really important to getting this to work.”

Almost all FSDs interviewed shared that there were substantial concerns about staff becoming sick: “Those first couple of weeks, [staff] were just very scared. But they did it because they knew how important it was to still feed the kids. They just pushed themselves and we just made sure everybody was safe and did what they needed to do.” To address these concerns, production sites prioritized safe distancing so that “everybody had their own little area that they were working in.” In one district, they marked the floor to help maintain safe distancing; in another, school nurses came in regularly to monitor staff wellness, take temperatures, and provide reminders about social distancing and sanitization practices.

The fear of having no personnel to distribute meals if one staff member became sick led some

FSDs to develop staff rotations. One FSD “proposed to the superintendent that ... each site had two teams. If someone got sick on Team A, and they all had to go home and quarantine, I could quickly pull in Team B and put them at a different school and start serving.” Although procedures were in place to reduce the risk of illness, many FSDs noted that the mere potential was “very stressful.”

Another challenge was that some staff could not, or would not, work during the closures. The reasons included their own health concerns, their need to take care of dependent children, or their lack of motivation to work due to the executive order from the governor that ensured all staff would be paid whether or not they worked. Consequently, some districts had staff shortages. One solution was finding help outside the meal program, in particular, from school paraprofessionals, administrative staff, and community volunteers. Maintenance staff and custodians were also mentioned frequently. They supported the distribution process by carrying items, ensuring a clean work environment, and relocating heavy items like refrigerators.

Overall, FSDs were impressed with the attitudes and work ethic of their staff: “I give a lot of credit to the individuals that have come to work, and continue to come to work” and “everybody’s been doing awesome.” Of note, continuing to support students and the community helped some staff members as well, with one staff member commenting that “this has been a really depressing period ... but coming in and helping in the kitchen, really made my day ... it was so good to see everyone and know that we were doing something nice for people.” Similarly, an FSD mentioned that some of her staff “look forward to coming and getting out” because it was “giving them a little normalcy in their life. ... They felt like they had an actual purpose and they were really helping the community.”

Theme 2: Identify Strategies to Facilitate Family Participation

Participation Rates

The rates of meal participation from January–May

2019 and January–May 2020 are presented in Table 1. The March meal counts are presented for the first two weeks, before the buildings closed, and the second two weeks, after emergency meals began. For January–May 2019, the average monthly overall participation rate ranged from 45.6% to 49.9%, and the average monthly free or reduced-price participation rate ranged from 68.1% to

74.9%. The average overall participation rates from January through the first two weeks of March (pre-COVID) 2020 were not significantly different from participation the previous year. However, in mid-March, overall participation dropped by 32.3 percentage points after the buildings closed. Overall participation improved a bit in April and May, but was still significantly lower than in 2019.

Table 1. Overall and Free or Reduced Lunch Participation Rates, January–May in the 2018–19 and 2019–20 School Years (SYs) in Connecticut School Districts (N=120)

	2018-19 SY ^a % (SE)	2019-20 SY ^a % (SE) (no weekends)	% Difference ^b	p-value ^c
Participation Rates Based on Total Student Population^d				
Pre-COVID				
January	45.6 (0.9)	47.3 (0.9)	1.7	0.2
February	46.0 (1.0)	49.4 (1.0)	3.4	0.01
March ^e	45.6 (1.0)	42.9 (0.9)	-2.7	0.04
Overall ^f	45.8 (0.6)	46.5 (0.6)	0.7	0.3
Post-COVID				
March ^g	45.6 (1.0)	13.3 (1.0)	-32.3	<0.0001
April	49.9 (1.4)	22.2 (1.4)	-27.7	<0.0001
May	48.3 (1.3)	21.5 (1.3)	-26.8	<0.0001
Overall ^h	47.9 (0.7)	19.0 (0.7)	-28.9	<0.0001
Participation Rates Based on Number of Students Eligible for Free/Reduced-Price Mealsⁱ				
Pre-COVID				
January	68.1 (1.5)	67.6 (1.5)	-0.5	0.8
February	68.6 (1.5)	71.0 (1.5)	2.4	0.3
March ^e	68.2 (2.6)	62.0 (1.5)	-6.2	0.002
Overall ^f	68.3 (0.9)	66.8 (0.9)	-1.5	0.2
Post-COVID				
March ^g	68.2 (2.6)	41.6 (1.5)	-26.6	<0.0001
April	74.9 (4.4)	72.9 (4.4)	-2.0	0.7
May	72.0 (4.2)	70.8 (4.2)	-1.2	0.8
Overall ^h	71.7 (2.3)	61.8 (2.3)	-9.9	0.002

^a Calculated using least squares mean regression.

^b Calculated as the percent participation for the 2019–20 SY (without weekends) minus the percent participation for the 2018–19 SY.

^c Calculated using analysis of variance accounting for repeated measures within a school district and adjusting for the average percent of students eligible for free or reduced-price meals.

^d Calculated by: (Pre-COVID) dividing the number of meals served by the total number of students, accounting for the number of serving days; (Post-COVID) dividing the total number meals served by the total number of students, accounting for the number of serving days

^e Pre-COVID values for March during the 2019–20 SY represent the days prior to the school closures that month

^f Calculated using only Pre-COVID dates from January through mid-March during the 2018-19 and 2019-20 SY.

^g Post-COVID values for March during the 2019–20 SY represent the days after the school closures that month.

^h Calculated using data from March - May 2018–19 SY and 2019-20 SY; March 2020 is Post-COVID days only

ⁱ Calculated by: (Pre-COVID) dividing the number of free or reduced-priced meals served by the number of students eligible for free or reduced-price meals, accounting for the number of serving days; (Post-COVID) dividing the total number meals served by the number of students eligible for free or reduced-priced meals, accounting for the number of serving days.

A second way to examine participation rates is to compare the post-COVID participation rates to the pre-COVID participation rates for students eligible for free or reduced-price meals. The rationale is that these are the students at greatest risk of food insecurity. When viewed this way, the reach in April and May is more encouraging. When not counting weekends as serving days, the decreases in participation in April and May 2020 were smaller (−2.0% and −1.2%, respectively) and not statistically significant. Because 29% of districts offered meals for one or two weekend days, we recalculated the post-COVID participation rates including the additional weekend days. Although this decreased the percentage daily participation values (because the number of meals is being divided by a larger number of days), the difference between the April and May 2020 and 2019 free or reduced-cost participation rates still did not reach statistical significance.

The interviews provide the FSDs' perspectives on the decrease in participation and the distinction between overall participation and free or reduced-price participation rates. Most FSDs reported that meal program participation fell "dramatically" after buildings closed. Although the FSDs did not collect information about the free or reduced-price eligibility status of participating families, they had different perceptions across districts. One FSD said that "it was the free and reduced population that was really taking advantage of the feeding," while another stated, "These weren't just families that were on free and reduced lunch. ... These were families that didn't necessarily want to chance going to the grocery stores, and some of the families, you know, were suddenly without a job." Other districts noted similar trends, as a different FSD added, "I don't care what walk of life you are ... or what financial status you are, we saw everything from A to Z and we still do." One FSD noted that the only reason for nonparticipation should be because "they've got food in their refrigerator."

Communication about the Program

It was also clear from the interviews that increasing participation was a priority. All the interviewees agreed that effective communication strategies

were critically important; however, they reported varying levels of success. One FSD who was proud of her high staff morale and creative menus remarked, "I can honestly say that the biggest stumbling block I saw in this whole thing was communication." She reported meeting families in June who were still unaware of the emergency meal program. In contrast, other FSDs described "a steady stream of communication" and that they had "really, really gotten the word out."

The most common methods to share meal program details were emails and postings on districts' websites. Other strategies included phone calls, text messages, banners, flyers, signs, social media postings, newspaper postings, radio announcements, word of mouth, and municipal networks, such as mayors, churches, and libraries. Several FSDs explained that "not everybody is connected technology-wise" and that "you can send out an email blast from the school district, but that doesn't necessarily fit everybody." Many worried that families were receiving so much information via email that school meal information was getting lost: "people sometimes just need an old-fashioned phone call." That FSD said they saw an increase in participation after spending "about three full days of calling" families qualifying for free or reduced-priced meals. Another district that utilized robo-calls had the principals instead of the superintendent create the messages so "the parent may think, 'Oh my God, hey, that's our principal!'" Another FSD "put up a big banner in the park...to let families know about the sites and the new site opening up down the road in the low-income area."

Existing city and town networks were utilized as well. One district's English Learners' program "had the phone number of every immigrant family and called every home to communicate to them where meals were being served." The district's FSD also contacted "all the religious leaders in town to communicate the message to everyone in their congregations" and utilized the public library's "vast communications network" by adding school meal program information to the library newsletter. Districts also tailored the message to specific populations, such as immigrant families who may not have been able to access federal pandemic assistance.

Communication about the Food

Several FSDs mentioned the importance of communicating about the specific food families could expect to receive. One used Facebook to show people the meals: “I took a picture of ... the actual table full of all the grilled chicken Caesar salads ... and parents were commenting like, ‘oh my God, that looks so good.’” Another FSD surveyed families as to why they were not participating and found that “the number one response was that they didn’t know what was available.” In response, she began posting daily menus. While many FSDs reported that menus sometimes changed last minute due to supply network challenges, it was important to give families an idea of what meals would be offered; this increased their comfort and the program’s appeal.

Accessibility, Comfort, and Clear Information

The FSDs perceived that participation rates were also helped by focusing on accessibility and family comfort, and eliminating common misconceptions about the meal programs. As physical access to the meal sites was a barrier to many families, one district leader who adopted a delivery model of distribution noted, “All schools should be thinking differently about how we get the food to the families, and not just make the families come to us.” However, for districts without the resources to deliver meals, one FSD explained his process of strategically locating grab-and-go sites. He “specifically picked sites where they would get a lot of walkers” and created community sites at daycares and community centers. Efforts were made to place distribution sites in low-income neighborhoods, which increased participation, as reported by that FSD. Ultimately, making meal pick-up or delivery easier for families, particularly families without cars or with jobs as essential workers, ensured that students who needed meals could access them.

Meal program leaders noted the need to be aware of and combat many common misconceptions regarding emergency meal programs. These misconceptions included parents’ fears of “double dipping” when receiving free meals in addition to P-EBT or SNAP benefits, worries that meal pick-up was unsafe, assumptions that meals were only

for students who are eligible for free or reduced-price meals, and fears of needing to show identification when picking up meals. It was critical that districts identified families’ assumptions and fears, either through surveys or conversations, and updated communication messages to indicate that meal pick-up was safe and for all families, no matter their financial status or reception of other benefits. For example, to ensure that immigrant families felt comfortable accessing free meals, one district “updated the meal plan flyers ... which say you don’t need to show any proof of immigration status” and placed Spanish speakers at every pick-up site. Identification of common barriers to participation required districts to communicate with and deeply understand the families in the district, highlighting the importance of school and family relationships.

Beyond ensuring access and eliminating misconceptions, an effective strategy to maintain family participation was to strengthen family comfort during the distribution process. One FSD explained, “the families coming through were seeing the same people and I think that was really reassuring to them. ... They got to know each other by name.” In other districts, staff “dressed up every day in something funky.” A focus on making the process fun for students helped reduce the fear of stigma, and the relationships built between staff and families during a time of fear and uncertainty increased the likelihood that families would return each day.

Theme 3: Develop Partnerships to Coordinate School, Municipal, and Community Efforts

Relationships between the schools and community institutions helped strengthen meal programs and provide more resources for families. Common partners included restaurants, community organizations, foundations, social service agencies, food pantries, food distributors, farms, and the municipal government. Not every district engaged in community partnerships; however, when asked to talk about the benefits of having those connections, one FSD responded, “It’s critical. You get so much more done.”

Fill in Gaps by Aligning Efforts

The interviewees provided several examples of how community partners assisted emergency school meal programs when the schools were unable to distribute meals. When one FSD struggled to distribute meals to students from the two schools in her district without hot meal programs, “a social service agency said, ‘Don’t worry, we will supply food to any family that wants it.’” Similarly, many districts did not have the capacity to serve food over weekends or spring break. In one district, social service agencies provided families with gift certificates to purchase groceries over spring break; in another, a nonprofit raised money to fund a restaurant that cooked weekend meals. In these situations, FSDs identified where their services fell short and took advantage of strong community relationships to fill in the gaps. Some FSDs felt that pre-existing relationships with town or city institutions increased the likelihood of collaboration, yet several also described how they were able to build new relationships during the closures.

Several interviewees reflected on their work to integrate school and community efforts, emphasizing the importance of mutual communication. Some enhanced meal distribution by including school-based food pantries in their programs. One district had a previously established school-based pantry. Another district found new ways to distribute nonperishable food by accepting community donations and collaborating with a local food pantry that dropped off leftover items. This was more convenient for families because they did not have to travel to a different location to access additional food. Unfortunately, in this case, someone received food from the pantry items at the school that was outside of its “best by” date and subsequently posted a negative comment on the food service’s Facebook page. This precipitated the decision to end this initiative.

In another case, the food pantry gave the food service staff slips of paper to hand out to families when they came to pick up food. The slip said, “If you’re in need of a weekend meal or fruits or veggies or canned goods, here’s a number to call.” Another FSD said, “We didn’t really coordinate with [the food pantry] but just knew that they were doing the weekends. And so, we would tell people

[about them] when they came to our site ... and hopefully they were doing the same for week days.”

While not all schools co-organized their operations with social service agencies and food pantries, some found that aligning with each other’s efforts helped ensure that families knew about the local resources available. Another FSD utilized city hall as a way “to get integrated in with food drives and food pantries” so that they “weren’t working as a separate entity.” Ultimately, schools were part of the municipal resource networks and social safety net during the COVID-19 pandemic, and integrating town and city efforts allowed for a streamlined and united community response to the challenges of the time.

Program Enhancement Through Partnerships

Community partnerships sometimes moved beyond integration with other services, as they also worked to enhance the school meal distribution itself. Several stores donated shoes and snacks to food service staff, and one dairy distributor provided a district with refrigeration. In fact, the district’s FSD noted, “without the refrigeration, we would only have the capacity to do 400 or 500 meals.” The refrigeration and staff support provided by community partners reflects the fact that food services faced many new logistical and workforce-related challenges throughout the meal distribution, and that there were opportunities for outside organizations to assist creatively.

For the districts that utilized grab-and-go meal programs, the distribution sites provided an opportunity to share additional resources. One FSD commented, “this was a great opportunity to make sure that people that may not have before, or may have just missed qualifying for SNAP, now had that opportunity.” Another district collaborated with organizations such as End Hunger Connecticut and created “community information hubs,” where families could access services such as SNAP applications, kindergarten enrollment, and library books when picking up meals. Information hubs were an opportunity for families to access accurate materials and safely speak to experts in person. As many families utilized free meals for the first time during the pandemic, they most likely would bene-

fit from knowledge of other resources previously unfamiliar to them, such as SNAP. In addition, one district noticed “participation spikes” on days where they distributed face masks and distance-learning packets at the grab-and-go sites. Based on this, they decided “to create more uses for the tents, in order to drive higher participation.” Using the meal sites for multiple uses had the added benefit of incentivizing more families to utilize the meal program.

Theme 4: Establish Programs that Encourage Flexibility and Resiliency

Overall, one of the most common themes across the interviews was the need for flexibility and resiliency in order to maintain effective and efficient emergency school meal programs. For example, when reflecting on the programs, FSDs made statements relating to the seemingly constant changes, such as, “We had to rethink the whole process. So, I have to say from the beginning of this program, it evolved to where we are now” or “Everything is always changing with this.”

Many FSDs mentioned being “nervous” and “apprehensive” in the beginning of the closures; however, they were able to get “in a really good groove.” Numerous comments reflected the idea that “it was certainly a learning process.” In addition, many FSDs reflected that the program “ended up working out, actually, really well” and “is manageable now.” Some added that the lack of time to prepare demanded this flexible approach: “You had to make quick decisions. And you had to go with it. And then if it didn’t work, you change it on the fly. And I think the most important thing is not to be married to a decision.” As a result of the experience, multiple FSDs mentioned that they increased their “confidence,” and now believe their team of personnel is prepared for any future emergency and “could pretty much do anything under pressure.”

Looking forward, FSDs noted that flexibility would be necessary in the next school year due to the likelihood of changing schedules and plans. Some FSDs mentioned that they were included in district leadership decision-making teams, while others were not included in these discussions.

Additional Observations

Family Feedback

The FSDs reported that feedback from families regarding the continuous adaptations made by emergency school meal programs was overwhelmingly positive. FSDs received cards and pictures from students, as well as notes and comments from caregivers about the quality of the food and the sense of normalcy that it provided the students. One district experienced some negative comments on social media when the meals were slightly different than those stated on the menu; however, the programs generally received positive feedback.

Opportunity to Influence School Meal Perceptions

A few FSDs discussed the opportunities that arose during the emergency closures, particularly noting that “it was a good opportunity for the families to be able to see firsthand what the meals look like,” especially for the caregivers “who maybe never had their kids pick up meals.” FSDs reported that family members made comments such as “that looks so good” in response to pictures of meals on social media of their children’s school meals. Multiple FSDs discussed the substantial changes that have been made in school lunch quality since this generation of children’s parents were in school; therefore, they felt it was important to highlight the quality of current school meals. The emergency school closures provided school food services programs with this opportunity to showcase the school meals to encourage greater participation in the school meals program in future school years. Finally, one FSD also believed this experience demonstrated the need to provide free school meals to all students—not only those who qualify for free or reduced-priced meals. She believed that doing so would promote a “culture for everybody” in which all students and families understand that “it’s okay, no matter what level financially you’re at, to eat at school.”

Discussion

The interview approach used in this study sought to identify real-time adaptations in school meal programs during an unprecedented and ongoing crisis. The findings have been condensed into a re-

source table for busy food service professionals (see Appendix B). We hope this information will aid other food service programs in their continued response to COVID-19.

Although overall participation rates for school lunch were significantly lower across the state after school buildings closed, the participation rates in April and May approached the level of free or reduced-price participation for the same months in 2019. Many of the specific strategies that the FSDs highlighted prioritized reaching students eligible for free or reduced-price meals, including placing the distribution centers in lower-income neighborhoods, targeting communication through community and other school partners, and creating distribution sites that also met additional needs of the families. It is important to note, however, that all the emergency meals were free, and the staff did not track whether each student was eligible for free or reduced-price meals as they would in the school cafeteria. Therefore, we do not know the proportion of students who received meals in 2020 who were eligible for free or reduced-price meals. Future research is needed to assess how each district's emergency meal recipients compare to their typical population of meal participants.

Although consistent themes emerged from the interviews we conducted, future work is needed to quantitatively assess the costs and benefits of the strategies described. A limitation of the current study is that we do not have quantitative data on the use of different strategies across all the districts in the state. Future studies should measure the use of the strategies noted in the interviews and assess which are associated with significant increases in participation by students eligible for free or reduced-price meals.

Finally, all the people interviewed in this study were in leadership positions in the school food service operations and provided perspectives from that position. Future research is needed to capture a more holistic view of the program by including the perspectives of food service staff, students, families, government agencies, other school district employees, and community partners. Hearing from

these other stakeholders could answer questions about whether staff members feel safe at work, reasons why families do or do not participate in the program, community needs for additional support, the perceived effectiveness and usability of the meal programs, and how schools are being called upon to promote health and wellness in addition to providing academic instruction.

Conclusions

The findings from the current study provide insight into how meal distribution rates changed during the spring of 2020 in Connecticut and how food service leaders responded to the crisis. Despite the inability to plan ahead for long-term emergency school closures, school food personnel quickly shifted meal production and distribution practices to continue feeding their students. The strategies reported by a diverse group of FSDs were developed by a desire to maximize family participation, staff well-being, and safety for all. FSDs responded to the challenge of the pandemic by designing and implementing new procedures and protocols, finding ways to use existing resources, and establishing a culture of flexibility and innovation so they could adapt to the changing needs and unique circumstances of their individual districts and families. Expanding beyond the typical role of the school meal program, many districts built or strengthened connections with community partners to enhance existing services and increase their reach and impact. 

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Appendix A. Questions Asked During Interviews with Food Service Directors

- (1) Thinking back to when schools first closed, can you describe the decision-making process your district went through when selecting distribution methods and sites? What factors did you consider?
- (2) What does your distribution process look like?
- (3) What methods have your sites used to distribute meals? Who is involved in this process?
- (4) What are some innovative or creative distribution methods your sites have come up with, or that you have heard of others using?
- (5) Do you have thoughts about the families who are participating in your program now, as compared to the families who were participating before COVID?
- (6) Do you have thoughts about the families who are not participating right now? Any ideas about reasons why they are not participating?
- (7) Were there any staffing challenges you faced when you initially got started? Have new challenges emerged?
- (8) Can you describe who is staffing your sites right now? How does it compare to who was serving meals before?
- (9) Can you tell me about the communication strategies that were used in your district to keep parents updated on site openings and closures, and new distribution methods?
- (10) What are some challenges you have had in terms of food procurement and preparation?
- (11) What are some innovative or creative preparation methods your sites have come up with, or that you have heard that others are using?
- (12) Have there been any community organizations, including the food banks in Connecticut or the local food pantries in your district, that you have worked with during this time?
- (13) Are there things you have learned that can help us improve any part of the current meal service, not necessarily just during emergencies?
- (14) Are there things you have learned about how we can be better prepared for future emergency school closures?

Appendix B. Best Practices for Implementing Emergency School Meal Programs Identified Through Key Informant Interviews

Domains and Themes	Supportive Strategies
A. Tailor programs to community needs and available resources	
A1. Distribution Process	<ol style="list-style-type: none"> 1) Increase access to meals: <ul style="list-style-type: none"> • Deliver meals to student homes (recommend coolers at end of driveway; notify families with exact delivery time) • Consider where most low-income families live. Create grab-and-go sites at schools and community locations within walkable distances. 2) Be flexible to maximize efficiency, reach and safety: <ul style="list-style-type: none"> • Add or remove sites and staff • Adjust times that each site is open • Increase or decrease number of meals distributed at once • Rent outdoor refrigerator if needed
A2. Menu Development	<ol style="list-style-type: none"> 1) Know your food inventory: <ul style="list-style-type: none"> • Keep an up-to-date, complete inventory for each building • Use freezer inventory first • Stock up on components for fruit and vegetable meals to ensure meals fit the NSLP meal pattern • Use Department of Defense funds for fresh produce 2) Rethink equipment and packaging: <ul style="list-style-type: none"> • Purchase equipment and supplies to do own packaging • Provide meals to be reheated at home • Offer bulk milk • Color-code meal components at distribution sites to ensure everyone gets all components • Clearly explain that food is fully cooked and how to reheat safely
A3. Staffing Practices	<ol style="list-style-type: none"> 1) Spend time together in person: <ul style="list-style-type: none"> • Protect morale, keep it positive, and make it fun • Communicate daily • Observe problems and generate solutions together 2) Prioritize and ensure staff safety: <ul style="list-style-type: none"> • Create safely distanced workstations • Invite nurses and maintenance staff to help • Create rotating teams to limit exposure • Fill staff shortages with other school personnel (e.g., paraprofessionals, nurses)
B. Identify strategies to facilitate family participation	
B1. Communication about the program	<ol style="list-style-type: none"> 1) Use every strategy you can to reach families: <ul style="list-style-type: none"> • School district channels: emails, robocalls, posts on social media, text messages, posts on district websites • Community channels: banners in the community, library newsletter • Reach out individually if necessary: personal phone calls, church leaders, special program leaders 2) Make sure messages are available in all the languages spoken by participating families

3) Clarify misconceptions:

- All children—not just those who are free or reduced-price—eligible—can obtain food
 - You can still get meals if you have received P-EBT
 - No one will be checking immigration status
-

- B2. Communication about the food
- 1) Share detailed information about the foods provided
 - 2) Note the availability of meals for those with dietary restrictions
-

C. Develop partnerships to coordinate school, municipal, and community efforts

- C1. Fill in gaps by aligning efforts
- 1) Collaborate with other local food providers:
 - Local restaurants
 - Farms
 - 2) Engage the charitable food system:
 - Establish school-based food pantries
 - Align efforts with community food pantries
 - 3) Work with partners to meet the local need:
 - Social services
 - City hall
-

- C2. Enhance the program through partnerships
- 1) Industry partners can help with equipment needs (refrigeration, shoes)
 - 2) Set up “Community Information Hubs”:
 - Engage families in other ways at distribution sites
 - Examples: SNAP enrollment, kindergarten registration, voter registration, and library book check-outs
-

D. Establish programs that encourage flexibility and resiliency

- D1. Have a growth mindset
- 1) Communicate the need to be flexible to the staff:
 - Need to make quick decisions
 - Need to be willing to drop an idea if it is not working
 - Eventually, confidence builds
-

Dismantling and rebuilding the food system after COVID-19: Ten principles for redistribution and regeneration

SPECIAL ISSUE COSPONSORED BY INFAS:
 THE IMPACT OF COVID-19 ON FOOD SYSTEMS



Inter-institutional
 Network for
 Food and
 Agricultural
 Sustainability

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Abstract

The COVID-19 pandemic has claimed hundreds of thousands of lives and cost economies trillions of dollars. Yet state responses have done little to address the negative externalities of the corporate

food regime, which has contributed to, and exacerbated, the impacts of the pandemic. In this paper, we build on calls from the grassroots for

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states to undertake a strategic dismantling of the corporate food regime through redistributive policies and actions across scales, financed through reparations by key actors in the corporate food regime. We present a strategic policy framework drawn from the food sovereignty movement, outlined here as the “5Ds of Redistribution”: Decolonization, Decarbonization, Diversification, Democratization, and Decommodification. We then consider what would need to occur post-redistribution to ensure that the corporate food regime does not re-emerge, and pose five guiding principles grounded in Indigenous food sovereignty to rebuild regenerative food systems, outlined here as the “5Rs of Regeneration”: Relationality, Respect, Reciprocity, Responsibility, and Rights. Together these ten principles for redistribution and regeneration provide a framework for food systems transformation after COVID-19.

Keywords

Corporate Food Regime, COVID-19, Food Sovereignty, Food Systems Transformation, Redistribution, Regeneration, Reparations

Introduction

At the time of writing, COVID-19 had claimed over two million human lives, with estimates by the Centre for Risk Studies that it will cause GDP losses of up to US\$82 trillion over the next five years (University of Cambridge Judge Business School, 2020). The magnitude of the pandemic has spurred an unprecedented response from governments: Trillions in fiscal emergency measures are set to drive up national deficits in the name of economic recovery (International Monetary Fund [IMF], 2020). As one example, the Canadian federal government allocated CA\$169 billion in emergency funds between March and June 2020 (Parliamentary Budget Officer, 2020), equivalent to more than 40% of federal revenues in 2018–2019 (Government of Canada, 2019). Nevertheless, state responses fail to address the underlying structural features of the “corporate food regime” (McMichael, 2005), including land consolidation, industrialized and intensive crop and livestock production, the concentrated market power of multinational corporate actors, the tight coupling

of the fossil energy and agri-food sectors, and liberalized global trade (Holt-Giménez & Shattuck, 2011). Together, these features increase the risk of pandemics and exacerbate their effects (Wallace, Liebman, Chaves, & Wallace, 2020).

Not only is the global corporate food regime highly implicated in and vulnerable to shocks like COVID-19 (Hendrickson, 2020), but it has long been described as an “international public health disaster” (Olivier De Schutter, cited in UN News, 2012, para. 4). Currently COVID-19 is exacerbating conditions such as food insecurity (World Food Programme, 2020), poor mental health (Torales, O’Higgins, Castaldelli-Maia, & Ventriglio, 2020), and substance abuse (Holloway et al., 2020), while interacting with other ongoing pandemics that disproportionately affect people in the Global South, such as HIV/AIDS (McLinden, Stover, & Hogg, 2020; Pérez-Escamilla, Cunningham, & Moran, 2020). Like the 2009 H1N1 influenza pandemic, COVID-19 follows health gradients, bringing higher infection risk and death rates to the lower socio-economic strata of highly unequal societies (Bambra, Riordan, Ford, & Matthews, 2020; Jordan, Adab, & Cheng, 2020).

In Canada and other high-income countries, risks of food insecurity and diet-related disease are elevated among those with low incomes (McIntyre, Bartoo, & Emery, 2014; Phipps, Burton, Osberg, & Lethbridge, 2006) and among Indigenous, Black, and other racialized populations (Batal et al., 2018; Damman, Eide, & Kuhnlein, 2008; Domingo et al., 2020; McIntyre et al., 2014; Tarasuk & Mitchell, 2020) who face geographic, social, cultural, and economic barriers to accessing healthy food. The loss of jobs and income as a result of COVID-19 has increased food insecurity in Canada (Holland, 2020; Statistics Canada, 2020), as well as globally (World Food Programme, 2020). Early analyses of COVID-19 mortality indicate that those with diet-related diseases, such as cardiovascular diseases and type 2 diabetes, are at higher risk of morbidity and mortality due to COVID-19 (Bansal, 2020; Cariou et al., 2020; Hussain, Bhowmik, & do Vale Moreira, 2020; Jordan et al., 2020; Stefan, Birkenfeld, Schulze, & Ludwig, 2020). Higher consumption of ultra-processed foods in low-income communities, linked to malnutrition in the form of obesity, may

be an underlying factor in higher COVID-19 death rates (White, Nieto, & Barquera, 2020).

These findings suggest that the existing disparities created or deepened by the corporate food regime are now further exacerbated by worsening food insecurity, poverty, and health risks associated with COVID-19. Current state responses to this crisis appear compensatory, with the intention of stabilizing—not restructuring—the (food) economy. In Canada, for example, over CA\$60 million has been allocated by the federal government to Food Banks Canada alone (Food Banks Canada, 2020). While a necessary interim emergency response, in the words of Graham Riches, food banks nevertheless “prop up a broken system” in which overproduction and waste are inherent features that benefit corporations while undermining the human right to food and dignity (Riches, 2020). As another example, both the federal government and various provincial governments have declared meat processing an essential service, resulting in meat processing plants reopening after only short closures due to COVID-19 outbreaks in their facilities—some of the largest outbreaks in Canada—which put workers’ lives at risk (Baum, Tait, & Grant, 2020). As with previous economic recessions and crises, re-entrenchment of the status quo is thus the dominant expectation across political and economic institutions (see, for example, Wright [2010] on the push to “stimulate” the economy” and HLPE [2020] on investments after the 2007–2008 crisis).

Yet times of crisis provide opportunities for transformation (Wright, 2010). In this paper, using the pandemic response in Canada as an illustrative example, we consider possible policy responses to the global pandemic and their potential effects on building the food systems of the future, prioritizing the dimensions of our analysis by focusing on those responses most advocated by community and Indigenous organizations associated with the food sovereignty movement. Potential responses fall primarily into two categories. The first is reinvestment in the corporate food regime, thereby reproducing vulnerabilities, inequities, and the

associated high costs to the environment, economy, human health, and overall well-being (IPES-Food, 2017). A second, alternative pathway would be to transition purposefully to a more resilient and equitable food system by disrupting the processes which fuel the corporate food regime: Ongoing colonization and racism, industrialization, consolidation, concentration, and commodification. Following the lead of social movements oriented by food sovereignty principles, we echo calls for a strategic *dismantling* of the corporate food regime in order to create spaces for *rebuilding* food systems based on social justice and ecological foundations. Such a change requires economic and political restructuring through a suite of redistributive policies and actions across scales, following principles outlined here as the “5Ds of Redistribution”: Decolonization, Decarbonization, Diversification, Democratization, and Decommodification.¹ It also requires a complementary framework, which we have synthesized from Indigenous food sovereignty scholarship as the “5Rs of Regeneration”: Relationality, Respect, Reciprocity, Responsibilities, and Rights.

While there is much debate about the role of the state in food sovereignty construction (Roman-Alcalá, 2018, 2020; Schiavoni, 2017; Trauger, 2014; Trauger, Claeys, & Desmarais, 2017), states must take on the role of dismantling the corporate food regime in accordance with the calls of the grassroots food sovereignty movement, because “only the state has the authority to mobilise state resources,” expropriate and redistribute assets from large companies or landowners, and compel compliance (Borras, Franco, & Suárez, 2015, p. 612). In their current configurations, however, (neo)liberal states alone are inadequate for reorganizing and rebuilding the democratic decision-making and governance systems central to food sovereignty (Trauger, 2014). Similarly, the International Monetary Fund and World Bank-imposed structural adjustment programs are prime examples of how misallocated power and control of intergovernmental institutions over the food economy can effectively undermine food security and exacerbate

¹ While others have used similar approaches to naming principles, which remarkably all begin with the letter D (Leach et al., 2020; Stirling, 2009), our proposal diverges somewhat from these and also expands the list.

poverty (McMichael, 2005, 2014). Thus, it is insufficient to focus only on the role of state power in dismantling the corporate food regime, as such action does not preclude a return to, or re-entrenchment of, the corporate food regime. In other words, while the state can play a necessary role in taking down the corporate food regime by redistributing power and resources, rebuilding alternatives entails mobilizing transdisciplinary knowledge and diverse actors to develop and implement policies for food security and sustainability (MacRae, 1999).

Outline and Approach

This conceptual article is organized into two main sections. In Part 1, we identify five principles, the 5Ds of Redistribution, which can guide redistributive policy directions for food systems transformation. We provide justification for the principles and examples of potential policy directions for redistribution proposed by social movements and proponents of food sovereignty in the Canadian context. In Part 2, we suggest a second, complementary set of principles, the 5Rs of Regeneration, drawn from the Indigenous food sovereignty literature and movements, to inform the rebuilding and governance of resilient food systems.

The 10 Principles for Redistribution and Regeneration conceptual framework emerged through discussions in a collaborative and interdisciplinary working group following the sudden and dramatic societal disruption caused by the COVID-19 crisis. As a group, we followed media coverage and reporting on the economic impacts of COVID-19, tracked unfolding state responses at a time when there was considerable uncertainty about how the pandemic would spread and its potential impact on the food system, and analyzed early social movement responses. The 5Ds are particularly informed by the latter, as the author collective—all community-engaged researchers—has years of involvement and experience with land, food, and social justice movements. Two of our collective's members are Indigenous scholars actively involved with Indigenous food sovereignty organizations and struggles; three are white settler

scholars; and two are racialized settler scholars, one of whom is queer. Collectively, we work with Indigenous communities, activist networks, community service and charitable organizations, different levels of government, and farmer organizations in North America/Turtle Island,² South America, and sub-Saharan Africa. While the framework presented here does not represent the position of any individual food sovereignty organization, it is based on the demands of the global food sovereignty movement and links critical academic concepts to the political demands of some of the key movements involved in food systems transformation in Canada. The 5Rs are also informed by Kirkness and Barnhardt's (1991) foundational work on higher education for First Nations peoples, and the later work of Indigenous scholars sharing insights from Indigenous research methodologies (Hart, 2010; Kovach, 2009; Morrison, 2011; Wilson, 2008).

Part 1. Dismantling Processes of Accumulation: The 5Ds of Redistribution

In settler colonial states, economic growth is bound up in capitalist and colonialist processes of dispossession. In Canada, these processes include the clearing of lands for settlement, agricultural intensification and expansion, and extractive industries such as clearcut logging, mining, hydro-power development, and fossil fuel extraction (Kepkiewicz & Dale, 2018; Morrison & Wittman, 2017; Willow, 2016). Extractivism has direct, negative impacts on health through toxic contamination, resource depletion, and landscape alterations that make Indigenous food systems inaccessible. These impacts disproportionately affect communities of color through the environmentally racist distribution of risks and benefits (Waldron, 2018) and can lead to Indigenous Peoples' over-reliance on market-based foods due to concerns around the safety and availability of traditional foods (Robin, Dennis, & Hart, 2020; Waziyatawin, 2012). The COVID-19 pandemic and associated economic crisis are likely to intensify the struggles between marginalized communities, particularly Indigenous communities, and extractive industries (Bernauer & Slowey, 2020).

² Turtle Island is the name used by many Indigenous Peoples for what is usually referred to as North America.

The corporate food regime—consisting of agribusiness, oil and gas, and other extractive industries including forestry, commercial fisheries, and associated technology and finance sectors—has therefore played a major role in colonizing, commodifying, and controlling lands and resources with an increasing carbon footprint, leading up to the COVID-19 pandemic. This has led to the corporate concentration of wealth and power in both the Canadian and global food system (Clapp, 2018; Holt-Giménez & Shattuck, 2011; McMichael, 2005) while leaving individuals, communities, and states with diminishing control and influence (Fuchs & Clapp, 2009). Yet transnational corporations are often difficult to hold accountable for their role in multiple health and socioecological crises (Bowness et al., 2021), including epidemics and pandemics (Wallace, 2016), toxic chemical exposure (Burger & Bellon, 2020; Elver & Tuncak, 2017; Shattuck, 2020), and biodiversity loss and climate change (Campbell et al., 2017). This is in part due to the obscuring effects—or mental and geographic “distance”—introduced by industrialization, globalization, and financialization (Clapp, 2014, 2015; Goodman & Redclift, 1991; Goodman & Watts, 1997; Kneen, 2002).

The disproportionate power exercised by transnational agri-food corporations and the social, economic, and ecological costs of the corporate food regime spurred the emergence of the global food sovereignty movement. The food sovereignty movement demands a radical shift from the corporate food regime toward more ecologically sustainable, resilient, equitable, and rights-based food systems that provide healthy food, are culturally appropriate, and support dignified livelihoods for food providers (Nyéléni Forum for Food Sovereignty, 2007). In response to the COVID-19 crisis, La Via Campesina, one of the main international actors in the food sovereignty movement, has called for “solidarity across movements and borders” to collectively “demand that our governments channel resources to those that need them most” (La Via Campesina, 2020, para. 6).

The profound societal transformation advocated by the food sovereignty movement requires a mass mobilization of political will and resources. In the current liberalized and globalized economy,

such a transformation necessitates international coordination and cooperation among states and social movements to curb the global influence of transnational corporations and to hold them to account. As Borrás, Franco, and Suárez suggest, “all states and international organisations must respect and protect existing land-based social relationships in other countries and effectively regulate [transnational corporations (TNCs)] and business enterprises, the international financial system and the trade and investment regime accordingly” (2015, p. 612).

How should such a large-scale, food-sovereignty-inspired transformation be funded? One model in line with the status quo would follow the current organizing principle of the corporate food regime, “privatizing profits and socializing losses,” which translates to the public shouldering the cost. However, an inverse model would finance the transition through reparations provided by the main beneficiaries of the corporate food regime—among them, large agri-food corporations, financial institutions, and states themselves—in accordance with the centuries of externalized costs that *already* have been borne by people and ecosystems. In accordance with a reparations-based approach, a transformation guided by the food sovereignty paradigm entails large-scale, state-mediated redistribution of land, power, and wealth from the corporate food regime, based on the 5D principles: Decolonization, Decarbonization, Diversification, Democratization, and Decommodification. We describe these principles and their application to the Canadian context below.

1 Decolonization

Our approach to decolonization is explicitly anti-colonial—emphasizing anti-racism, anti-sexism, and antiheteronormativity—with the understanding that white supremacy and settler colonialism are not events of the past but ongoing processes and structures (Wolfe, 2006). Agriculture in particular has historically been used to dispossess Indigenous Peoples, and this legacy persists today (Carter, 2019; Daschuk, 2019). In addition, infectious diseases and their specific effects on Indigenous Peoples have been a defining feature of Canada’s colonial history (see, for example, the

work of Carlson [1997] on the smallpox epidemic and Boggild, Yuan, Low, and McGeer [2011] on the disproportionate effect that H1N1 had on Indigenous people in 2009). With respect to COVID-19 in particular, Indigenous people are once again poised to be especially hard-hit due to the social determinants of health, rooted in ongoing colonialism, that structurally place them at high risk, e. g., food and water insecurity, crowded housing, jurisdictional challenges (Domingo et al., 2020; Levi & Robin, 2020; Rice et al., 2016; Skye, 2020). Despite these considerations, only CA\$305 million, or 0.003% of the Canadian government’s initial COVID-19 funding package, was allocated to Indigenous communities (Pasternak & Houle, 2020). This massive underinvestment maintains the state’s colonial approach to Indigenous-crown relations:

If a population indicator was utilized for the distribution of government relief, the allocation to First Nations would equal just over [CA]\$4 billion. [The reality is] a stark reminder on how government support and relief do not follow usual conventions when applied to First Nations and their communities. (Pasternak & Houle, 2020, para. 13)

To move toward decolonizing the food system, grassroots Indigenous movements, food sovereignty organizations, and scholars of settler colonialism emphasize that policies must be implemented that redistribute land and wealth to Indigenous Peoples (Table 1). Decolonization is context-dependent, and accordingly will take different forms in different places. Just as colonization is both mental and material—perpetuated by ongoing land dispossession and the extractivism on which settler states depend—decolonization is also mental and material. Following other Indigenous and settler scholars (Smith, 2012; Tuck & Yang, 2012), we view decolonization as involving not only the cultivation of a critical consciousness, but also material redistribution. In settler colonial contexts such as Canada, where land has been violently and unjustly coerced or stolen from Indigenous Peoples, and where these patterns continue to be reproduced through state and capitalist expansion of the extractive economy and state exertions of sovereignty, decolonization necessitates Indigenous self-determination and “must involve the repatriation of land simultaneous to the recognition of how land and relations to land have always already been differently understood and enacted” (Tuck & Yang, 2012, p. 7). Indeed, while there is enormous diversity within and across Indigenous communi-

Table 1. Examples of Redistributive Policies Supporting Decolonization

Decolonization			
Redirect / Redistribute	What	From	To
Processes of redistribution and redirection	Land	The state and property owners	Indigenous communities
	Wealth		
Example policy recommendations from the Canadian context	<ul style="list-style-type: none"> • Expedite resolution of existing and future land claims (Standing Committee on Indigenous and Northern Affairs, 2018). • Return land and jurisdiction to Indigenous Peoples (Pasternak & King, 2019), beginning with Crown land (People’s Food Policy Project, 2011). • Deliver on treaty obligations (Manuel & Derrickson, 2017; Starblanket & Hunt, 2020), including honorably and continually negotiating mechanisms of sharing (Scott & Boisselle, 2019) according to a pre-doctrine of discovery framework (Assembly of First Nations, 2018). • Decrease regulatory barriers to traditional food harvesting and processing (Inuit Tapiriit Kanatami, 2017; Morrison, 2008). • Negotiate and provide reparations in accordance with each Indigenous Nation’s specific demands (Manuel & Derrickson, 2015). • Guarantee the right to clean water (Lukawiecki, Plotkin, & Boisvert, 2018) and the right to food (De Schutter, 2012). 		

ties, many Indigenous food sovereignty scholars and advocates describe land as kin and food as sacred, informed by a relational worldview that recognises the interdependence of human and nonhuman nature (Coté, 2016; Morrison & Wittman, 2017).

2 Decarbonization

There is scientific consensus that the world must cut emissions dramatically to avoid catastrophic climate disruption. Globally, the agriculture and food sector is among the largest contributors to greenhouse gas (GHG) emissions (Campbell et al., 2017; IPCC, 2019). In Canada, the agriculture sector alone contributes almost 10% of Canadian emissions (Government of Canada, 2020b). Canada ranks eleventh globally in production of greenhouse gas emissions (Government of Canada, 2020a) and is one of the world’s highest per capita GHG emitters (Stoddart, Tindall, & Greenfield, 2012). Despite committing in the Paris Agreement to reduce its GHG emissions to 30% below 2005 levels by 2030, even in the most optimistic scenario Canada is projected to miss its reduction target of 304 megatons by 77 megatons of carbon dioxide equivalent (Environment and Climate Change Canada, 2019).

In line with the degrowth paradigm (Gerber, 2020), decarbonization requires moving beyond the reproduction of industrial relations in efforts to reduce emissions by entirely reconfiguring economies in a way that is socially just and respects ecological limits. We use the term decarbonization

here in a broad sense, to refer to the need to cut all greenhouse gases and toxic emissions, while noting that carbon-based extraction in particular is driving major climate disruption, with significant effects on the food system. In addition, the industrial food system—itsself highly dependent on fossil fuels and a key driver of land use change—causes significant harm to ecosystems and the planet as a whole (Campbell et al., 2017).

Decarbonizing the food system requires states to enact policies that redirect capital flows away from fossil energy-intensive agri-food sector enterprises to low fossil energy-intensive enterprises, in the pursuit of net zero emissions (Table 2). Farmer organizations in the food sovereignty movement have already identified strategies and policy options to reduce agricultural emissions in Canada while simultaneously improving farmer and worker livelihoods and public health. One option, for example, is for the state to “tax shift” by heavily taxing resource-intensive, high-emission companies and redistributing funds to food providers and workers (Qualman & National Farmers Union, 2019). Additionally, the state could subsidize low-emission agroecological systems and research for communities most affected by climate change, both domestically and in the Global South.

Beyond the GHG emissions intensity of agriculture and food production, it is worth acknowledging the downstream aspects of the food system that are carbon intensive: diet (Tilman & Clark, 2014; Willett et al., 2019) and food waste (Cuéllar & Webber, 2010; Scialabba, 2015). Decarboniza-

Table 2. Examples of Redistributive Policies Supporting Decarbonization

Decarbonization			
Redirect / Redistribute	What	From	To
Processes of redistribution and redirection	Profits and subsidies	Energy-intensive firms	Low-energy enterprises
	Wealth (intra- and interstate)	The biggest GHG-emitting states	Regions most affected by climate change
Example policy recommendations from the Canadian context	<ul style="list-style-type: none"> • Redirect subsidies from fossil fuel and agricultural input corporations to clean energy development and low emissions technology and farming (IISD, 2019; Qualman and National Farmers Union, 2019; see also MacRae et al., 2013). • “Just transition” policies that provide a green jobs guarantee and retraining programs for workers in fossil-energy intensive industries at risk of displacement during decarbonization (Cooling, Lee, Daub, & Singer, 2015). • Provide reparations to low- and middle-income countries, in line with Canada’s climate debt, and open borders to climate refugees (Dickson, Webber, & Takaro, 2014). 		

tion of the food system would therefore also entail a shift to less GHG-intensive diets and reductions in food waste. Both features of the food system were highlighted during the COVID-19 crisis: meatpacking plant workers were forced to continue to work in dangerous conditions to meet the demand for meat, while plant closures reduced processing capacity and forced the euthanasia of animals ready for market, fueling waste. This was a missed opportunity to implement a just transition for meatpacking workers and undertake a concerted policy effort to incentivize the production and distribution of less GHG-intensive foods. In addition, the fact that supply chain disruptions and restaurant closures led to food losses for farmers while simultaneously demand at food banks was spiking (Dyer, 2020; Harvey, 2020) should prompt a rethinking of how to structure and mediate food markets and expand food preservation and nutrient recovery programs to decrease hunger, food waste, and GHG emissions across the food system.

3 Diversification

Generally, diversification in the Canadian agricultural policy context means producing different crops for integration into the global market. Here, we employ the concept of diversification to directly challenge biological, sociocultural, and political homogenization. Canada is a highly export-oriented agricultural powerhouse (Agriculture and Agri-Food Canada, 2017); globally, it is the fifth-largest exporter of agri-food products (Government of Canada, 2016). More than half of the value

of Canada’s agricultural production is sold for consumption abroad (Government of Canada, 2016). Nevertheless, Canada is also one of the world’s largest agri-food importers; it is particularly dependent on the U.S., with 60% of the value of Canada’s agri-food imports attributed to the U.S. in 2016 (Agriculture and Agri-Food Canada, 2017). In addition, certain agri-food sectors in Canada are highly concentrated. The export-oriented meat sector is a case in point: just three plants (two owned by Cargill and one by JBS) are responsible for 80–95% of Canadian beef processing (Fedor, 2020; National Farmers Union, 2020). As COVID-19 has demonstrated, such an extreme level of concentration in the supply chain(s) creates bottlenecks that are vulnerable to disruption and underscore the need for a more diversified food system.

Redistributive policies in line with the diversification principle aim to redress specialization and homogenization in the food system (Nyström et al., 2019), in terms of what is grown and eaten, and in terms of how food is processed and distributed (Table 3). Redistribution should thus aim to increase diversity in at least two ways: increasing agrobiodiversity at multiple scales (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, 2019; International Panel of Experts on Sustainable Food Systems, 2016), and creating new, diverse, and territorially embedded food supply chains (MacRae, 2011). For example, Canada could take steps to strengthen and enforce competition laws at home to lessen the power that highly concentrated agri-food corporations have

Table 3. Examples of Redistributive Policies Supporting Diversification

Diversification			
Redirect / Redistribute	What	From	To
Processes of redistribution and redirection	Subsidies and land	Large-scale farmers of monoculture commodities	Small- to medium-scale agroecological food providers
	Profits and corporate equity	Large centralized processors, distributors, and retailers	Small regional processors, distributors, and retailers
Example policy recommendations from the Canadian context	<ul style="list-style-type: none"> • Subsidize diversified and low-input farming (Qualman & National Farmers Union, 2019). • Fund participatory and agroecological research and public extension services (Isaac et al., 2018). • Re-establish small- and medium-scale abattoirs and processors and reduce the regulatory barriers for those selling to local markets (National Farmers Union, 2020). • Enforce and strengthen “human rights-sensitive” competition law (De Schutter, 2010). 		

over determining product availability on market shelves. However, these competition laws should be layered with fair trade considerations to ensure not only accountability and transparency for growers and consumers in Canada, but also provisions for farmer and worker welfare abroad, especially in low-income countries (De Schutter, 2010).

4 Democratization

In the most basic sense, democratization refers to creating more equitable access to decision-making power—especially for those who have been disenfranchised, marginalized, and/or excluded from democratic processes (Levkoe & Sheedy, 2019)—in a context of transparency. As such, our interpretation of democratization is not state-centric; it includes those who live in Canada but are not formally recognized as citizens, including migrant food and agricultural workers and refugees, who are often disproportionately impacted by food insecurity (Lane, Nisbet, & Vatanparast, 2019; Weiler, McLaughlin, & Cole, 2017) and the effects of COVID-19 (Haley et al., 2020).

Both progressive and radical strategies (Holt-Giménez & Shattuck, 2011) are needed to democratize and decentralize food system governance and redistribute decision-making power. A reconfiguration of state institutions could break down government silos through more horizontal governance,

and dissolve overly bureaucratic and exclusionary decision-making processes through participatory and transdisciplinary engagement (Andrée, Coulas, & Ballamingie, 2018; MacRae, 1999, 2011)—for example, by creating food policy councils at multiple jurisdictional levels and heeding their recommendations, and by respecting nation-to-nation agreements (People’s Food Policy Project, 2011).

Beyond the state, democratization also requires expanding and transforming oversight of agri-food corporations and companies whose operations incur significant costs to the public in the form of health, social, and environmental externalities (MacRae & Winfield, 2016; Wittman, 2015) (Table 4). As more than three thousand scholars recently asserted in a call to action in *The Guardian* (Fraser et al., 2020), the nature of work and workplaces must be democratized. For example, the Canadian government could require agri-food businesses to transition towards worker-owned models in order to receive COVID-related support (Fraser et al., 2020). This would provide food workers, including migrant workers, increased control over their own health, labor, and futures. The democratization of work prioritizes progressive labor law reforms that encourage and enhance unionization, in contrast to the regressive labor laws that have accompanied the rise and concentration of corporate power under neoliberalism (Ferdosi, 2020; Riddell, 2004).

Table 4. Examples of Redistributive Policies for Democratization

Democratization			
Redirect / Redistribute	What	From	To
Processes of redistribution and redirection	Control over government	Corporate lobbies and political and economic elites	People
	Control over corporate entities	Owners and executives	Workers
Example policy recommendations from the Canadian context	<ul style="list-style-type: none"> • Make government funding and support contingent upon firms transitioning to worker cooperatives (Fraser et al., 2020). • Rescind policies that limit, and enact policies that encourage, unionization in the private sector (Schenk, 2014). • Provide migrant workers resident status on arrival and open work permits, and provide pathways to citizenship (Migrant Rights Network, 2020). • Employ a governance model based on legal (Scott & Boisselle, 2019) and regulatory pluralism (Koc, MacRae, Desjardins, & Roberts, 2008) to create participatory, equitable and “joined-up” food and land policies (MacRae, 2011; MacRae & Winfield, 2016). 		

5 *Decommodification*

The right to food has been established through a number of international agreements and covenants, including the Universal Declaration of Human Rights (UDHR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR). Despite its “commitment to the progressive realization of the right to food” (Rideout, Riches, Ostry, Buckingham, & MacRae, 2007, p. 566), the Canadian government has yet to guarantee this right in practice. COVID-19 has exacerbated food insecurity—not a new problem in the Canadian context, particularly for marginalized populations—reinvigorating discussions on the commodification of food versus rights-based approaches to addressing food insecurity.

Redistributive policies should directly address the inequitable effects of enclosure, generally referring to the disruption of common management regimes through the creation of property amenable to private ownership. Neoliberal market policy has allowed some actors to accumulate a disproportionate share of property and profit, leading to a concentration of land and other resources, and thus wealth and power (Borras et al., 2015; Hendrickson, Howard, & Constance, 2019). Policies aimed at decommodification interrupt capital accumulation by re-designating key components in the food system—land, food, and labor in particular—as basic rights (with associated

responsibilities), rather than property that can be exploited for profit.

To properly compensate for the augmented cost of production from internalizing social and ecological costs, some food prices may need to increase. This requires that members of the public also see their purchasing power increase. A reparations-oriented redistributive perspective on the trend towards corporate concentration in the food system points to the need to explore policies that would redistribute wealth, land, and corporate profits and equity to the economically marginalized among farmers, workers, and eaters (Table 5). This could be accomplished through taxation and regulation. For example, the state could implement a universal basic income program as an interim step in the progressive realization of the right to food, while establishing progressive corporate tax regimes and a progressive wealth tax to subsidize social welfare programs and strengthen social safety nets.

Part 2. Rebuilding from the Bottom Up: The 5Rs of Regeneration

Following the dismantling of the corporate food regime through redistribution, what would need to occur so that it cannot re-emerge? What could a regenerative food regime look like?

We highlight five guiding principles as the 5Rs of Regeneration,” rooted in the work of Indige-

Table 5. Examples of Redistributive Policies for Decommodification

Decommodification			
Redirect / Redistribute	What	From	To
	Income, property, and wealth	Economic elites	Economically marginalized
Processes of redistribution and redirection	Land	States and corporate land holders	Indigenous Peoples, agroecological farmers, the public
	Profits and corporate equity	Corporations	Workers
Example policy recommendations from the Canadian context	<ul style="list-style-type: none"> • Redistribute wealth through tax reform (Macdonald, 2014, 2018). • Provide a guaranteed basic income (Alston, 2017; Tarasuk, 2017) while strengthening social safety nets (Himelfarb & Hennessy, 2016). • Create foodland trusts for new and small-scale food providers (Gorsuch & Scott, 2010; Hamilton, 2005; Wittman, Dennis & Pritchard, 2017), with priority to historically marginalized populations. • Legally enshrine the right to food and other rights-based social protections necessary for building food sovereignty (Food Secure Canada & Lambek, 2017; Lambek et al., 2017). 		

nous food sovereignty scholars and advocates (Martens, Cidro, Hart, & McLachlan, 2016; Morrison, 2011, 2008), to rebuild resilient and vibrant land and food systems post-redistribution: Relationality, Respect, Reciprocity, Responsibility, and Rights. Given that the 5Rs are rooted in Indigenous research methodologies (Hart, 2010; Kovach, 2009; Wilson, 2008) and Indigenous approaches to education in Canada (Kirkness & Barnhardt, 1991), and represent traditional Indigenous values,³ this section is presented through an Indigenous epistemology of interconnectedness, with the understanding that these principles are cyclical. We flesh out the 5Rs with on-the-ground examples from interstitial spaces in Canada, or “the niches, spaces and margins of capitalist society” (Wright, 2010, p. 211).

1 Relationality

Relationality is both an ontological and epistemological concept (Wilson, 2008)⁴ that opens up new possibilities for (co)existence (Andreotti, Ahenakew, & Cooper, 2012). Because Indigenous Peoples understand the world through processes of relating to living and nonliving beings, ways of knowing are contextual and based on specific observations and experiences across time (Deloria, 2003), capturing the dynamic and interconnected nature of place-based realities.

In practice, relationality includes gratitude. Acts of gratitude in a just food system require protecting the land by advocating for clean water, air, and soil (Martens, 2018). In a globalized world, the concept of relationality also speaks to the need to situate knowledge and harmonize Canada’s governance efforts by “[enabling] other countries to develop food systems with similar purposes and values” (MacRae, 2011, p. 433) in the pursuit of planetary health (Whitmee et al., 2015).

The Indigenous principle of “seven generations” sheds light on the significance of relationality (it has been seven generations since Canada’s foundational Indian Act of 1876). This is a concept

in many Indigenous cultures that considers ancestral, present, and future generations in actions toward the land. Applying the seven generations framework (see, for example, Borrows, 2008) emphasizes that care, stewardship, and systemic approaches are necessary to ensure that the land will be healthy and treated with respect. In Canada, examples of whole-systems and relational approaches to food and wellness can already be found in some Indigenous communities where social services incorporate land and food-based programming as preventative and holistic endeavors that bring people together in healing (see, for example, the Nisichawayasihk Cree Nation Family and Community Wellness Centre [Nisichawayasihk Cree Nation, 2018]). Another example is the People’s Food Policy Project, which engaged around 3,500 participants in a collaborative consultation process over three years to create a vision for a coherent and systematic national food policy (Levkoe & Sheedy, 2019; People’s Food Policy Project, 2011).

2 Respect

In many prairie-based Indigenous cultures in Canada, respect is taught through the seven sacred teachings: wisdom, love, respect, bravery, humility, honesty, and truth (Borrows, 2008, p. 11). For example, the bison—considered a sacred and keystone species, whose loss is still felt in communities today—carries the teaching of respect through its life-giving abilities (Robin et al., 2020). Traditionally, all parts of the bison were used; thus, to waste life is to disrespect the gifts provided through creation. To enact respect for the living world entails honoring the gifts of life and the relationships that exist between and among all living and nonliving beings (Kimmerer, 2013).

A respectful food system is anti-colonial and anti-oppressive. It requires people and institutions to consider the impacts and interconnectedness of capitalism, colonialism, racism, patriarchy, and other forms of oppression in the food system. Importantly, it also requires people and institutions

³ We do not intend to pan-Indigenize; rather, we mean only to highlight some of the “shared aspects” of an Indigenous ontology, epistemology, and axiology as described by Wilson (2008, p. 7).

⁴ Ontology and epistemology are interrelated concepts typically used in philosophy. Ontology is concerned with the nature of reality(ies) and the world. Epistemology has to do with the nature of knowledge(s) and ways of knowing.

to seek action through both social reform and land protection. Enacting the principle of respect necessitates a deliberate reconsideration of unsustainable and inequitable actions in relation to the land and human and non-human actors. For example, a respectful food system precludes the possibility of worker and animal exploitation and abuse—problems that have been made ever more visible as a result of COVID-19 (Graveland, 2020; Haley et al., 2020).

Perhaps one of the most pertinent examples of a deeply disrespectful food system that has arisen during the COVID-19 pandemic is the demeaning approach of relying on food banks to feed people. While providing critical services, the reputation of food banks as “dumping grounds” for less desirable food is deeply concerning (Robin et al., 2020). In contrast, respectful food governance requires a dignified way to distribute food; indeed, on-the-ground examples can already be found in places where communities take on the work of feeding their members. In Indigenous communities in Canada, this is visible through the maintenance of country foods programs in which hunters, fishers, and gatherers are compensated for stocking a community freezer; fresh traditional food is then distributed to community members (NMFCCC, 2017). Scholars have also noted the holistic approach to food security used by some food hubs that explicitly move beyond emergency food assistance and toward more democratic projects of community self-determination (Figueroa, 2015; Levkoe, 2017), as well as by self-organized grassroots efforts to redistribute food directly (Roman-Alcalá, 2020).

3 Reciprocity

A food system based on respect for people and nature is reciprocal; give-and-take practices are in constant operation. Through Indigenous ways of knowing, being, seeing, and doing, reciprocity is critical to maintaining and supporting respectful relationships and to understanding the sacredness of the gifts of life, including food. The principle of reciprocity could help guide the creation of a new form of social and economic governance based on equitable and caring exchanges, which have already emerged in response to COVID-19 in the form of

mutual aid initiatives in Canada (Mutual Aid Network Canada, 2020) and across the world (Roman-Alcalá, 2020).

A just and sustainable food system requires active participation by those in relationship with the land, who adhere to processes of giving back. For example, to consume fish means to be in relationship with the water. Reciprocity in this relationship must also include gratitude expressed by caring for water through research, policy, and/or advocacy work, and by guaranteeing access to clean water for all communities, including Indigenous communities, in perpetuity (Martens, 2018). To ensure that water is not misused (i.e., through continued privatization, contamination, and depletion), scholars and advocates have identified the need to develop a holistic and coordinated multi-jurisdictional water strategy, embedded in broader hydrosocial relations which recognize both the human right to water and the responsibility for the care of water (Barlow, 2016, 2019; Wilson, Harris, Joseph-Rear, Beaumont, & Satterfield, 2019).

4 Responsibility

Indigenous people come to understand roles and responsibilities through the teachings of their Nations. For example, naming and clan systems—an ancestral kinship system that honors animal beings—are a mechanism through which responsibilities are ascribed to Indigenous people in their interdependent relationships with creation. To live responsibly means to carry out the individual, family and community roles and obligations that have been gifted through ancestral teaching and responsibilities. Teachings refer, *inter alia*, to the scientific and cultural knowledge of lands and places, accumulated since time immemorial, embodied in Indigenous languages and enacted in daily practices (Cote, 2016).

The principle of responsibility provides accountability to those relationships that are important: with one another, and to the life-giving ecosystems on which we depend. In practice, responsibility towards the land and its inhabitants requires direct action through relationship; taking responsibility seriously requires policy-makers, organizers, protectors, protestors, and advocates to consider how responsibility is enacted through

relationship to the land (Wilson, 2008). For example, the mobilization of ‘urban agrarians’ who organize from cities in defense of distant foodlands and food providers points to a developing sense of responsibility for broader food systems change (Bowness & Wittman, 2020). In transitioning to a regenerative food system, we have also suggested that those who have benefited most from the corporate food regime be held responsible for past harms, and should provide reparations accordingly.

5 Rights

Responsibilities go hand-in-hand with rights. Human rights, Indigenous and collective rights, and food providers’ rights are established in treaties, covenants, and declarations signed by states at the international level, including the Universal Declaration of Human Rights (UDHR), the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), and the United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP). The implementation of these rights is then enacted by states, local communities, and municipal or regional governments through legislation. For example, in late 2019 the British Columbia government passed the B.C. Declaration on the Rights of Indigenous Peoples Act in order to implement UNDRIP provincially (B.C. Government, 2019).

While rights instruments play an important role in addressing historical and ongoing state, corporate, and individual harms, we recognize that they may also reinforce problematic notions of state sovereignty. In the Canadian context, for example, the state is the authorizer and enforcer of human and Indigenous rights, which it fails to guarantee in practice. In a context where the state has attempted to assimilate Indigenous Peoples into colonial ways of being, attention must be paid to both the rights of individuals and the collective rights of Peoples (National Inquiry into Missing and Murdered Indigenous Women and Girls, 2019).

The pursuit of—and responsibility for—upholding individual, Indigenous, collective, and, increasingly, nature’s rights is at once universal and context-specific. As noted by the National Inquiry into Missing and Murdered Indigenous Women

and Girls, distinguishing between forms of rights—human, Indigenous, collective—is a means to re-evaluate which rights should be protected by the state and which rights must be “upheld through new relationships and by confronting racism, discrimination, and stereotypes” (2019, p. 182). This expanded notion of rights departs from traditional Westphalian notions of rights and citizenship, which privilege the sovereignty of individual nation states. The increasing recognition of the “rights of nature” is one example that illustrates how the notion of rights has broadened beyond an anthropocentric focus (see, for example, the White Earth band of Ojibwe’s Rights of Manoomin [LaDuke, 2019]).

These emerging notions of rights and citizenship still derive from states and their capacity to enact legislation that defines legal persons worthy of recognition and protection. However, as with broader conceptions of rights, such as those proposed by the food sovereignty movement (Wittman, 2009), collectivities are strategically reasserting and ascribing rights to food providers, lands, and waters. Regenerative food systems governance could expand not only which rights apply and to what and whom, but also the range of entities which have the capacity to grant them.

Conclusion

The COVID-19 crisis presents a renewed urgency to place food systems transformation at the front and centre of post-pandemic recovery plans. It has reminded the world of the essential nature of food, land, and workers, while shining a light onto some of the major environmental, economic, social, and health problems resulting from the profit-oriented corporate food regime and the vulnerabilities therein. Importantly, it has also demonstrated the capacity for states to mobilize and shift resources on a massive scale in times of crisis.

The COVID-19 pandemic is a wake-up call for states to find new ways to facilitate food system resilience and address the risks embedded within the highly specialized, concentrated, and exploitative food system. We argue that transforming food systems to become more resilient, sustainable, and just entails a process of both dismantling and rebuilding. The dismantling process could be facili-

tated through the state-mediated redistribution of land, wealth, and power accrued by major actors in the corporate food regime in line with the food sovereignty principles of Decolonization, Decarbonization, Diversification, Democratization, and Decommodification. Following the calls that have emerged from grassroots Indigenous food sovereignty organizations in Canada, we then propose a different set of principles—Relationality, Respect, Reciprocity, Responsibility, and Rights—to counter the values embedded in neoliberal racial capitalism (such as privatization, competition, rationalization, etc.) and to guide the rebuilding of new food futures in ways that prevent the reemergence of exploitative, neoliberal food systems. While not exhaustive, the ten principles synthesized here offer a framework to guide and track research on the progress, barriers, and opportunities related to pursuing this radical transition.

While we have largely focused here on redistribution within the confines of national borders, the globally interconnected nature of food systems (in particular, the importance of international trade, the influence and reach of transnational corporations, and the rise of wicked problems such as climate change) means that national policies must be nested within internationally coordinated and

harmonized global food policy frameworks. Establishing new and coherent forms of governance at multiple scales is another area that is ripe for future research by food systems scholars and practitioners.

For too long, the main actors in the corporate food regime have benefited from the externalization of social, health, and environmental costs and risks, which have in turn been borne by the public, and disproportionately so by structurally marginalized social groups. It is our hope that in taking stock of the current moment, policy-makers, leaders of social movements, and food sovereignty advocates can align policy responses in pursuit of a transformative food systems agenda. Redistribution is a necessary step to provide redress for the harms caused by the corporate food regime and to finance a just transition to more resilient, sustainable, and equitable food systems. 

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Food hubs play an essential role in the COVID-19 response in Hawai'i

SPECIAL ISSUE COSPONSORED BY INFAS:
THE IMPACT OF COVID-19 ON FOOD SYSTEMS

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Abstract

Community food security and food systems resilience have received much emphasis in the last two decades, at least partially in response to mounting challenges and pressures on the global food system. While empirical research shows strong evidence that direct-to-consumer relationships in the food system predominantly serve affluent communities, during the COVID-19 pandemic local food providers have become a necessity through their provision of essential services, such as hunger relief and home deliveries for vulnerable populations. In this paper, we examine the challenges and opportunities of food hubs—

innovations in local food systems that help connect small farmers with local markets—during the COVID-19 pandemic using quantitative and qualitative data from practitioners on the ground. The hubs were not necessarily equipped or experienced in the response needed, but they quickly adapted to the situation and demonstrated success during the pandemic, as illustrated by 200–300% growth in performance metrics such as revenues generated, employees retained, customers served, and farmers supported. The performance of the hubs in response to the multiple challenges accompanying the pandemic demonstrates their key role in food system resilience through features of diversity, functional redundancy, and connectivity, suggesting that disaster preparation should consider local food hubs a necessary service. We provide policy suggestions for supporting their role in local food system resilience beyond the pandemic.

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Keywords

Food Hubs, Community Food Systems, Resilience, COVID-19, Pandemic, Hawai'i, Hawaii, Food System, Participatory Action Research

Introduction

The concepts of community food security and food systems resilience have received much emphasis in the last two decades, at least partially in response to mounting challenges and pressures on the global food system (Foley et al., 2011; Godfray et al., 2010; Rockström et al., 2017). The intrinsic uncertainties and complexities of food systems—socioecological systems that include, at minimum, food production, processing and packaging, distribution and retail, and consumption (Ericksen, 2008)—mean that they must be able to operate effectively even in the face of multiple, unpredictable drivers of change.

While calls for resilience in food systems have been growing, resilience remains a paradigm rather than a firmly defined concept (Tendall et al., 2015). At the broadest level, resilience can be defined as the capacity to continue to function despite disturbances and shocks. With its roots in ecology, resilience is a system-based approach that acknowledges complex interactions between various components, scales, and links to other sectors (Tendall et al., 2015). Resilience theory suggests that a whole system approach is essential to capturing any resilience effort (Jones, 2013), and that multiple outcomes may be recognized directly, indirectly, and across time scales (Béné, 2020). Although the concept of resilience remains abstract, there are core aspects that are well agreed upon from the fields of ecology, such as diversity, functional redundancy, and connectivity of the players within a system (Ungar, 2018). While a growing body of literature is available on the concept of food system resilience (e.g., Ericksen, 2008; Pingali, Alinovi, & Sutton, 2005; Tendall et al., 2015), the COVID-19 situation provides an opportunity to observe first-hand the responses and emerging roles of food-system components to a major disruption.

We argue that local food systems are a critical infrastructure for disaster response and in planning for local resiliency. Over the last twenty years, planners have reclaimed involvement in local food

systems and aimed to strengthen supports (Pothukuchi & Kaufman, 1999). Before local food systems became a part of the planning agenda, planners had worked with conservation programs to preserve farmland for agricultural use, but a planning presence in food systems work had been lacking for over a half a century in the U.S. (Vitiello & Brinkley 2014). Twenty years ago, planning scholars Pothukuchi and Kaufmann (2000) argued that “food is essential” (p. 117) and should be among other well recognized planning concerns such as housing, energy, environment, economy, and health. However, scholars have argued that local food and direct-to-consumer projects favor affluent communities and not the poor (Guthman, 2004; Guthman, Morris, & Allen, 2006). Guthman et al. (2006) observed that direct-sale farmers tend to demand a higher price for their produce, so that in many locations across the U.S., community agriculture has been viewed as niche and non-essential. Nonetheless, research has shown that policy support for local food did not appear as a result of planning but rather emerged as a social and environmental movement in spite of planning (Thibert, 2012). Planners can support these local movements but must learn from the practitioners on the ground to support good food policy (Campbell, 2004; Thibert, 2012). Andrée, Clark, Levkoe, and Lowitt (2019) argue that communities’ ability to prioritize local food systems has been highly dependent on grassroots-, county-, and state-level leadership. As such, the capacity of local food systems varies greatly across the U.S.

The declaration of the COVID-19 virus as a global pandemic by the World Health Organization on March 11, 2020 and as a national disaster in the U.S. two days later consequently brought about stay-at-home orders, travel restrictions, business closures, and recessions in many countries. Some of the first impacts on U.S. food producers were major declines in export markets and travel restrictions for seasonal laborers, resulting in substantial food waste (*BBC News*, 2020). As people sought to decrease their exposure at grocery stores, community supported agriculture (CSA) services, online sales, and home delivery services became popular and grew substantially (Lazaruk, 2020; Talty, 2020). As shut-downs continued, private and govern-

mental aid began to flow, with billions of dollars coming from federal support via the Coronavirus Aid, Relief, and Economic Security (CARES) Act. But many barriers still remained: in April, Evich (2020) noted that “Tens of millions of pounds of American-grown produce is rotting in fields as food banks across the country scramble to meet a massive surge in demand, a two-pronged disaster that has deprived farmers of billions of dollars in revenue while millions of newly jobless Americans struggle to feed their families” (para. 1).

Food hubs are innovations in local food systems that help connect small farmers with local markets and increase food access for local residents (Matson, Sullins, & Cook, 2013). In this paper, we examine roles and responses of food hubs—based on the experience of practitioners on the ground—exploring challenges and opportunities that have emerged during the pandemic, and offer policy insights and suggest policy for future endeavors of food hubs and local food systems beyond the pandemic.

Hawai‘i’s Food System, Food Hubs, and the Coronavirus

Hawai‘i’s history suggests that the kanaka maoli (Native Hawaiians) were agriculturally self-sufficient for approximately a millennium by developing diverse agroecosystems (Lincoln & Vitousek, 2017; Winter et al., 2020), supporting a population of 400,000 to 800,000 people prior to the arrival of Captain Cook in 1778 (Stannard, 1989). With colonization, Hawai‘i replaced local food production with large-scale plantations for export and substantial food imports by joining global markets. By the early 1900s Hawai‘i primarily relied on imported foods. Agriculture remained the largest economic driver until it was usurped by tourism following statehood in 1959.

In the early 1970s the plantations began to close, with subleasing or subdividing of their substantial land holdings. The change in land tenure created more farms and farmers but significantly decreased the total land farmed, as areas were rezoned or left unattended (Page, Bony, & Schewel, 2007). The natural result of smaller land parcels and more farmers was an increase in diversified agricultural production and forms (Lincoln &

Ardoin, 2016b). Since the decline of plantation-era agriculture, public policy objectives have transitioned from promoting diversified agriculture which in Hawai‘i, as noted in the Office of Planning (2012b), was defined as “everything except sugar and pineapple” (p. 2) to promoting local food grown for local consumption and agricultural self-sufficiency (Office of Planning, 2012a, 2012b).

Movements such as “farm-to-fork” and Hawai‘i Regional Cuisine further helped to link agriculture to Hawai‘i’s dominant economic engine: tourism. Unfortunately, Hawai‘i still performs poorly in terms of food self-sufficiency, and now Hawai‘i imports approximately 85–90% of the food locally consumed (Loke & Leung, 2013). The high number of small farms in Hawai‘i (over 6,500 of the 7,328 farms are less than 50 acres) range from subsistence, to hobby growers, to multiple-income farms, to bona fide farmers (Lincoln & Ardoin, 2016a, 2016b). Local food sales grew from US\$84.4 million in 2015 (US\$22.8 million direct sales and US\$61.4 million wholesale) to US\$152.4 million in 2017 (US\$27.9 million direct sales and US\$124.5 million wholesale) (*Pacific Region Farm News*, 2016; USDA, 2017). In the U.S., sale of local food was 3% of all agricultural sales and involved 7.8% of farmers in 2017. By contrast, in Hawai‘i local sales make up 27% of all agricultural sales and involve 33% of farmers in 2017 (USDA, 2017). However, this is still a small portion (about 4%) of total food sales, which totaled US\$3.7 billion in 2005 (Leung & Loke, 2008).

The oldest food hub in Hawai‘i, Adaptations, is 27 years old, but most of Hawai‘i’s food hubs are less than five years old. Prior to 2020, the food hub concept was relatively unknown in Hawai‘i. In 2017, the *Honolulu Star-Advertiser* published an informational pamphlet on food hubs, “Food hubs help farms, boost access to local produce” (Oshiro, 2017). In 2017, the majority of Hawai‘i’s food hubs (currently 11, and two in formation) joined a food hub group, the Food Hub Hui, facilitated by the Hawai‘i Farmers Union United (HFUU) to discuss shared needs and explore ways to collectively increase support and recognition of Hawai‘i’s food hubs. The effort led to a legislative bill, the Food Hub Pilot Program (Hawai‘i State Legislature, 2020). The bill was accompanied by outreach

efforts to the public in the form of op-eds and other written publications, and directly to legislators through infographics and testimony. Through these efforts, food hubs went from being relatively unknown to a commonly discussed solution for helping Hawai'i to reduce food imports (Viotti, 2020).

Hawai'i's first case of Coronavirus was officially announced on March 6, followed shortly by a mandatory 14-day quarantine for all travelers coming to Hawai'i, the closure of public schools statewide, and stay-at-home orders for some counties (Young, 2020). Overnight, tourism—which in 2019 generated US\$2 billion in state tax revenue and supported a third of all jobs in the state—declined nearly 99.9%, causing one of the highest unemployment rates in the nation (O'Connor, 2020). Page et al. (2007) observed that Hawai'i farmers who participate in the local food industry cope with economic pressure by selling to high-end restaurant and hotels. The loss of tourism caused the immediate loss of a substantial component of the local agricultural markets. Coupled with public health directives that reduced patronage at restaurants and diminished spending due to high unemployment, local agriculture underwent a massive loss in demand.

Community Food Security, Food Hubs and Food Systems Planning

Local food systems or direct-to-consumer sales by farmers have emerged partly as an alternative to mainstream food and agricultural systems. Research on the “food dollar” has shown that, nationally, most farmers received less than 10% of the money spent by the final consumers (Wilde, 2013). Food hubs provide an alternative to this value-chain model, with the vast majority of hubs stating that providing a fair price to producers is a central part of their mission (Colasanti et al., 2018). Community supported agriculture (CSA) and farmers markets are examples of direct agricultural markets, based on interactions of producers and consumers. These markets, according to Hinrichs (2000), “present an apparent counterpoint to large scale, more industrialized systems of food production and distribution, now under the growing control of a few seemingly unpeopled, yet powerful

transnational corporations. If relations between producers and consumers are distant and anonymous in more ‘global food system,’ in local, direct markets, they are immediate, personal and enacted in shared space” (p. 295).

A food hub is an intermediary organization that manages the aggregation, distribution, and marketing of source-identified food products from local and regional farmers to strengthen their ability to satisfy wholesale, retail, and institutional demands (Barham et al., 2012). A food hub differs from other food distributors mainly in that most of its suppliers are exclusively growing local food and are therefore a component of a community or local food system. Although food hubs operate as an intermediary in direct-to-consumer systems, they often operate as a social enterprise and many are employee- or farmer-owned cooperatives. Thus food hubs have been described as “financially viable businesses that demonstrate a significant commitment to place through aggregation and marketing of regional food” (Fischer, Pirog, & Hamm, 2015, p. 97). Furthermore, food hubs have been described as essential components of scaling-up local food systems, and as flagship models of socially conscious business (Colasanti et al., 2018).

In Hawai'i, food hub suppliers tend to be a mix of small and hobby farmers who have limited access to markets on their own as well as larger farms seeking to access different markets. This is similar to the national pattern, where nearly 90% of hubs report sourcing mostly or exclusively from small and medium sized farms (Colasanti et al., 2018). Food hubs support farmers by providing them with a reliable market, a challenge often expressed by small farmers (Day-Farnsworth & Morales, 2016). By aggregating, food hubs are able to access larger and more diverse customer bases and contracts than the individual farmers, accessing the growing demand from larger buyers such as government institutions for local food.

Community Participatory Research Approach and Methods

This research gains some of its strong points from the authors' involvement in both research and practical application. Such hybrid roles of researchers being community activists has been

highlighted in Indigenous Hawaiian research methods (Kahakalau, 2019). We utilize a participatory action research (PAR) methodology specifically adapted to Hawaiian communities, called Mā'awe Pono (Kahakalau, 2017). Mā'awe Pono, in a sense, is a deepening of the PAR method and includes a greater commitment to place-based knowledge about Hawai'i and its people. Central concepts include local protocols, communication styles, and trust building. Mā'awe Pono also includes a strong heuristic element, similar to planning research methodology (Raja, Clark, Freedgood, & Hodgson, 2018), in that it involves the researchers on a personal level, includes intuitive judgment and a spiritual dimension, and relies on common sense (Kahakalau, 2017).

In early 2017, representatives of food hubs in Hawai'i were convened with facilitation from the Hawai'i Farmers' Union United to discuss shared needs and explore collaborations. The group, which became the Food Hub Hui, initially consisted of five of the major food hub leaders in Hawai'i and grew to represent 11 food hubs in subsequent meetings. The principal author was the facilitator of the group in his official role as the HFUU Policy Committee Chair, and the second author was invited as an "ally" researcher within the local land-grant university. Initial meetings were informal "talk story" sessions in which participants got to know each other's stories and histories, as well as the current state of their businesses. Detailed procedural minutes and notes captured these conversations.

Shared visioning led to the group's initiative to draft and advocate for a bill in the 2020 Hawai'i legislative session called The Food Hub Pilot Program (Hawai'i State Legislature, 2020). To strengthen their advocacy, the group agreed that documentation of their current impacts on economics and food systems would be useful. The authors facilitated an oral survey in September of 2019 to representatives from each of the 11 food hubs to gather quantitative data on their sales outlets, operations priorities measured by Likert scales, and Key Performance Indicators (KPI) such as annual revenues, number of employees, and farmers served.

Using data from the survey, the Food Hub Hui

engaged in advocacy with Hawai'i State Legislators and a public awareness campaign to promote their impacts and bring awareness to the request for support. Although the bill was well received, the legislative session was never finished due to concerns over COVID-19. In response to the pandemic, the Agricultural Response and Recovery Working Group (ARRWG), an ad hoc community-based advocacy group, was formed, seeking to (1) provide a unified voice to support local agriculture during the economic crisis, (2) highlight opportunities for CARES funds to support local agriculture, and (3) increase awareness of the vulnerabilities in Hawai'i's current food systems. As part of ARRWG's efforts, new data requests were made to multiple groups, including the Food Hub Hui. This led to a second round of data collection in September of 2020. Quantitative assessment of the KPI and sales outlets were again collected for the 11 food hubs to represent their "post-COVID" operations. During the second round, 30-45-minute semi-structured interviews were conducted by the primary author with seven of the food hub leaders that explored their history, motivations, infrastructure, and COVID-19 response in depth. Interviews aimed to explore the unique nuances of each hub's step-by-step actions, priorities, and strategy to pivot. These interviews were recorded, transcribed, and coded into themes by the authors. We used a "directed content analysis" approach, which entailed first coding for relevant themes, then looking for themes emerging from the data (Hsieh & Shannon, 2005). Coding involved the two authors (1) independently reading and rereading the transcripts, (2) independently coding the transcripts into themes, and (3) collectively comparing and discussing the independent codings to identify common themes. Recurring themes were considered more important. Interview questions focused on how the pandemic impacted their markets, major challenges that they faced, and how they overcame them. The two resulting data sets provide a look at the operations of the food hubs about six months before and six months after Hawai'i's closure to tourism. This study emerged not from a research directive, but from researchers working closely with community members and helping to solve problems and address their needs.

The two researchers' position in respect to the various organizations demonstrates their involvement and engagement with the farming community of Hawai'i (Figure 1).

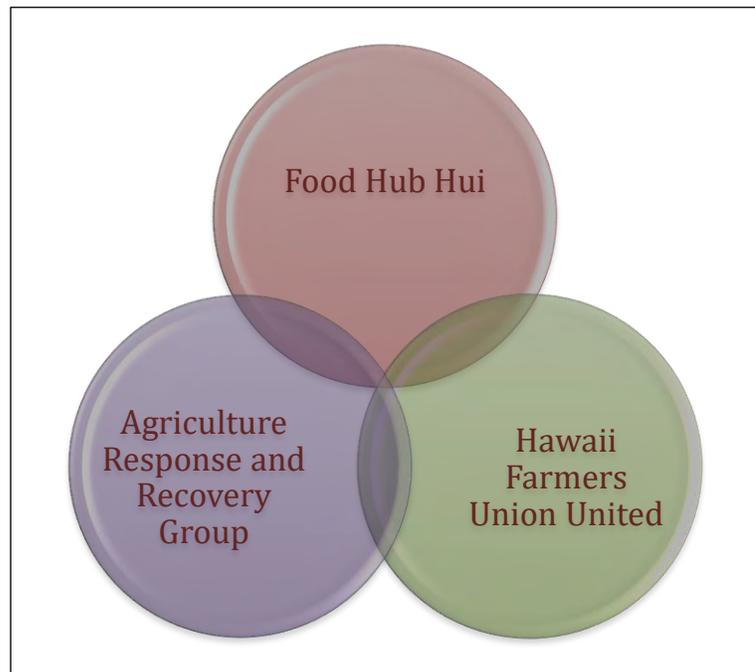
Results and Discussion

We would like first to acknowledge the food hubs that have participated in this study, listed in Table 1. We have known their leaders to be passionate about local food systems, farmer well-being, and consumer health. As frequently said by the Adaptations manager, "nobody is in this industry for the money." To the best of our collective knowledge, this list represents the vast majority (over 95%) of economic food hub activity in the state. They are evenly split between for- and nonprofit organizations, with one organization being a farmer-owned cooperative.

Initial Shock and Increased Sales

Prior to March 2020, food hubs supplied a fairly conventional customer base, with over 70% of sales going to restaurants, wholesale organizations, and institutional contracts. Several did have CSA programs or other direct sales, constituting approximately 28% of their combined sales. Hubs variably engaged in direct sales, with several not engaging at all, several having moderate levels (20-30% of sales), and a couple having direct sales as their primary outlet (approximately 90%). At the onset of the global pandemic, several food hubs experienced a major loss of sales as restaurants stopped ordering and the Hawaii State Department of Education stopped purchasing food for school meals. One reported: "Pre-COVID, 95% of our sales were comprised of food service including schools, hospitals, restaurants and hotels. In mid-March, when COVID hit, sales pretty much halted." Another said, "We primarily sold direct to restaurants. In one week, we almost lost all business. Before COVID, restaurants made up around 75% of sales." Several hubs acknowledged their vulnerability in conventional markets, one saying, "We were already concerned that we relied on a

Figure 1. Venn Diagram of the Two Authors and the Organizations Cited



couple big buyers for the bulk of our sales. I've definitely thought before what would happen if they stopped buying." Leaders in these hubs "had been thinking of ways to diversify" revenue streams. Prior to the pandemic, other hubs had already transitioned or started transitioning their models away from wholesale. For example, Honolulu-based O'ahu Fresh said that they "had already been moving away from wholesale accounts, we had like maybe five wholesale accounts that we lost. It was only 10% of the business at the time."

With the dramatic and dynamic shifts in demand due to COVID, farmers and ranchers were in dire need of organizations able to aggregate and distribute local food. Many farmers who relied on direct relations with restaurants found themselves with surplus produce. At that time, many farmers turned to food hubs for the first time as a potential market. Virtually all hubs reported an increase in the number of farmers they sourced from, with a total increase from 664 to about 900 (Table 2). Simultaneously, the hubs also were developing new markets.

Increased demand for online CSA and "make-

Table 1. Food Hubs in Hawai'i that Participated in This Study

These represented the vast majority of the total volume and sales of all food hubs in the state.

Food Hub	Location	Type	Products Offered
Adaptations, Inc.	Captain Cook, Hawai'i	LLC	CSA service with home delivery, wholesale, SNAP EBT
Farm Link Hawai'i	Haleiwa, Oahu	LLC	CSA service with home delivery, wholesale, SNAP EBT
Hawai'i Ulu Cooperative	Kailua- Kona, Hawai'i	Cooperative	Wholesale
Kahumana Farm Hub	Wai'anae, Oahu	Nonprofit	CSA service with home delivery, wholesale, farmers markets, community food distributions, SNAP EBT
Kohala Food Hub	Kohala, Hawai'i	Nonprofit	CSA service
Kokua Kalihi Valley	Kalihi, Oahu	Nonprofit	Community food distributions, farmers market, SNAP EBT
Local Harvest	Lahaina, Maui	LLC	CSA service with home delivery, wholesale, community food donations
Maui Food Hubs	Haiku, Maui	Nonprofit	Online store, Community food distributions, SNAP EBT
Oahu Fresh	Honolulu, Oahu	LLC	
Sustainable Molokai	Kaunakakai, Molokai	Nonprofit	Mobile market, community food distributions, SNAP EBT
The Food Basket	Hilo, Hawai'i	Nonprofit	Mobile market, community food distributions, SNAP EBT

your-own bag” products including home delivery constituted the first wave of sales increases. Starting in April, demand increased substantially, presumably as people sought to stay quarantined and avoid crowded grocery stores. The media picked up on the trend and further promoted CSAs, causing a further increase in demand. Several food hubs were listed publicly as an essential service, acknowledging the critical role they provided to health by reducing contact, particularly for the elderly. Food hubs provided Covid-19 specific services while many non-essential businesses closed their doors (e.g., Beers, 2020; Cheng, 2020; Gee, 2020; *Honolulu Star-Advertiser*, 2020; KHON2, 2020; Ruminski, 2020).

Responding to the surge in demand for direct

sales was an essential first pivot for all the hubs. Adaptations hub said that “even though all the restaurants, with about six exceptions, shut down more than half of our income, our Fresh Feast CSA quadrupled over about four weeks, from 125 to 400 members, and that made up most of the loss.” Some of the food hubs were already offering online CSA services and needed only to upgrade their practices to comply with COVID-19 guidelines. Sustainable Molokai said, “Our Mobile Market sales were already done online, so our main pivot was to change our neighborhood deliveries to drive-through model and of course implemented PPE and additional protocols to ensure food safety.” Others had to quickly adapt and build new programs in order to access the market, one hub

Table 2. Key Performance Indicators (KPI) of the 11 Food Hubs Surveyed that Represent their Operations Prior to March 2020 and After June 2020

	Before March 2020	After June 2020	Change (%)
Annual Revenue	US\$3,280,000	US\$9,750,000	197%
No. of part-time jobs	42	93	121%
No. of full-time jobs	25	53	112%
No. of suppliers	664	900	36%

saying, “We knew nothing about doing direct sales. We had no platforms to do it. We really had to start from scratch and put it together very quickly.”

As the hubs expanded in direct sales, they also leveraged each other to offload excess production or to source produce for their clientele. This coordination also added a new category of sales between the hubs. For example, Kahumana Farm Hub (KFH) said, “O’ahu Fresh asked us to bundle green onions and Asian greens for their CSA. We already did it for our own CSA, so it was an easy service to add on.” These hub-to-hub collaborations allowed hubs to cope with the quick growth of their respective CSA programs.

Several hubs had extended their CSA services to food-insecure people before the pandemic by accepting Supplemental Nutrition Assistance Program (SNAP) customers and, at times, offering them 50% discounts for affordability. Of the 11 surveyed, over 50% were already enrolled with SNAP and four were in the process of enrolling. In fact, over half stated that they had developed a food hub as a strategy to improve health and food access for in their own communities. This is consistent with national surveys that indicate that over 90% of hubs state that improving human health is a core, if not primary, value of their mission (Colasanti et al., 2018). Kokua Kalihi Valley (KKV), a food hub started in 2016, exemplifies these values:

We quickly determined the food hub provided access to highly nutritious produce for the community while overall food access was shrinking. The provisioning of food provided a related benefit strengthening connections to families and community members impacted by COVID or COVID restrictions. Eating healthy, adding immunity boosting foods to one’s diet, and having regular contact with KKV health care providers with food distribution as the point of intersection have been a key to our community health system response. With this increased connection it has been easier to trace infections, share health information, model safe practices and answer questions from uncertain community members facing a pandemic.

The Adaptations hub took it one step further and created a “pay-it-forward” fund for vulnerable customers affected by lay-offs who could not afford their CSA. One of their members, a wealthy homeowner, contributed a US\$2,500 check to the fund. Adaptations stated, “It really did make a big difference for a number of people. There was one woman who was waiting for her SNAP approval and really was trying to decide between putting gas [in her car] and paying rent before she even used it up. So we gave her a US\$500 amount from the pay it forward fund. Before she ended using it all she was able to start paying with SNAP. So this is what it was supposed to do. It bridged her.”

In April, a second wave of increased spending on local food came from distributions for relief feeding programs funded by philanthropic organizations as well as national, state, and county governments. In some cases, the use of local food in these feeding programs was mandated as a way to channel funds to local farmers and processors. This was particularly true with philanthropic donations that sought to maximize the impact of their dollars, which resulted in food distributors contacting the food hubs in order to appropriately source local products. In other cases, local food was encouraged but not required, as with most of the feeding programs that were funded by the CARES Act. In these cases, some hubs took a proactive approach, identifying the feeding programs and actively soliciting as a market opportunity. Local food sales also increased even when buying local was not a requirement, because normal supply lines were disrupted. For instance, the Food Basket was “unable” to procure rice for their family feeding program, and instead sourced locally grown and processed breadfruit as their primary carbohydrate.

Demand from community feeding programs was new to about half of the food hubs. One said, “We had about a month of horrible sales and then the community feeding programs started taking off and pretty much replaced our food service throughout until the end of June.” Some of the hubs were contracted, or applied for funds, to do the distribution directly, leveraging their infrastructure and farmer relationships, while other hubs were subcontractors or major providers to external groups engaged in distribution programs. For

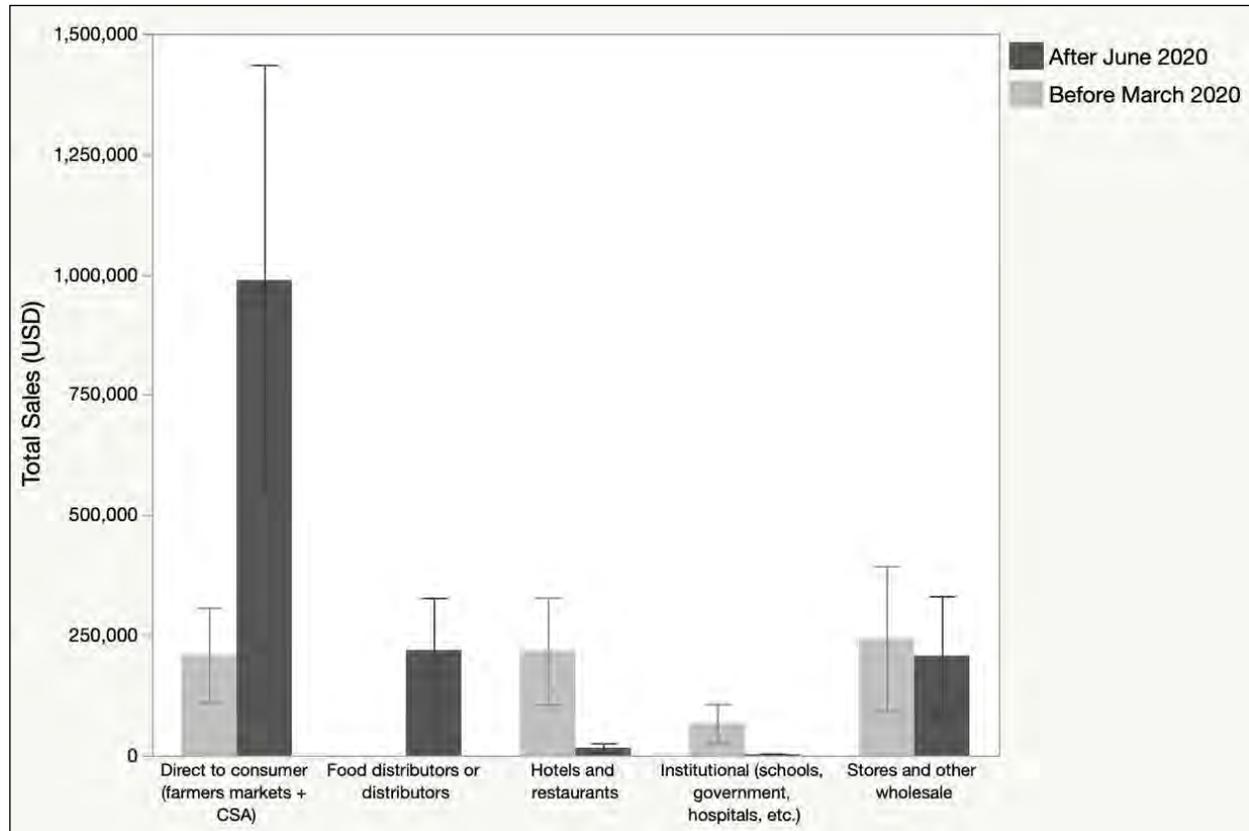
example, KFH was subcontracted by the Waianae Comprehensive Health Center to provide “pre-made” CSA bags for community food distribution. In these cases, the contracting organization would give the food hub a budget per bag, which allowed the hub more flexibility in selecting items and more work opportunities for packaging and distributing the bags.

Hub-to-hub collaboration deepened as a result of the demand from community feeding programs. Hubs directly involved with food distributions sourced from hubs that were not. For example, the Food Basket was able to purchase breadfruit from the Hawai'i Ulu Coop. Kokua Kalihi Valley sourced from KFH which, in some cases, was sourced from Adaptations Hawai'i. As a result, increased food distributions for one hub meant increased sales for several other food hubs, although they were not the primary organization hired. In the survey, 91% of the food hubs agreed or strongly agreed that they connected more with

other food hubs during the COVID-19 pandemic.

Total sales for the 11 food hubs went from US\$3.2 million prior to COVID-19 to US\$9.7 million after the pandemic, an increase of 197% (Figure 2). Some hubs increased as much as ten times in sales, hiring, and purchases, while one of the hubs decreased total sales but increased profitability because of earning higher margins with their shift to more direct-to-consumer sales. In the survey, 83% of the hubs agreed or strongly agreed that sales and the number of customers increased. In addition, 41% of the hubs reported that their profitability had improved because of more direct sales through CSA while 41% were neutral. Increased sales for the hubs also led to more employees (over 100% growth) and more purchasing of local food (Table 2). Current sales of US\$9.7 million is approximately equivalent to the value of 8% of all local food sales to retail markets, institutions, and food hubs for local or regionally branded products in Hawai'i (USDA, 2017).

Figure 2. Shifts in Total Sales Outlets and the Standard Error Bars for Seven Food Hubs that Contributed Their Sales Data



Another wave of CARES Act funding is expected, as Hawai'i has not spent its full federal allocation as of this writing. One hub commented, "I think I am going to be interested to see with the next few weeks [of September] through to December because I feel like the production has hit a rollercoaster all of a sudden. I see enormous amounts of CARES relief money that everyone is trying to spend very quickly because it has to be spent. And then the bottom is going to fall out in January, right?"

Increased Purchases of Local Foods

The increase in sales by the food hubs was coupled with increased supply. In the survey, 83% of hubs agreed or strongly agreed that they bought more food and 75% of them said they had many more suppliers coming on board. Hawai'i's food hubs currently work with about 900 farmers, which is about a third more farmers than before the pandemic (Table 2). This figure represents 12% of Hawai'i's farmers, and about a third of farmers who produce food for local consumption (USDA, 2017).

During this time, some hubs expanded their sourcing requirements. Previously, some hubs worked primarily with farmers using certified organic, organically managed, permaculture, backyard, and regenerative practices. As a result of COVID-19, these hubs began to include the full range of farmers, including those utilizing conventional practices. Almost all hubs said that they prefer to work with regenerative farmers, but at a minimum they all require their suppliers to provide full disclosure of their growing practices.

Several hubs pointed out that many new customers saw CSA and home delivery services as a replacement for trips to the store. In a short time, several food hubs pivoted from offering premade CSA bags to make-your-own bags to allow for greater consumer choice. The Kahumana Farm Hub manager explained, "Our customers started purchasing these build-your-own boxes in our online store. With that, we realized that they want those kinds of things because they say they don't want to go to the store. They want this to be their store. Also, our cafe started selling more ready-to-go foods in both our farmers' markets and in our

CSA." Adaptations saw the same trend of people purchasing from their hub to prevent a trip to the store: "I think I have had a number of my friends say that they are now just relying on our store and then, like a once per month trip to Costco. By that, then they are not going to the farmer's market or even their local grocery store. They're trying to limit their contacts outside."

The shift in "specialty-to-staples" preferences for CSA customers is a new trend for many local producers and distributors that previously focused on luxury items. Several food hubs confirmed that new customers wanted to see a greater assortment of products. For example, O'ahu Fresh's founder said, "We are purchasing more food from the same farmers that we worked with before. But for the value-added products, we really added probably at least twenty new vendors." Public food distributions were catered to a different clientele than what most hubs had been used to, echoing the trend in CSA customers demanding more staples. As a result, several hubs started relying on more conventional foods and farmers. KFH shares their experience:

In our community, we have many Chinese, Laotian and Korean farmers who used to rely entirely on Chinatown in Honolulu. With the closure of businesses, these farms, many of them housed in Wai'anae, have been hugely affected. Because of the lower demands, they have had to drop prices on their onions, choy sum, bok choy, parsley, garlic chives and the many other vegetables they used to supply to Chinatown. The Kahumana Farm Hub has tried to support these farmers by distributing some of their vegetables through our popular Community Supported Agriculture home delivery program and in local food distributions.

KFH, like many of the hubs, expressed their commitment to fair payment for farmers, such that seventy cents of every dollar spent on local food in their hubs goes to the producers. In some cases, the change in markets actually resulted in increased returns to farmers. For example, KFH increased their purchase price for many produce items:

“because the CSA shift resulted in higher [profit] margin for us, we immediately started paying the growers more. That is a central part of our mission at Kahumana, to co-create healthy and inclusive communities.”

The hubs that increased the most in sales were on O‘ahu, where most of the population of Hawai‘i resides. Many hubs relied on produce from outer islands where the bulk of agricultural production occurs. For example, KFH dramatically increased purchasing from Hawai‘i Island during the pandemic (Figure. 3).

More Workers, Warehouses, and Cars Supported by Partnerships and Government Grants

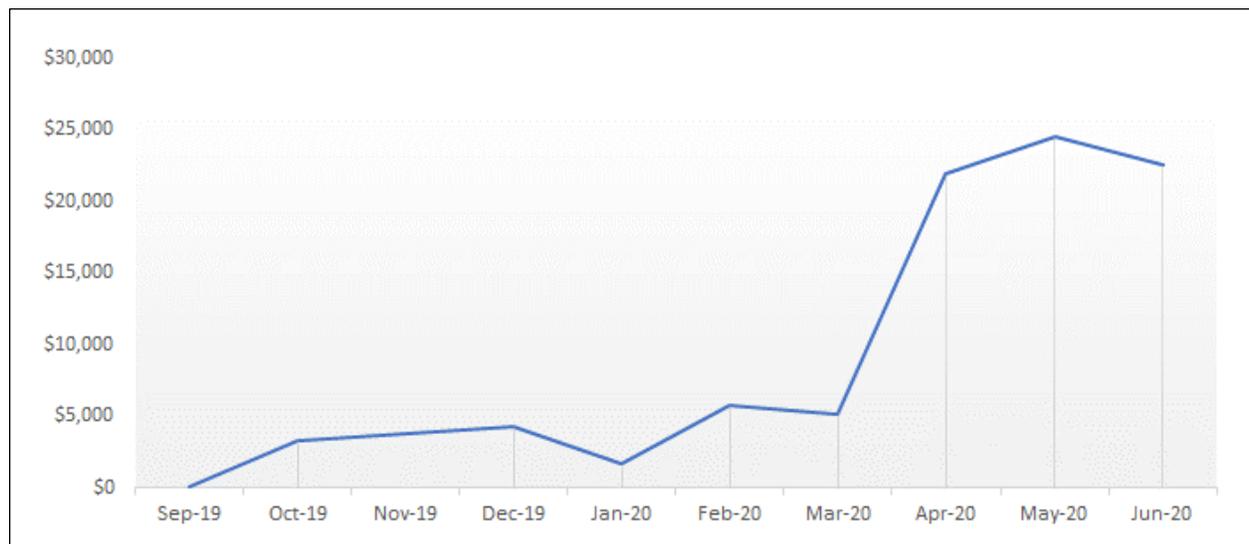
In the survey, 83% of the food hubs reported they had to hire more workers, with the number of jobs growing by over 100% (Table 2). Full-time jobs provided by the hubs increased with the pandemic from 25 to 53, and part-time jobs from 42 to 93. O‘ahu Fresh said, “We hired 12 more people. I just started reaching out to friends and my own social network. Combination of drivers, packers, admin, customer service, and web design.” Every food hub hired more people in a short time span. Some were able to hire people who were laid off from other departments of their organization. Most of the food hubs established before the pandemic reported that they were able to benefit from the

federal Payroll Protection Program.

The Food Basket provides a good illustration of the type of flexible worker that the food hubs hired: “A person that wants to work with us, is going to have to be really well-rounded, really flexible. The thing I have learned most about this is, you know, we have staff who are willing to jump in the trenches when we need extra hands at a community drop and that I can count on to have safe behavior given the pandemic. And at the same time, is not afraid to jump into a truck and drive or lend a hand with loading produce or packing produce.” Rather than emphasizing specialized skills, the hubs looked for people who were flexible, good spirited, and community-driven. Several hubs were able to hire people who had been laid off from tourism industries, showing that the hubs could be sites for retraining and re-development. O‘ahu Fresh said, “Pretty much everyone that came on had previously been working in restaurants and tourism. We had surf instructors and waiters. Everyone was working before but then had lost their jobs.”

Several hubs also reported that they had to partner with other organizations to be able to expand their labor needs for storage, packing, and delivery. One hub reported, “Our business shifted to a lot more deliveries which we would not have been able to fulfill ourselves. We partnered with a

Figure 3. Purchases from Hawai‘i Island by Kahumana Farm Hub, Situated on O‘ahu Island, September 2019 to June 2020



staffing company that began to provide support with home delivery by using their own vehicles.” In March, the Maui Food Hub was launched as a response to the pandemic and partnered with an existing produce company to quickly build its CSA capacity. Maui Food Hub said, “We have been contracting with this facility Sun Fresh Hawai‘i, for our refrigerator space, vehicles, packing, and sorting labor. We reimburse Sun Fresh for about 6–8 workers a week.” Furthermore, increased home deliveries had to be met with more refrigerated vehicles. A hub said, “Our whole transportation fleet became refrigerated. That happened because we were doing home deliveries. That way products would remain chilled all the way until it gets delivered. So it’s only now that we’re starting to consider frozen products.” Hub-to-hub collaboration expanded from sourcing to include logistical needs, such as when KFH “hired O‘ahu Fresh to bring multiple pallets per week from the harbor and airport to Wai‘anae.”

Discussion and Closing Remarks

Local Food is Now More “Essential”: Frontline Response of Food Hubs in Hawai‘i Mirror Experiences of Others

In this paper we have examined the evolving role and response of food hubs in Hawai‘i to the COVID-19 pandemic. In the U.S., the CDC declared the provision of food and other essential goods an activity exempt from stay-at-home orders. The CDC also provided specific guidelines for farmers markets and CSA operations and encouraged the public to order food online or use curbside pickup whenever possible. Along with grocery stores, farmers markets and CSA operations became considered essential services overnight, by staying open with new and strict Covid-19 rules. In contrast, many non-essential services temporarily closed or shut down permanently. Local food was not a necessity until the pandemic, which pushed small farmers and their networks, facilitated by food hubs, to be recognized as essential services. A co-owner of a San Francisco Hub, Veritable Vegetable (VV), illustrates the importance of food hubs and short supply-chains during the epidemic:

A chain is only as strong as its weakest link, and the longer a chain is, the more opportunities there are for stress and breakage. If you have a shorter chain, obviously you can repair and react quicker. (Curry, 2020, para. 12)

The example of Hawai‘i confirms the comment from VV that a short supply chain can respond more quickly to stress and breakage. Evidence suggests that the alternative food infrastructure led by Hawai‘i food hubs quickly met the changing demand for food. The same COVID-19 trend of buying direct and local can be seen in multiple locations in the U.S. For example, Smith (2020) notes that in the COVID-19 era, many farms have created or expanded delivery services, bringing orders directly to homes. Small farmers who networked locally to expand or establish new informal co-ops, CSA operations, and food hubs have been successful during the pandemic because they responded to the public need for safe food. Held (2020) suggests from a New Mexico study that co-operatives selling CSAs online became a lifeline for farmers during the pandemic:

What emerged was the Better Together CSA, a cooperative effort that pooled their produce and resources to get fresh food to local families stuck at home. Now in its fourth membership cycle, the CSA has grown from 45 shares to 85, with nine to 12 farms participating, depending on the week. (para. 4)

In Hawai‘i, hubs became a lifeline for farmers as illustrated by increased purchasing of local food by the hubs. All the hubs have supported small farmers and micro-entrepreneurs, but during the COVID-19 pandemic any Hawai‘i farmer could benefit from the increased sales of the hubs and not just small and backyard farmers. The pandemic was also a period when more conventional farmers joined the food hub circles, which strengthened their ability to feed communities. The hubs facilitated strong inter-island networks that allowed for quick mobilization of produce from agriculturally rich regions such as Hawai‘i and Maui Islands to feed people in O‘ahu, the most populated island. The networks are a testament to the

work of the Hawai'i Farmers Union United, an organization that has fostered friendship and solidarity among small farmers and food hubs over the past 10 years.

Some actions of Hawai'i's food hubs also seem to be unique to Hawai'i. The hubs are community-oriented and have compassion for the poor and disadvantaged people in their communities, offering frontline responses for people who suffer from food insecurity. With the popularity of CSAs and home deliveries, Hawai'i hubs offered direct-to-consumer sales but did not forget about those in need by prioritizing SNAP EBT cardholders and providing discounts and services when possible. Almost 90% of the food hubs were involved in various ways with community food distribution programs. A few hubs purchased local food only for food distribution and not for CSAs or other direct markets.

Food insecurity rates in Hawai'i and the U.S. are far higher in rural areas (Feeding America, 2019). It has been projected that Hawai'i's food insecurity rate will increase by about 50% to some 233,000 people in 2020, from 151,000 in 2018, due to the effects of COVID-19 (Feeding America, 2020). In the seven and a half months after March 2020, 19 million pounds of food were distributed compared with 12 million for 2019 (Jung, 2020). Food hubs lower food insecurity in two ways: (1) by feeding vulnerable populations, and (2) by providing economic stimulus to food producers in rural areas. Improved profits by food hubs typically translate to higher payments to their growers. Many of the food hub suppliers are themselves suffering from food insecurity. A few hubs purchased local food only from community feeding programs and not for CSAs or other direct markets, further increasing sales for local growers struggling to keep their farms and provide for their own families. Food hubs provide stability for the local community and economy through purchases and sales.

Sustaining Local Food Beyond the Pandemic?

A question now is how can the increases in local food purchases be sustained after the pandemic? The pandemic has paved a path for local agriculture to transition from a luxury to a necessity.

While the hubs were quick responders to the pandemic, there is little evidence that demand for local food will persist. Even during the pandemic, small farmers received a fraction of the money designated for coronavirus relief while large, industrialized farms received the bulk of it (Ramgopal & Lehren, 2020). The pandemic led to two strong currents of increased demand: (1) direct-to-consumer CSA online purchases and home deliveries, and (2) government purchasing of local food to distribute to vulnerable populations. From a food hub perspective, the first trend can grow with promotion and expansion to meet the demand. However, there is great uncertainty about continuation of government-supported public food distribution.

As demonstrated, food hubs can quickly respond to a food crisis. Hubs have built networks of farmers and markets that can adapt quickly to changing conditions on the ground. Investing in the physical and organizational infrastructure represented by food hubs should precede strategies for more production:

When we talk about doubling local food production, the emphasis is always on just that—production. For some reason there is a notion that if someone would just grow the food then everything else will fall into place. And so, the emphasis is always on the barriers to production—access to land, water, labor and capital. However, we ignore the fact that producing food is only the first step in a chain of activities needed to get that food to consumers. (Lincoln, 2020, para. 5–6)

Moving up the value-chain by addressing institutional hurdles to purchasing local food might be a better strategy than simply growing more food. The pandemic illustrates that state policies must be updated to strengthen local food systems. Five years before the pandemic, two farm-to-school pilot programs showed the potential to make a difference for local agriculture through institutional purchasing of local food (Hawaii State Department of Education, 2018). Currently, policymakers feel that it is urgent to establish more robust policies to build a strong local food economy that can with-

stand shocks such as a global pandemic (Local Food Institutional Purchasing Hui, n.d.). Hawaiian public and private institutions are becoming more serious about supporting local agriculture through purchasing local produce as well as processed and cooked local foods for institutional food service. We argue that these types of policies have the potential not only to support farmers and food hubs but also to build resiliency against the next natural or manmade disaster.

The Role of Local Food in Disaster Resilience

During the pandemic and associated governmental restrictions, local food almost overnight went from a “luxury” item for affluent tourists to an essential service that had significant impacts on the well-being and the economics of the state. In particular, food hubs played an essential role in coordinating the flow of local produce from farmers to consumers. While the hubs were not necessarily equipped or prepared for a pandemic, they pivoted quickly. The roles and responses of food hubs and their networks through the pandemic demonstrate food systems resilience.

Resilience is typically thought of in terms of systems. Any significant shock, such as COVID-19, has multiple, cascading effects within the system. In the case of COVID-19 there are social behavioral changes, economic impacts, supply-chain issues, and so on. One reason for the substantial success of the food hubs is that they address multiple effects of the shock. Hubs source and hire local, and are dedicated to profit-sharing with farmers; funds injected into food hubs have a large multiplier effect on the local economy and employment (Schmit, Jablonski, & Mansury, 2016). The economic multipliers of local food show that every 1% increase in consumption of locally produced food would result in US\$60 million in local sales and approximately 1,578 additional jobs (Leung & Loke, 2008), and as more services are provided by food hubs, the multipliers are expected to increase. This is particularly attractive for CARES and other funding that seeks primarily to mitigate economic hardships.

In particular, we propose that institutional purchasing by government agencies such as the military and the Department of Education, and

other government-funded purchasing, be required to buy local foods in order to maintain a minimum demand and supply of local production. This purchasing would necessitate minimum levels of local production, processing, and distribution to ensure that some base-level physical and organizational infrastructure is present in the local food system and available to respond during times of emergency. Leung and Loke (2008) calculated that for every US\$100 spent on local food in Hawai'i, an additional US\$2.25 in tax revenue is generated (taking into account the lost revenues from reduced importation), offsetting some of the additional costs associated with locally produced food. Furthermore, these economic multipliers were calculated assuming a farm share of 25% of the food dollar, but, as demonstrated, food hubs often give a substantially higher share of revenue back to the farmer. Therefore, the cost of local food purchasing would be partially offset by increased economic multipliers and tax revenues while providing essential resilience infrastructure necessary for appropriate disaster response.

A core aspect of resilience is “functional redundancy”: how many different players perform the same functions, so that if one fails during a shock, there are backups to continue to fulfill the role. For instance, due to panic purchasing in the U.S. there was a brief shortage of rice in Hawai'i, and the Food Basket could not procure rice for its feeding programs. The Hawai'i Ulu Producers Cooperative was able to replace rice with breadfruit until the supply lines recuperated. The redundancy of the production of staple carbohydrates locally even when 99% of carbohydrates are imported can play critical roles when the primary functions fail. Hub-to-hub collaborations exemplify the functional redundancy that contributes to community resilience.

If local food does enhance the resilience of a food system, it implies benefits to disaster planning that go beyond simple economics. Compassionate practitioners rather than proactive planners have built Hawai'i's local food movement. Local food planning has not been prioritized in government policies and programs, despite well-stated priorities of food security (Economic Development Alliance of Hawai'i, 2016; Ige, 2017). While imported food

supplies were temporarily disrupted by the pandemic, a more significant disaster or a combination of disasters could have more drastically affected imports, making local food a greater necessity. Nobody anticipated that the hubs were going to position themselves as responders to the pandemic. Governmental policies must value resilience as an essential strategy and the role of food hubs in

functional redundancy and a strong local food economy. While hubs have been described as a key component of scaling-up local food systems and a flagship model of socially conscious business, their response to the COVID-19 pandemic in Hawaii and in the U.S. suggests that they fill a vital function through their provision of essential services during disaster.

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The impact of COVID-19 on local government stakeholders' perspectives on local food production

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Abstract

Local food production (LFP) can play an important role in ensuring access to food during supply chain disruptions. Because the drafting, adoption, and implementation of policies regulating LFP is under the purview of local governments in many U.S. states, researchers at University of Florida, Institute of Food and Agricultural Sciences Extension conducted a study to assess whether COVID-19 affected local government stakeholders' (LGS) ($N=92$) perspectives on LFP and the role that LFP can play in responding to public health emergen-

cies. LGS who oversee the drafting, adoption, and implementation of LFP policies include staff responsible for code enforcement, sustainability initiatives, and planning, as well as elected and appointed leaders, such as mayors, city and county managers, and city and county commissioners. The survey assessed LGS' attitudes and knowledge about LFP. The survey also asked LGS about their perceptions and awareness of LFP in their communities, including their perceptions of the benefits of and barriers to LFP and the ways in which LFP producers were using the food they produced. Survey questions also focused specifically on COVID-19 and the role of LFP in public health emergencies. In particular, survey questions asked whether LGS perceived a change in their own attitudes, knowledge, and perspectives; whether there had been a change in the LFP activities in their communities following COVID-19; and what they thought the role of LFP was in responding to public health emergencies. Direct comparisons of

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LGS who responded to a 2019 survey ($N=43$) were assessed for statistically significant changes in overall attitudes, knowledge, or perceived benefits of LFP following COVID-19. This study found that LGS have generally positive attitudes and perceptions of benefits of LFP, including its role in public health emergencies, but have limited knowledge about LFP or awareness of barriers to its implementation. The results of this study indicate that LGS understand the potential benefits of LFP in public health emergencies but would benefit from information and training to support the development of policies and programs in their communities.

Keywords

COVID-19, Pandemic, Local Food Production, Local Government, Food Access, Food Policy, Urban Agriculture, Community Development, Public Health

Introduction

The impact of the 2019 novel coronavirus (COVID-19) has been referred to as a “wake-up call to the vulnerability of our food systems” (Gralak et al., 2020, p. e309). The food system has been identified as a weak point in pandemic preparedness (Osterholm, 2005), and previous research on the impacts of pandemics on food systems found that a pandemic that is severe enough to result in reductions in labor, supply chain disruptions, and changes in purchasing behavior can be expected to cause significant and widespread food shortages in the United States (Huff, Beyeler, Kelley, & McNitt, 2015).

As was widely documented, in the spring and summer of 2020, COVID-19 disrupted food supply chains leading to empty grocery store shelves and farmers terminating crops for which there was no available market (Campbell & McAvoy, 2020; N. Johnson, 2020; Kolodinsky, Sitaker, Chase, Smith, & Wang, 2020; Schrottenboer, 2020; Yaffe-Bellany & Corkery, 2020). Beyond disrupting food supply chains, layoffs and furloughs due to shutdowns led to newly food insecure individuals, which yielded a surge in demand at food banks (Friedersdorf, 2020). Reports stated that food insecurity doubled in the months following the

onset of COVID-19 and that more than 50 million Americans—including 17 million children—were estimated to be food insecure due to the pandemic (Hake et al., 2020; Kenneally, 2020; Segers, 2020; Silva, 2020; Wegman, 2020). Specifically within Florida, foodbanks reported double the daily distribution of meals after the crisis started, and 2.7 million missing weekly meals in Florida as a result of employment disruption due to COVID-19 (Gallagher, 2020; Second Harvest Food Bank, n.d.). News coverage of these contrasting impacts—food with no markets and community members without access to food—provided an opportunity to increase awareness of food systems and the role they can play in communities’ resilience during natural disasters and public health emergencies.

A report from the Food and Agriculture Organization (FAO) of the United Nations on COVID-19’s disruptions of food systems and food accessibility asserted that local food production is a key measure to build more resilient local food systems (Fei et al., 2020). While there is no standard definition of local food production (LFP), the term is generally taken to refer to activities including home and community gardens, farming on vacant lots, and direct sales channels that farms use to sell their products in their local community, such as farmers markets and community supported agriculture (CSA) arrangements (Hodgson, Campbell, & Bailkey, 2011). The FAO’s emphasis on LFP is supported by a substantial body of literature that has found that LFP has a number of benefits to communities that are particularly salient in the wake of COVID-19, such as increasing food access and food security in limited resource populations (Brown & Jameton, 2000; Meenar & Hoover, 2012; Neff, Palmer, McKenzie, & Lawrence, 2009; Smith & Harrington, 2014). Beyond commercial LFP, community gardens have been shown to have benefits that could be valuable in responding to a public health emergency, such as increasing access to fresh fruits and vegetables, building social capital, and providing opportunities for social engagement (Alaimo, Reischl, & Allen, 2010; Brown & Jameton, 2000; Gray, Guzman, Glowa, & Drevno, 2014; Hagley, Rice, & Flournoy, 2012; Holland, 2004; Mukherji & Morales, 2010; Okvat & Zautra, 2011).

Echoing the findings from the FAO about the importance of LFP, consumer behavior changed in the wake of COVID-19 with an increasing interest in purchasing local food and via direct sales from producers (Kolodinsky et al., 2020; Worstell, 2020)—this increased interest was identified in both Google searches as well as actual increases in direct purchasing (Crampton, 2020; Kolodinsky et al., 2020; Schmidt, Goetz, Rocker, & Tian, 2020). CSAs, in particular, increased in consumer popularity after the onset of COVID-19 (Ricker & Kardas-Nelson, 2020; Schmidt, Tian, Goetz, Bartley, Moyer, & Rocker, 2020). The consumer interest in LFP and purchasing directly from local farms—as well as the producers adopting new ways of reaching customers (e.g., by online sales)—if sustained, has been identified as a building block for the innovation and transformation that can build food systems resilience (Worstell, 2020). I hypothesized that the confluence of these various impacts of COVID-19 and the responses to these impacts from producer to consumer increased awareness of and support for local food production and direct sales opportunities, which may translate into longer term change if it garners LGS support and policy adoption.

The FAO also issued a report specifically focused on the role of cities and local governments in responding to COVID-19's impacts on food access and community food systems. This report documented the results of quantitative and qualitative research on municipal responses to disruptions in food systems and the implications those responses had for food security and for long term food system resilience (Marocchino et al., 2020). One key point identified in the report was that areas with shorter supply chains and increased proximity to food production were more resilient (Marocchino et al., 2020). The FAO recommends that local governments support food distribution and purchasing from local producers (Marocchino et al., 2020). Key messages emerging from their analysis were that city and local governments serve as enablers in addressing the impacts of COVID-19 on food systems and that local governments “demonstrated enormous potential in identifying and connecting the food systems actors, facilitating collaboration and coordination and exploring in-

novative community-based solutions” (Marocchino et al., 2020, p. 14). One of their policy and action recommendations to build a more resilient food system was to promote local food production and improve short supply chains (Food and Agriculture Organization of the United Nations [FAO], 2020; Marocchino et al., 2020). Others have also identified food systems disruptions due to COVID-19 as an opportunity to reconceive the current arrangement of the food system and to adopt policies that will support a more resilient and equitable food system moving forward—notably by focusing on community food production, shorter supply chains, and having local government stakeholders (LGS) adopt food systems plans and policies that reflect their values, resources, and priorities (Béné, 2020; Farley & Scherr, 2020).

As is implicit in the recommendations to support LFP from the FAO and others, there are a number of frequently cited barriers to LFP. Most salient for the present study are restrictive policies that are under the purview of local governments, such as zoning regulations, codes of ordinances, and permitting requirements (Castillo et al., 2013; Horst, 2017). LFP can be bolstered by changes to zoning, land-use ordinances, and comprehensive plans (Angotti, 2015; Desjardins, Lubczynski, & Xuereb, 2011; Hagley et al., 2012; Mukherji & Morales, 2010), which has led to food policy councils and advocacy groups taking that approach (Boden & Hoover, 2018; Gupta et al., 2018; Haines, 2018; Scherb, Palmer, Frattaroli, & Pollack, 2012). There are also a number of barriers to LFP that—though not rooted entirely in local policy—are barriers that local governments could address via the previously discussed “enabling” function identified by the FAO. These barriers include a lack of financial resources, lack of access to land and water, soil and water contamination, and lack of knowledge about agriculture (Daftary-Steel, Herrere, & Porter, 2015; Hagley et al., 2012; Wortman & Lovell, 2013)

Local government authority for self-governance, often referred to as “home rule,” has a long-standing history in the United States dating back to 1875 (Sebree, 1989). The concept of home rule means that counties and municipalities have the ability to make their own laws and policies govern-

ing their own affairs without needing authorization from the state (Sebree, 1989; Su, 2017). In the U.S., 48 states have home rule provisions for at least some of their cities, and 37 states have home rule for their counties (Hanson, 1998). Because of home rule, policies regulating LFP—including the types of production and locations that are allowed—are under the purview of local governments in the majority of U.S. states. LGS who oversee the drafting, adoption, and implementation of LFP policies range from staff responsible for code enforcement, sustainability initiatives, and planning, as well as elected and appointed leaders, such as mayors, city and county managers, and city and county commissioners (Mukherji & Morales, 2010). These groups have diverse backgrounds—often with little or no prior knowledge or experience with issues related to food production—yielding potential gaps in knowledge or inaccurate perceptions about food production in communities or agriculture in general (Hendrickson & Porth, 2012). Understanding the knowledge, attitudes, and perceptions of these influential individuals is an important first step to develop informational materials and programs to foster the development of LFP in communities (Hendrickson & Porth, 2012).

Advocacy groups play an important role in the development of local food systems and key stakeholders—including members of these advocacy groups as well as producers, industry groups, and Cooperative Extension—can provide information, resources, and support to communities' LFP efforts (Hendrickson & Porth, 2012). General knowledge about LFP activities, advocacy groups, and food systems stakeholders serve as a foundation for LGS' to make informed decisions about LFP policies and regulations in their communities. Technical information about different production systems, best management practices, and potential public nuisance or food safety considerations are of particular importance for LGS staff who are responsible for drafting policies and ordinances to support LFP (Hendrickson & Porth, 2012). These policies and ordinances require definitions of types of operations, specification of types and intensities of activities that are allowed in different zoning classifications, and a number of other technical details which may simply be beyond the knowledge

of the LGS' responsible for drafting the policies (Hendrickson & Porth, 2012).

I hypothesized that LGS' attitudes toward LFP serve as a general foundation for their willingness to focus their limited time and resources towards supporting or developing LFP in their communities. These attitudes may be influenced by their general understanding of agriculture, LFP, or the above-described benefits. In some communities, attitudes may be influenced by the perceptions of the divide between rural and urban communities, perceived differences in the needs of more urbanized communities, and perceptions of the impact LFP has on traditional farming communities (Sharp, Jackson-Smith, & Smith, 2011). Information on public perceptions of LFP or evidence-based research on the impacts of LFP may influence LGS' attitudes towards the priority and usefulness of the benefits of LFP in their communities (Rahe, Van Dis, & Gwin, 2018).

The foregoing highlights the importance of the perspectives of LGS on the development of LFP in communities. As mentioned previously, of the many parts of daily life that were upended by the COVID-19 pandemic, food systems issues were at front and center of attention in communities. Because local governments were responsible for many aspects of the pandemic response, including, for example, emergency food programs and maintaining school lunch distribution for Title I schools, I hypothesized that COVID-19 may have caused LGS to reckon with issues of community food systems, food access, and LFP for the first time.

The motivation for this study was the fact that LGS are unlikely to be familiar with research literature on food systems and LFP, but the mass-media reporting about the profound impact of the COVID-19 pandemic on the food system, including reports about the doubling of food insecurity (Segers, 2020) and food shortages at grocery stores (Schrotenboer, 2020), could have been a “consciousness raising” event leading to greater knowledge about or appreciation of the importance of LFP. I hypothesized that this event could have provided an opportunity for LGS to increase their knowledge about LFP in their communities or it could have spurred them to want to learn more about LFP. I also hypothesized that this experience

could have affected their attitudes, leading them either to think more favorably about the potential benefits of LFP—due to the increased need for food in their community or because access to produce from local farms filled a need during the pandemic—or it could have led them to think more negatively, if the benefits they expected did not materialize following the pandemic. This event also could have provided the opportunity to think about the role LFP could play in their communities' response to a public health emergency. Given the overall importance of LGS to the support and facilitation of LFP in communities as emphasized by the FAO report (Marocchino et al., 2020), coupled with the possibility of COVID-19 serving as a “cue to action,” I was interested in assessing the perceptions of LGS following COVID-19.

Methods

In summer 2020, University of Florida, Institute of Food and Agricultural Sciences (UF/IFAS) Extension conducted a study to assess whether COVID-19's impact on food systems affected the perspectives of LGS ($N=92$) on LFP. The survey assessed their perceptions of changes in LFP activities in their communities and the role that LFP plays in responding to public health emergencies, such as pandemics or natural disasters. The survey also assessed LGS' judgment of the usefulness of different types of information or training topics to support LFP in their communities.

The population for this study was identified as a part of a previous research study conducted in the fall of 2019 by the UF/IFAS Center for Public Issues Education. In 2019, researchers at the Center for Public Issues Education accessed public databases of city and county governments in Florida to develop a contact list of LGS, including city and county commissioners, city and county managers, city and county clerks, mayors, city and county planners, zoning administrators, parks and recreation directors, strategic initiative managers, and environment and sustainability directors ($N=2,623$). The 2019 study was formative research to serve as the basis to begin developing a program for UF/IFAS Extension to support local food production and urban agriculture efforts in Florida. The research team used a census approach of

soliciting responses for all identified individuals rather than sampling from the population because this is a relatively new topic and audience for UF/IFAS Extension, and the research team wanted to hear from as many respondents as possible. For both the 2019 and 2020 surveys, members of the study population were sent an email containing information about the upcoming study, which was followed by an email with a link to the survey on Qualtrics, an online data collection platform. Individuals who did not complete the survey following the initial invitation received a follow-up email reminder each week for three weeks, after which the study was closed. The fall 2019 survey collected usable responses from 221 respondents. The LGS population identified for the 2019 study was used as the population for the 2020 COVID-19 study.

The survey response rate was lower than desired. One reason for the low response rate was that the large population for the study and limitations of time and financial resources prevented the research team from being able to implement procedures that have been found to increase response rate, such as providing incentives for participation, using multiple methods of contacting the study population (e.g., preceding the email request with a postcard in the mail), or using mixed mode data collection by mailing copies of the survey to those who do not complete it following the email distribution (Dillman, 2014). Further, based on email responses from members of the study population, other potential reasons for the low response rate were that UF/IFAS Extension was not familiar to members of the study population, and, hence, they were unwilling to respond. In addition, some members of the study population replied that they are not allowed to click links in unsolicited emails at their government email address. Because of the low response rate, non-response bias was assessed by comparing early to late respondents (Johnson & Shoulders, 2017; Lindner, Murphy, & Briers, 2001; Miller & Smith, 1983). Early respondents (those who responded to the survey within the first week, $n=29$) were compared with late respondents (those who did not reply until they received a reminder email $n=60$) on the dependent variables of interest in this study—knowledge, attitude, and perceived

benefits— using two-tailed independent *t*-tests at the .05 alpha level. There were no significant differences between the early and late respondents on knowledge [early $M=3.23$, $SD=.81$; late $M=3.22$, $SD=1.10$; $t(89)=.05$; $p=.96$]; attitudes [early $M=4.48$, $SD=.49$; late $M=4.46$, $SD=.63$; $t(86)=.18$; $p=.85$]; or perceived benefit of LFP [early $M=4.05$, $SD=.66$; late $M=4.01$, $SD=.61$; $t(84)=.25$; $p=.80$]. However, it should be noted that sample sizes per group were smaller than the recommended, which may increase risk of Type II error. Therefore, the results of this study should not be generalized beyond the sample.

The researcher-developed questionnaire that was used as the instrument for the 2019 study was used as the basis for the for the COVID-19 follow-up survey. The original impetus for the 2019 study was that UF/IFAS Extension had begun receiving questions from LGS about how to support LFP and how to draft policies to foster urban agriculture. To begin to systematically develop information and resources to support LGS' efforts related to urban agriculture and LFP more generally, UF/IFAS Extension and the Center for Public Issues Education developed a survey to solicit information that could guide the development of materials and programs that would be most beneficial to LGS. The survey was developed by reviewing literature discussing the benefits of and barriers to implementing LFP in communities, as well as reviewing previous studies that had been conducted regarding Extension and LFP (Dickmann et al., 2016; Hendrickson & Porth, 2012). Questions regarding attitudes, perceived knowledge, LFP activities in the community, perceived usefulness of training topics, and preferred methods of receiving information were added to help UF/IFAS Extension learn what types of information could be developed in order to support LFP in Florida and ways that LGS are interested in receiving that information. The survey instrument was assessed for face and content validity by an expert panel consisting of a section chair of the Florida Chapter of the American Planning Association, senior planners in Alachua County and the City of Gainesville, the Pasco County Extension Director, and a policy specialist at the National Sustainable Agriculture Coalition.

The research team also conducted a cognitive test of the survey instrument with two members of the target audience in order to assess whether the questions on the survey instrument were clear, used accessible terminology, and were interpreted as the research team intended.

It is common practice for social science research to include groups of questions, referred to as “scales,” to measure subjective variables such as attitudes or perceptions to increase the likelihood of valid measurement. The scales are tested for internal consistency to ensure that the group of questions are measuring the same concept (Robinson, Shaver, & Wrightsman, 1991). For this study, the internal consistency reliability of the scales was calculated using Cronbach's alpha, and the standard consistency score for a scale to be considered reliable is .7 or higher (Nunnally, 1978). Questions that were not of interest to assessing the effects of COVID-19 were removed from the 2019 survey instrument, and questions specifically related to how COVID-19 had affected LFP activities in communities and LGS' perspectives were added to the survey instrument. In particular, LGS were asked whether their attitudes and perceptions about LFP have changed since COVID-19. They were also asked whether there were changes in the amount of LFP in their communities or what LFP products were being used for following COVID-19. A group of questions asked LGS about their perceptions of the role of LFP in their community during a public health emergency.

Because there is no standard definition of “local food” or “local food production,” the survey provided the following operational definition:

The production, processing, distribution, and sale of food within urban and suburban areas for noncommercial/hobby, commercial, educational, or nonprofit purposes. Examples of these activities include: food producing gardens (community, backyard, institutional, market, or rooftop); edible landscaping; bee, poultry, and animal keeping; farmers markets or mobile produce trucks; urban or market farms; and innovative food-production methods, such as hydroponics, aquaponics, and aquaculture.

While farmers markets are a market channel, rather than a type of food production, a variety of organizations include farmers markets in their definitions in order to capture the relationships of farms on the periphery of communities that grow and market their products primarily for sales in those communities (Hodgson et al., 2011; Martinez et al., 2010).

Subjective knowledge was assessed with four items using a 5-point Likert-type scale (1=strongly disagree; 5=strongly agree). A mean score for all four items in this scale was computed for each individual to represent their overall subjective knowledge. The internal consistency reliability for this four-question knowledge scale was $\alpha=.85$. Attitudes toward LFP were assessed using a 5-point semantic differential between nine sets of bipolar descriptors (e.g., undesirable/desirable; harmful/beneficial). A mean score for the nine items in this scale was computed for each respondent to represent their overall attitudes towards LFP. The internal reliability for the nine-question scale was $\alpha=.92$. The benefits of LFP were assessed with 12 items using a 5-point Likert-type scale (1=strongly disagree; 5=strongly agree). A mean score was calculated for each respondent to represent their overall perception of benefits. The internal reliability for this twelve-question scale was $\alpha=.92$.

Respondents were asked to indicate which of 13 LFP activities were occurring in their communities and were also asked seven questions about what the local food producers in their communities were using their products for, which was measured on a 5-point scale (1=not at all; 5=to a great extent). LGS were asked about the usefulness of seven training and informational topics related to LFP using a 5-point scale (1=not at all useful; 5=extremely useful). Respondents were asked to report the change in their attitudes towards LFP, perceived benefits of LFP, and amount of LFP activities in their communities following COVID-19. They were also asked about the perceived change in what producers were using their products for following COVID-19 and their perception of the role LFP plays in responding to public health emergencies.

Descriptive statistics were calculated on

personal and professional characteristics for all respondents ($N=92$). For LGS who responded to both the 2019 and 2020 surveys ($N=43$), paired *t*-tests were used to assess whether there were statistically significant changes in attitudes, knowledge, perceived benefits, and informational needs of LGS' who responded to both surveys. Data were analyzed using the SPSS software package.

Results

Roughly half of the respondents were elected officials (47%) and just over a third indicated that some aspect of LFP was included as part of their job duties (36%). For the length of time in their current position, 46% had been in their role for 1–5 years, with 41% having been in their role for six years or longer. More than half of respondents (57%) had served in a government role for more than 10 years. Over half of respondents (54%) indicated that the political views of the community in which they served were conservative or very conservative (see Table 1).

Just over 30% of respondents identified as Republican and either conservative or very conservative. The same percentage of respondents (32%) identified as Democrat and moderate. A large proportion of respondents preferred not to answer questions about their political affiliation or beliefs (27% and 18%, respectively). A large proportion of respondents were age 50 or older (76%) (see Table 2). Respondents indicated moderate self-reported knowledge, rating their knowledge of LFP activities in their community and their familiarity with LFP activities the highest, and rating their ability to identify key stakeholders in LFP in their community the lowest. The mean index score for this scale was 3.22 (*SD* 1.03) on a 5-point scale, putting it just above the midpoint, which indicates that these LGS had limited self-perceived knowledge (see Table 3).

LGS' overall attitudes toward LFP were positive, with a mean index score of 4.47 on a 5-point scale (*SD* .59). LGS also rated highly the benefits of LFP, with enhancing local economies, increasing food access, and generating new market opportunities for farmers rated the highest of the benefits of LFP, and increasing savings for local government agencies rated lowest. The mean index score

Table 1. Professional Characteristics of Respondents

Variable	After COVID-19 (N=92)		Both Before and After COVID-19 (N=43)	
	Number	%	Number	%
Job Position ^a				
County commissioner	7	8.0	4	9.3
City commissioner	20	22.7	5	11.6
County manager	2	2.3	1	2.3
City manager	13	14.8	5	11.6
City clerk	11	12.5	7	16.3
Mayor	13	14.8	10	23.3
City council	1	1.1	0	0
County planner	5	5.7	4	9.3
City planner	6	6.8	3	7.0
Environmental and sustainability director	1	1.1	0	0
Other	9	10.2	4	9.3
Involved with LFP as part of job duties ^b				
Yes	31	35.6	15	34.9
No	56	64.4	28	65.1
Time Served in Current Position ^c				
Less than 1 year	11	12.6	9	22.5
1 to 5 years	40	46.0	18	45.0
6 to 10 years	19	21.8	4	10.0
More than 10 years	17	19.5	9	22.5
Time Served in Government Position ^d				
Less than 1 year	2	2.3	0	0
1 to 5 years	25	28.4	10	25.6
6 to 10 years	11	12.5	9	23.1
More than 10 years	50	56.8	20	51.3
Political Beliefs/Values of Community ^e				
Very conservative	13	14.6	5	12.8
Conservative	35	39.3	16	41.0
Moderate	21	23.6	16	41.0
Liberal	6	6.7	2	5.1
Very liberal	2	2.2	0	0

^a Responses missing from 4 in After COVID-19

^b Responses missing from 5 in After COVID-19

^c Responses missing from 5 in After COVID-19 and 3 in Both Before and After COVID-19

^d Responses missing from 4 in After COVID-19 and 4 in Both Before and After COVID-19

^e Responses missing from 3 in After COVID-19 and 4 in Both Before and After COVID-19

for the benefits of LFP scale was 4.04 (*SD* .63) (see Tables 4 and 5).

The LFP activity identified most frequently as occurring in communities was farmers markets (75%), with urban farms occurring the least frequently (16%). LGS indicated that the primary uses

of LFP products were personal consumption and supporting community food access. All the training topics were rated as very useful by the respondents, with effective models that other communities have used to enhance LFP, food safety measures related to LFP, and evidence-based research on the im-

Table 2. Personal Characteristics of Respondents

Variable	After COVID-19 (N=92)		Both Before and After COVID-19 (N=43)	
	Number	%	Number	%
Political Affiliation ^a				
Republican	30	34.1	18	46.2
Democrat	28	31.8	10	25.6
Independent	4	4.5	1	2.6
Non affiliated	2	2.3	0	0
Prefer not to answer	24	27.3	10	25.6
Personal Political Beliefs/Values ^b				
Very conservative	13	14.8	5	12.8
Conservative	17	19.3	13	33.3
Moderate	28	31.8	12	30.8
Liberal	8	9.1	2	5.1
Very liberal	6	6.8	2	5.1
Prefer not to answer	16	18.2	5	12.8
Age Category ^c				
20–29	1	1.2	0	0
30–39	8	9.3	3	7.0
40–49	12	14.0	6	14.0
50–59	17	19.8	9	20.9
60–69	37	43.0	20	46.5
70–79	11	12.8	5	11.6
Sex ^d				
Female	38	42.7	15	35.7
Male	46	51.7	25	59.5
Prefer not to answer	5	5.6	2	4.8

^a Responses missing from 4 in After COVID-19 and 4 in Both Before and After COVID-19

^b Responses missing from 4 in After COVID-19 and 4 in Both Before and After COVID-19

^c Responses missing from 6 in After COVID-19

^d Responses missing from 3 in After COVID-19 and 1 in Both Before and After COVID-19

pacts of LFP being rated the highest (see Tables 6–8).

Turning now to questions specifically related to COVID-19 or public health emergencies, over 50% of respondents indicated that their overall attitude towards LFP was more positive or much more positive than before COVID-19. Almost

two-thirds of respondents judged LFP as some what or much more beneficial following COVID-19. The majority of respondents indicated that the *amount* of LFP in the communities was about the same as before the pandemic (see Table 9).

Regarding changes in how producers were using their products following COVID-19, the majority of responses in each category indicated that the uses were about the same. The uses of LFP products that had the largest proportion of respondents indicate had increased more or much more were producing food for personal consumption (45%) and supporting community food access (36%) (see Table 10). Finally, respondents were asked about their perception of the role of LFP in public health emergencies. The respondents showed moderate support for the various roles that

LFP could play in public health emergencies, rating increasing the availability of healthy food the highest (M 3.85 SD .91) (see Table 11).

Looking specifically at respondents for whom before and after COVID-19 data were available, there were no statistically significant differences in any of the index scores for the knowledge,

Table 3. Self-Perceived Knowledge of Local Food Production Topics (n=91)

Item	M	SD
I am aware of the current local food production activities in my city/county.	3.32	1.22
I am familiar with the activities included under the umbrella of local food production.	3.30	1.23
I am aware of advocacy groups for local food production in my community.	3.19	1.26
I can identify key stakeholders in local food production in my city/county.	3.10	1.25
Knowledge Index Score	3.22	1.03

Note. Responses collected using 5-point scale (1=strongly disagree; 5=strongly agree).

Table 4. Attitudes Toward Local Food Production

Item	M	SD
Unimportant–Important (<i>n</i> =88)	4.65	0.61
Bad for rural communities–Good for rural communities (<i>n</i> =89)	4.64	0.70
Useless–Useful (<i>n</i> =90)	4.59	0.66
Bad for urban communities–Good for urban communities (<i>n</i> =90)	4.54	0.72
Undesirable–Desirable (<i>n</i> =88)	4.53	0.79
Bad for traditional farmers–Good for traditional farmers (<i>n</i> =89)	4.52	0.80
Harmful–Beneficial (<i>n</i> =90)	4.50	0.69
Overall bad–Overall good (<i>n</i> =91)	4.19	0.94
Not a priority–A high priority (<i>n</i> =90)	4.13	0.96
<i>Attitudes Index Score</i> (<i>n</i> =91)	4.47	0.59

Note. Responses collected using 5-Point Semantic Differential Scale with 1 for negative terms and 5 for positive terms.

Table 5. Perceived Benefits of Local Food Production

Benefit Outcome	M	SD
Enhance local economies (<i>n</i> =91)	4.33	0.82
Increase food access and security (<i>n</i> =91)	4.29	0.78
Generate new market opportunities for farmers (<i>n</i> =91)	4.22	0.80
Improve general health and well-being of community members (<i>n</i> =90)	4.19	0.78
Foster community engagement (<i>n</i> =91)	4.15	0.83
Generate social capital in communities (<i>n</i> =88)	4.15	0.82
Provide opportunities for youth development programs (<i>n</i> =91)	4.15	0.82
Opportunities for educational experiences for community members (<i>n</i> =91)	4.15	0.73
Increase community members' consumption of fruits and vegetables (<i>n</i> =91)	4.12	0.87
Enhance the aesthetic appeal of neighborhoods (<i>n</i> =91)	3.63	0.99
Increase savings for county/city agencies (<i>n</i> =90)	3.60	0.96
Increase property values (<i>n</i> =91)	3.49	0.97
<i>Benefits Index Score</i>	4.04	0.63

Note: Responses collected using 5-point scale (1=strongly disagree; 5=strongly agree).

attitudes, or benefits scale mean scores; however, the mean score for attitudes approached significance ($p=.06$). While there were no significant differences in the mean index scores, there were significant differences in specific items, including a decrease in the rating of generating social capital in communities as a benefit of LFP. There were statistically significant increases in attitude scores on LFP being a high priority, and good for urban communities, rural communities, and traditional farmers. The only item in the knowledge scale with a statistically

Table 6. Current LFP Activities in Respondents' Communities (*n*=87)

	Number	%
Farmers markets	65	74.7
Beekeeping	56	64.4
Farm stands	55	63.2
Backyard chickens or goats	48	55.2
Community gardens	45	51.7
Mobile farm stands	38	43.7
School gardens	36	41.4
Community supported agriculture (CSA)	33	37.9
Aquaculture, hydroponics, and/or aquaponics	28	32.2
Farming on vacant lots	24	27.6
Front-yard gardening	22	25.3
Market gardens	20	23.0
Urban farms	14	16.1

significant increase was the ability to identify key stakeholders in LFP in the community (see Tables 12–14). There was a statistically significant change

Table 7. How Local Food Producers in Respondents' Communities are Using Their Products

Uses	M	SD
Personal consumption only (n=89)	3.49	0.99
To support community food access (n=88)	3.36	0.97
Purely as a hobby (n=89)	3.19	1.02
Making a living (n=89)	3.18	1.22
Supplementing household income (n=89)	3.13	1.00
To connect with members of their community (n=89)	3.11	0.87
Neighborhood beautification/revitalization (n=89)	2.58	0.98

Note. Responses collected using 5-point scale (1=Not at all; 5=To a great extent).

Table 8. Usefulness of Informational and Training Topics

Topic	M	SD
Effective models other communities have used to enhance local food production (n=88)	4.09	0.92
Food safety measures related to local food production (n=88)	4.06	0.89
Evidence-based research on the impacts of local food production (n=88)	3.97	0.90
Environmental best management practices associated with local food production activities (n=88)	3.93	0.98
How to identify stakeholders for developing local food production activities (n=87)	3.91	0.96
Research data pertaining to public perceptions of local food production (n=88)	3.90	0.94
Definitions and terminology associated with local food production (n=88)	3.61	0.98

Note. Responses collected using 5-point scale (1=Not at all useful; 5=Extremely useful).

Table 9. Perceived Change in Attitudes, Benefits, and Activities Following COVID-19

Variable	Number	%
Overall attitude towards LFP now as compared with before COVID-19		
Much more negative	0	0
Somewhat more negative	4	4.5
About the same	40	44.9
Somewhat more positive	20	22.5
Much more positive	25	28.1
Judgement of the benefits of LFP as compared with before COVID-19		
Much less beneficial	0	0
Somewhat less beneficial	1	1.1
About the same	37	40.7
Somewhat more beneficial	27	29.7
Much more beneficial	26	28.6
Amount of LFP in your community as compared with before COVID-19		
Much less	3	3.3
Somewhat less	7	7.8
About the same	58	64.4
Somewhat more	17	18.9
Much more	5	5.6

in the perceived usefulness of every informational topic, with each item being rated as more useful, aside from definitions and terminology associated with LFP, which were rated less useful (see Table 15).

Discussion

Over half of respondents reported positive changes in their attitudes towards LFP and their judgement of its benefits. However, respondents indicated that the amount of LFP in their community is about the same as before COVID-19, and they rated the role that LFP can play during public health emergencies as having only moderate benefits for their communities. Taken together, these overall responses indicate that the COVID-19 pandemic and its ongoing effects can be used as an opportunity for food systems advocates and educators to communicate about the ways in which LFP can mitigate negative disruptions in the food supply chain and foster community resilience in communities. It is worth noting that this study was conducted in the summer of 2020, so some changes in LFP that were underway may not have had time to be developed and become operational.

The low ratings of knowledge for identifying key stakeholders in LFP or awareness of advocacy groups for LFP in communities highlights a key opportunity for individuals working in food systems to provide LGS with information about individuals and groups in their communities to support LFP. In addition, the rating of all the informational and training topics as useful or extremely useful provides guidance for Extension or other groups that can provide evidence-

Table 10. Perceived Change in How Local Food Producers in Respondents' Community Were Using Their Products Following COVID-19

Uses	Percentage of Responses				
	Much less	Less	About the same	More	Much more
Personal consumption only ($n=87$)	1.1	2.3	51.7	36.8	8.0
Supplementing household income ($n=87$)	2.3	10.3	62.1	17.2	8.0
Making a living ($n=86$)	2.3	10.5	73.3	11.6	2.3
Neighborhood beautification/revitalization ($n=86$)	2.3	10.5	80.2	7.0	0
Connect with members of their community ($n=86$)	2.3	7.0	62.8	24.4	3.5
To support community food access ($n=86$)	0	5.8	58.1	29.1	7.0
Purely as a hobby ($n=87$)	3.4	5.7	60.9	25.3	4.6

Table 11. Role of Local Food Production in Public Health Emergencies ($n=87$)

Roles	<i>M</i>	<i>SD</i>
Increase availability of healthy food in the community	3.85	0.91
Foster community resilience	3.68	0.92
Increase community members' ability to support themselves	3.66	0.90
Mitigate negative impacts of disruption in food supply	3.64	0.93
Provide opportunities for social/community cohesion	3.60	0.91
Mitigate food insecurity in limited resource populations	3.55	0.94

Note. Responses collected using 5-point scale (1=strongly disagree; 5=strongly agree).

Table 12. Knowledge about Local Food Production Before and After COVID-19 ($n=42$)

Item	<i>Pre</i>		<i>Post</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
I am aware of the current local food production activities in my city/county.	3.69	0.98	3.52	1.19
I am familiar with the activities included under the umbrella of local food production.	3.45	0.97	3.50	1.19
I can identify key stakeholders in local food production in my city/county.	3.19*	1.22	3.26*	1.25
I am aware of advocacy groups for local food production in my community.	2.80	1.21	3.20	1.23
Knowledge Index Score	3.22	0.74	3.38	0.99

* $p < .05$

Note. Responses collected using 5-point scale (1=strongly disagree; 5=strongly agree).

based information and trainings to assist LGS in supporting LFP in their communities.

Because of the extensive media coverage of food supply chain disruption and increased demand on food banks in their communities (Balch, 2020; Martin, 2020; Segers, 2020; Yaffe-Bellany & Corkery, 2020), it was hypothesized that there would be significant differences in LGS' attitudes toward, knowledge about, and perceived benefits of LFP. This research did not support that hypothesis. One possible explanation for this is that LGS are a unique population who may have been largely buffered personally from the negative effects of COVID-19 on the food supply chain.

Many people in government positions were able to continue working, many from home, so their income and access to food were largely unchanged. Another possible explanation of this is that LGS rated their own knowledge of LFP as limited, so they may not have the knowledge about LFP or its benefits to have been able to see the actual or possible benefits that it could have in their community following the COVID-19 pandemic.

It is important to note that LGS were reporting on their *perceptions* on their attitudes, knowledge, barriers, and the activities occurring in their communities, which may be influenced by their age, political views, or personal level of

Table 13. Attitudes Toward Local Food Production Before and After COVID-19 (n=40)

Item	Before		After	
	M	SD	M	SD
Unimportant–Important	4.53	0.72	4.70	0.46
Useless–Useful	4.54	0.75	4.68	0.52
Bad–Good for rural communities	4.15*	1.01	4.68*	0.57
Undesirable–Desirable	4.45	0.78	4.63	0.54
Bad–Good for urban communities	4.33*	0.85	4.62*	0.58
Harmful–Beneficial	4.54	0.71	4.56	0.59
Bad–Good for traditional farmers	3.85*	1.01	4.54*	0.71
Overall Bad–Good	4.44	0.83	4.16	0.97
Not a priority–A high priority	3.78*	1.00	4.15*	0.92
<i>Attitudes Index Score</i>	4.29†	0.69	4.54†	0.40

* $p < .05$; † $p = .055$

Note. Responses collected using 5-Point Semantic Differential Scale with 1 for negative terms and 5 for positive terms.

interest in LFP. Further, the initial impetus for the research study was to gain information that could be used to develop programs and materials to support local governments' efforts to adopt policies related to LFP, but it may be that LGS are not the best source for some of the information the research team was seeking. For example, the research team wanted to know what activities are currently

Table 14. Perceived Benefits of Local Food Production Before and After COVID-19 (n=43)

Item	Before		After	
	M	SD	M	SD
Enhances local economies	4.19	0.88	4.33	0.81
Increases food access and security	4.17	0.95	4.29	0.78
Provides opportunities for educational experiences for community members	4.21	0.89	4.21	0.71
Improves general health and well-being of community members	4.16	0.95	4.21	0.71
Provides opportunities for youth development programs	4.26	0.90	4.16	0.84
Increases community members' consumption of fruits and vegetables	4.17	0.96	4.12	0.86
Generates new market opportunities for farmers	4.05	1.09	4.12	0.79
Fosters community engagement	4.14	0.86	4.09	0.87
Generates social capital in communities	4.15*	0.82	4.07*	0.76
Enhances the aesthetic appeal of neighborhoods	3.74	0.95	3.74	0.98
Increases savings for county/city agencies	3.44	1.16	3.41	1.05
Increases property value	3.42	0.97	3.27	0.82
<i>Benefits Index Score</i>	4.02	0.79	4.02	0.60

* $p < .05$

Note. Responses collected using 5-point scale (1=strongly disagree; 5=strongly agree).

Table 15. Usefulness of Informational Needs Before and After COVID-19 (n=38)

Item	Before		After	
	M	SD	M	SD
Effective models other communities have used to enhance local food production	3.82*	1.16	4.03*	0.98
Evidence-based research on the impacts of local food production	3.82*	1.01	4.00*	0.90
Food safety measures related to local food production	3.92*	0.92	3.97*	1.01
How to identify stakeholders for developing local food production activities	3.79*	1.04	3.95*	1.06
Environmental best management practices associated with local food production activities	3.95*	0.96	3.89*	1.09
Research data pertaining to public perceptions of local food production	3.66*	1.10	3.89*	0.95
Definitions and terminology associated with local food production	3.82*	1.01	3.55*	0.98

* $p < .05$

Note. Responses collected using 5-point scale (1=Not at all useful; 5=Extremely useful).

occurring in communities and how LFP producers are using their products; in considering the results of this research, it is likely that those questions would be better asked of LFP producers or people working in food systems, rather than the people in government who are responsible for drafting and implementing policy. In addition, LGS may see their mandate as representing the wishes of their constituents, so research into the attitudes and perceptions of residents or of LFP producers may have actually been a better way to gain information that would help LGS to support LFP in their communities.

Conclusion

An unexpected effect of COVID-19 has been increased media and public attention on food systems. While much of this attention has been targeted at supply chain issues and food insecurity, it may also have increased awareness of LFP and its potential value for communities. Extension educators and food systems advocates can capitalize on this unique situation by providing evidence-based information on the benefits of LFP and examples of effective models that could be used to develop LFP programs in their communities—particularly as the pandemic has lasted long enough for LGS, producers, consumers, and businesses to seek measures to mitigate risk and uncertainty moving forward.

To that end, quantitative and qualitative research to document the benefits of LFP could be beneficial in creating educational materials specifically targeted to LGS. As mentioned previously, information from other perspectives would be particularly valuable because this population of LGS may have been spared many of the negative effects of COVID-19 on food systems. Additional

research focusing on the perceptions, knowledge, attitudes, and informational needs of community members and local food producers would help to provide a more complete picture of how COVID-19 has affected perspectives on LFP and on the role LFP can play in communities during public health emergencies. While adopting policies to support LFP can be an important element of increasing food system resilience, there are additional, complementary opportunities for LGS to support food systems and food security. These opportunities include dedicating funds to create infrastructure to support local and regional food distribution, and serving the “enabling” role previously mentioned by serving as a convener for multistakeholder councils. While COVID-19 has increased attention to food systems, it is important that this attention move from an emergency response to long-term planning and food systems development. 

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Alternative food distribution networks, resilience, and urban food security in Turkey during the COVID-19 pandemic

SPECIAL ISSUE COSPONSORED BY INFAS:
 THE IMPACT OF COVID-19 ON FOOD SYSTEMS



Inter-institutional
 Network for
 Food and
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 Sustainability

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Abstract

This article explores the potential of alternative food networks (AFNs) for food security and resilience as COVID-19 has raised challenges to the global food supply chain. Pandemic-induced disruptions to conventional food production, distribution, and consumption networks have revealed problems with the global food system and have drawn attention to the re-localization and regionalization of food systems. Lockdown and mobility restrictions have also disrupted the availability, quality, and stability of food. We evaluate how

AFNs have responded to these challenges in a non-western context through a case-study approach informed by participant observation and semistructured interviews. After examining the multiple factors that have been critical to the emergence and expansion of AFNs in Turkey since the mid-2000s, we argue that these food distribution networks have aimed to address food security, environmental sustainability, and farmer livelihoods in complementary ways. We provide a timeline of state-led measures in response to COVID-19 in Turkey as we consider their impacts on food distribution systems and access in urban areas. We then compare two AFNs: a food community working within a participatory guarantee system, and a

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Authors' Disclosure

Both authors are members of the online group Natural Food Network; the first author has been a member since 2014, and the second author since 2019. The second author has worked as a volunteer at Kadıköy Cooperative since January 2019. She is also an official partner of Kadıköy Cooperative. As per the cooperative's structure, she receives no financial benefit from the partnership. Neither author receives any financial or other benefit by publishing this article.

consumer cooperative that connects producers and consumers in urban areas. Although the two AFNs faced initial challenges due to disruptions in delivery services and lockdowns, they have been able to continue their services and address increasing demand. They also provided special solidarity packages for those adversely affected by the economic impacts of COVID-19. By building on the existing networks and relationships of trust between consumers and producers, and the capacity and willingness of producers to adapt to the new regulatory environment, the two AFNs have been able to continue their activities and start new initiatives.

Keywords

Alternative Food Networks, COVID-19, Turkey, Pandemic, Food Security, Resilience

Introduction

The COVID-19 pandemic has disrupted global food supply chains and exposed systemic weaknesses (Zurayk, 2020). Whereas some places have suffered from empty grocery shelves, others have experienced food loss due to fresh produce accumulating at farms (Held, 2020; Torero Cullen, 2020). As more people live in urban areas and depend on markets and distribution networks, social distancing measures have limited the internal and external logistics of food distribution networks. The short-term impacts of COVID-19 may also differ across the global North and South (Chin, 2020; Crush & Si, 2020; Skerritt, Patton, & Onu, 2020). Outbreaks of the disease and a lack of personal protective equipment have undermined the operation of food processing plants, food harvests, and market operations. At the same time, consumers have faced purchasing limits, higher prices, or fewer choices (Elejalde-Ruiz, 2020; Gallagher & Kirkland, 2020).

Although the long-term impacts of the COVID-19 outbreak remain unclear, the pandemic has raised new questions about food security and resilience. Here, we define food system resilience as

the capacity and ability to withstand and overcome disturbances (Worstell & Green, 2017). As the scope of the crisis continues to be assessed, several authors have called for food systems to strengthen their resilience by becoming more localized (Clapp, 2020; Held, 2020; Temürçü, 2020). The spread of COVID-19 has adversely and unevenly affected producers, transporters, processors, retailers, vendors, and consumers in local and national food systems by affecting the availability of food, access to it and its stability (Béné, 2020). Implicit in calls for more resilient local food systems has been the understanding that the global food system has remained as fragile as ever.

Recent academic literature on alternative food networks (AFNs) has given attention to these calls for the localization of food systems. Localization often refers to shortening the supply chain by eliminating, for instance, intermediary distributors, and increasing the geographic proximity between producers and consumers. Such place-based alternatives offer self-sufficiency while ensuring traceability. AFNs also promote alternatives to global industrial food production, including fair treatment of workers and sustainable agricultural production (Chase & Grubinger, 2014). As in the case of food hubs or cooperatives, AFNs expand local food distribution networks and help small farmers access larger markets and preserve their livelihoods (Perrett & Jackson, 2015).

Despite well-established research on AFNs and their contributions to food security and resilience,¹ the existing literature gives inadequate attention to the role of AFNs in the global South and their contributions to food systems (Pratley & Dodson, 2014). Likewise, during the pandemic, we have heard more about COVID-19 responses from the global North.² This paper aims to close this gap in the literature. By considering a case study from Turkey, we discuss how two AFNs that have been connecting producers and consumers effectively in urban areas of the country have responded to the COVID-19 pandemic, which challenges these net-

¹ See the Ackerman-Leist (2013) and Jarosz (2008) for a case study of the U.S.; Levkoe (2014); Sumner, Mair & Nelson (2010) for Canada; Larder, Lyons & Woolcock (2014) for Australia and Blake, Mellor & Crane (2010) for U.K.

² Food studies journals published in English, including the *Agriculture Human Values*, *Gastronomica*, *Food and Foodways*, and this journal have published articles and reflections on the impact of COVID-19 and food systems starting in the summer and fall of 2020.

works have faced in the short term, and what kinds of promises they hold for the localization of food systems. We focus on two AFNs: the online Natural Food, Conscious Nutrition Network food hub (Doğal Besin, Bilinçli Beslenme Ağı, referred to as Natural Food Network hereafter) and a consumer cooperative, Kadıköy Cooperative. These AFNs operate in two urban centers respectively: Ankara, Turkey's capital, and Istanbul, the country's financial center, where 18% of its population resides. Istanbul also constitutes about one-third of the food transportation flows in Turkey (Aslan & Demir, 2018). We argue that these AFNs were able to continue their distribution under serious lockdown and mobility restrictions during the initial months of COVID-19 due to the diversity of producers within their networks, their flexibility in procurement and distribution, and the ability of their producers to use household labor. They were also able to adapt quickly and respond to disruption in a way that did not undermine the well-being of the producers or consumers in their networks. However, due to lockdown measures affecting those over the age of 65 and those with chronic health conditions, not all producers were able to connect to consumers immediately.³

In the new regulatory environment that has emerged after COVID-19, these two AFNs have been quick to address challenges on the consumption side with calls for solidarity, adjusted work hours, and practices conforming to new mandates for social distancing. They have also continued to serve urban consumer centers with fresh, healthy, and good food.⁴ On the producer side, they have coordinated the smooth movement of fresh and processed food items so that their food would not be wasted and nutritious food would be available for consumers. Their adaptations to the new and changing regulations have been swift. Although delays in mail deliveries for the Natural Food

Network and reductions in Kadıköy Cooperative's hours of operation decreased both organizations' interactions with consumers, both have been able to continue food distribution and maintain relatively normal operations. As the two cases demonstrate, stronger local and regional food systems have ensured both economic opportunity for small producers and access to fresh and clean food for consumers in densely populated urban centers during and after disturbances. Both AFNs have also adapted to offer solidarity purchases where producers and consumers purchase items for people in need in Ankara and Istanbul, suggesting that the AFNs have the capacity to move quickly to respond to food security aftershocks.

After a review of relevant scholarship, we discuss the emergence and roles of AFNs in Turkey. Then we chronicle the regulatory measures taken in Turkey in response to COVID-19. After outlining our methodology, we move to the case studies. We examine in detail the organizational background of the Natural Food Network and Kadıköy Cooperative and focus on their responses to COVID-19. These case studies scrutinize how each organization reacted with new approaches to the changing regulatory environment and to the new challenge of food insecurity raised due to the pandemic. We end with a discussion comparing the responses of these two AFNs and evaluate their ability to respond to disturbance, while also acknowledging their limitations.

Background

Alternative Food Networks

AFNs emerged as a response to the environmental externalities of the industrialized and globalized food system and to pervasive social and economic inequalities (Alkon & Guthman, 2017; Chase & Grubinger, 2014; Holt Giménez & Shattuck, 2011).

³ According to the Turkish Chamber of Agricultural Engineers, most of the producers in conventional agriculture as well as AFNs in Turkey are over the age of 55 (Değirmenci, 2020).

⁴ AFNs in Turkey use different descriptors to define the food they circulate: While not all of the food distributed through AFNs is certified as organic, they emphasize descriptors as fresh, clean, healthy, good, just food to define production following agroecological principles that also respect and preserve local seeds and farm labor justice. A lack of trust in private certification agencies and the difficulties faced by smallholders in accessing certification make organic certification unnecessary, if not undesirable, for many (see Soysal Al & Küçük, 2019). For that reason, these networks rely on different forms of trust-building, such as the establishment of participatory guarantee systems (PGS).

As such, they represent “efforts to respatialize and resocialize food production, distribution and consumption” (Jarosz, 2008, p. 231). AFNs not only procure and distribute food through alternative channels, such as farmers markets, consumer cooperatives, and premium specialty food and voluntary labels (fair trade, organic, etc.), they also offer a range of food-related activities (Ackerman-Leist, 2013).⁵ By eliminating intermediaries from the process, direct marketing efforts by AFNs bring producers and consumers together and help them develop bonds of trust. These trust relationships bypass third-party certification systems and allow participatory guarantee systems (PGSs)⁶ to ensure the quality of food (Loconto & Hatanaka, 2018). Producers within AFNs often prohibit or strive to limit the use of certain conventional inputs and practices, think about the ecological footprint of food production from seed to waste, and incorporate diverse practices and crops (Chase & Grubinger, 2014).

Different values shape the work of AFNs. At their heart is a desire for decentralization, independence from fossil fuels and other inputs, community at local and regional levels, harmony with nature, diversity in practices and crops, and restraint from abusing nature, workers, and animals (Sumner et al., 2010). Several AFNs, particularly those in the global South, consciously resist corporatization (Fraser, 2017; Holt Giménez & Shattuck, 2011). Thus, some producers within AFNs reject genetically modified (GM) agriculture and seeds, citing implications for patenting life,

ecosystem impacts, and ethical concerns. AFNs have increased the availability and variety of locally grown foods in several communities (Nelson & Stroink, 2014). Cooperative food systems, a subset of AFNs, create a web of mutually beneficial activities for producers and consumers. Based on their commitment to cooperation and democratic processes, they also aim to reshape the dominant social-economic organization of food systems (Sumner, McMurtry, & Renglich, 2014). AFNs face tension in balancing the affordability of local, organic, or healthy food with viable incomes for producers, but their emphasis on local food systems creates complex adaptive systems (Nelson & Stroink, 2014).

Scholarly literature has also considered problems associated with alternative foodscapes.⁷ Although AFNs have defied simplistic categorization, many have responded to injustices and problems of the corporate food regime through various methods and practices, within and across countries (Fraser, 2017). As they incorporate strategies from anti-hunger and food sovereignty initiatives, support small farms and local production, and advocate for sustainable agriculture, clean food, and health, AFNs have occupied an oppositional status and enjoyed transformative potential to deliver progressive systemic change in food provisioning (Goodman & Goodman, 2009).

AFNs in the Turkish Context

An upper-middle-income economy, Turkey has achieved significant economic and social develop-

⁵ Other activities AFNs engage in include, but are not limited to, educating about and growing food; developing formal policy and infrastructure; implementing initiatives reconnecting producers and consumers such as field days; conserving agricultural land; and developing mechanisms to enable the participation of all consumers (Ackerman-Leist, 2013).

⁶ Participatory guarantee systems (PGS) are networks that consist of farmers, experts, public sector officials, food service agents, and consumers. They reallocate authority away from experts to a multistakeholder group. They help certify producers based on active participation of stakeholders and are built on a foundation of trust, social networks, and knowledge exchange. Connecting consumers to producers, the PGSs “create a local system of production and consumption whereby multiple stakeholders experiment with sustainable agriculture technologies on farms, but also collectively ensure that the organic agriculture techniques are adopted by setting standards and verifying their compliance” (Loconto & Hatanaka, 2018, p. 415).

⁷ AFNs were criticized for allowing the privileged class to continue consumption by emphasizing the sale of alternatives (Allen, 2008). AFNs were also criticized for failing to address structural problems in the system, such as the state’s responsibility in regulating environment and health (Alkon & Guthman, 2017). As organic and fair trade labels become more popular, these production methods can also be co-opted by multinational corporations and supermarket chains (Fraser, 2017; Guthman, 2004). Some labels may not always live up to the standards they put forth (Besky 2014). In the U.S., the sustainable agriculture movement has also been criticized for privileging the economic needs of small and organic producers rather than addressing the needs of low-income people (Guthman, Morris, & Allen, 2006).

ment results since the early 2000s (World Bank, 2017). The number of people living and employed in rural areas of Turkey has been declining since 2000, both in absolute and relative terms (Kan et al., 2019). As a result of legislative changes in 2013 (Law No. 6360), which redefined rural areas and classified villages as neighborhoods of municipalities, exact figures for the rural population are unknown (Republic of Turkey Ministry of Development, 2019).⁸ Agricultural policies since the 2000s have expanded neoliberal policies into the agricultural sector, and state support for farming largely has been withdrawn (Aydın, 2010). Although Turkey recovered quickly from the 2009 global financial crisis and enjoyed high growth rates until 2015, this recovery also resulted in large external and internal imbalances (World Bank, 2017). Following a failed coup attempt in 2016 and geopolitical turmoil, Turkey's gross domestic product (GDP) was projected to decline by 3.8% in 2020 (World Bank, 2020). When the pandemic started, the burden of Turkey's external debt was already affecting its economy. The most prolonged recession of 2018 has been characterized by persistently low or negative rates of growth, dwindling investment performance, problems repaying debt, rising unemployment, a spiraling currency depreciation, and high inflation (Orhangazi & Yeldan, 2020). As prices in imported goods and inputs for agricultural prices have increased, food prices have also spiked, and the depreciation of the Turkish lira has reduced the purchasing power of consumers.

Legal changes, including the Wholesale-Market Law (Law No. 5957) and Seed Law (Law No. 5553), encouraged the consolidation of food distribution networks and supermarket chains and have made it difficult for small producers to compete against larger producers (Atasoy, 2017). A range of

food scares, including mad cow disease and bird flu, incurred significant economic and social costs and provoked consumer anxieties. The lengthening of food supply chains, increasing food imports, presence of synthetic ingredients in food, and scandals involving tainted food have also brought shifting nutritional advice to consumers, who have lost their trust in the state and markets (Atalan Helicke, 2020). While manufacturers and retailers have worked to re-establish consumer trust, grassroots movements by activists, consumers, and nongovernmental organizations (NGOs) in Turkey have also pursued initiatives to address these anxieties and establish closer links to producers. (Nizam & Yenal, 2020)

Similar to factors in the emergence of AFNs in the North, AFNs in Turkey focus on localization. In the Turkish context, "local" means working with other local organizations, groups, and initiatives on the basis of trust relationships, and following principles of ethics and justice in food access (Doğançayır & Kocagöz, 2018). Efforts in Turkey to shorten the food supply chain and promote localization include serving a specific geographic area (Kadıköy Cooperative), working with consumers in a particular place (Natural Food Network), and collaborating with producers in a certain place. Several AFNs in Turkey emphasize "good-clean-just agriculture" principles (Çelik, 2016). They have also built stronger connections between small producers and consumers through organic farmers markets and weekly bazaars (*paazar*)⁹ in urban centers of Istanbul and Ankara, and they have tapped into online forums to create collective initiatives. A common concern is urban consumers' access to food produced by sustainable practices or respect for labor justice.

The number of AFNs in Turkey that provide community supported agriculture (CSA) or partici-

⁸ Coinciding with the aftermath of the 2009 global financial crisis, the agricultural policy changes resulted in "a mass urban flow (urban-directed migration), and the formation of extended (rural-urban) settlement structures involving various types of mobility and novel living structures" (Öztürk, Topaloğlu, Hilton, & Jongerden, 2018, p. 516). A new phenomenon called "retirement villages" is changing village characteristics: People return to their hometowns or parents' villages to farm both as an "income-generating" activity and "as a strategy to resist commodification in agriculture" (Öztürk et al., 2018, p. 513).

⁹ A *paazar* is an outdoor market serving different neighborhoods one day a week year around. These markets are managed by the municipalities. Middlemen often sell fresh fruits, vegetables, cheese, eggs, honey, legumes, and other dried food, along with small kitchen and bathroom items, such as pans, salt shakers, and mirrors. They often sell conventionally grown items without a label of the origin for fresh fruits and vegetables.

patory guarantee systems (PGS) has increased from 10 in 2015 (Urgenci, 2016) to 43 in 2020 (Gıda Toplulukları, 2020). We date the emergence of these AFNs to the early 2000s and to two inter-linked phenomena. First, the Buğday Association for Ecological Living (referred to as Buğday from now on), an Istanbul-based NGO, has been a leading actor in the clean and healthy food movement since its founding in 2002. Buğday has established organic farmers markets and a seed conservation and exchange network, initiated agricultural tourism (a project bringing volunteers to ecological farms), and implemented several other projects connecting consumers and producers. Similarly, its campaigns, such as its effort to ban toxic chemicals from agricultural production, have created public awareness about clean food. Altogether, these efforts have also contributed to the formation of a network of individuals who have become leaders in establishing food communities or working toward policy change (Buğday, n.d; Çanga, Kutlu, & Çalışkan, 2018). Second, Buğday and other actors established a network in 2004 to reduce the use and import of GM food in 2004, thereby enhancing solidarity and collective action among grassroots organizations.¹⁰ Since then, the organizations within these networks have worked closely to build sustainable food systems. Led by an umbrella organization of environmental and consumer rights groups, academicians, groups representing agricultural engineers, producer associations (e.g., the Confederation of Farmer Unions), doctors associations, and organic certification agencies, the anti-GM platform made grassroots demands for clean and healthy food more visible in the public arena.

Before COVID-19, each AFN we examine had a well-established network and connected small producers engaged in sustainable food production practices with mainly middle-income urban consumers in major urban centers in Turkey. They had access to the crops grown by a diversity of producers, who maintained successful traditional varieties, such as heirloom varieties and landraces. Yet, these producers were flexible enough to incorporate innovation. These two AFNs generated sufficient

income to maintain their operations and support small producers. The producers they worked with farmed in different places in Turkey and relied mainly on family and friends for labor. Small producers may have high vulnerability to shocks due to their small or micro-scale operations, lack of access to insurance, and insufficient cash flow. Over the years, however, these AFNs devised methods to support small producers. They developed trust relationships among consumers and producers and remained active during political and economic crises in Turkey. In this sense, they effectively addressed disturbances and worked toward building a resilient food system while ensuring livelihoods for small producers.

Both the Natural Food Network and Kadıköy Cooperative emphasize collective food systems and reject hierarchy. The initiatives are organized differently. The Natural Food Network is a decentralized network. It emphasizes CSAs and PGS, coordinates exchanges between consumers (three-fourths of whom are in Ankara) and producers around Turkey. Kadıköy Cooperative provides a physical space where fresh crops and processed food items are gathered from small producers throughout Turkey and sold to consumers in the Kadıköy neighborhood of Istanbul, with an emphasis on solidarity economy and grassroots mobilization.

COVID-19 and Response: Regulatory Measures and Impacts on AFNs

Turkey reported its first COVID-19 case on March 11, 2020, and like many other countries, started to implement stay-at-home measures starting March 15. All K-12 education was closed for a week, then resumed remotely. All non-essential businesses were closed gradually between March 15 and March 21, while community prayers at mosques were banned. Age-based curfews for those over 65 years old and younger than 20 years old were implemented. Restaurants and pastry shops were kept open for to-go orders. Limited grocery store and supermarket hours (9 a.m. to 9 p.m.) were announced on March 24 throughout Turkey

¹⁰ Turkey does not cultivate GM crops. It has imported GM animal feed since 2011, and continues food imports from countries that cultivate and process GM crops (Atalan Helicke, 2015).

(Karadağ, 2020). Farmers markets and *pazar* continued to operate under new guidelines, such as increased distance between stands, restrictions on the number of visitors, and the prepackaging of all food items. Grocery stores and supermarkets were allowed to admit only a limited number of customers at a time, corresponding to one tenth of their usual capacity (Karadağ, 2020). Lines of consumers in front of markets became common in densely populated areas of metropolitan cities, while some people resorted increasingly to online markets or market delivery systems. Restrictions on intercity travel did not extend to food and agricultural items. Even when there were delays, stocks were quickly replenished. Yet, the prices of a variety of food items increased dramatically (Yıldırım, 2020).

After the first few weeks, universal curfews were imposed in metropolitan cities, first over the weekends, then over extended holidays (April 23–26 and May 16–19).¹¹ During weekend curfews, only bakeries selling bread and other food items and drinking water vendors were allowed to operate, provided they worked with a delivery system (CNNTürk.com, 2020). People were still not allowed to go outside their homes, except to shop in neighborhood grocery stores and bakeries or to receive home deliveries between specific hours (9 a.m.–2 p.m. during April 23–26, and 10 a.m.–4 p.m. during May 16–19).

COVID-19 measures affected the agricultural sector in Turkey in many ways, as the pandemic coincided with both the planting and harvest seasons for different crops. In the fields, workers risked exposure to the virus and had to practice social distancing and wear masks. Although exceptions were granted by local authorities (Özdemir, 2020), many farmers were restricted from working outside due to the age-based curfews or safety measures. New guidelines for transportation and

for accommodation of seasonal farm workers were announced, but these largely failed to provide a safe working environment (Zırh et al., 2020). Since the agriculture sector was excluded from the government's Economic Stability Shield program to provide financial relief during the crisis, producers did not receive any financial support during this period.

Problem Statement

Examining these two organizations in Turkey helps us understand how AFNs emphasizing collective food systems address short-term challenges during significant disruptions. These AFNs have shifted their operations and priorities in line with a shift in the regulatory environment and adapted different mechanisms to ensure that consumers and producers maintain trust. Although Turkey has been prone to lockdowns historically due to periodic political crises or authoritarian policies,¹² the period examined here represented the longest series of lockdowns for the majority of the population with consequences for food production (e.g., planting and harvest) and consumer access. A few of these lockdowns coinciding with religious holidays have led to a consumer rush to markets and increases in food prices (Abiral & Atalan-Helicke, 2020). However, general food availability has not fluctuated in Turkey. Reduced wages and loss of income have destabilized food security for some in large urban centers. In response, the solidarity mechanisms these AFNs fostered between consumers and producers provide a model of how to maintain both small producer livelihoods and urban food security.

Methods

Case study research design, participant observation, and semistructured interviews allow us to understand the experiences, processes and practices of

¹¹ By June 1, 2020, Turkey reported a total of 166,000 COVID-19 positive cases and 4,609 deaths. The highest daily reported cases were about 2,000 in March; 5,000 in April; and 1,600 in May. Turkey eased most of the lockdowns by midsummer. It is compulsory to wear masks in Turkey (fines are charged to those who do not wear masks at 900 Turkish liras, equivalent to US\$130). As of November 12, 2020, Turkey reported a total of 404,000 cases and 11,200 deaths.

¹² For a generation over a certain age and for certain regions in Turkey, lockdowns are not uncommon, but for younger generations (particularly those in Ankara and Istanbul), lockdowns are a new phenomenon. Heper and Evin (1988) examine the protests, lockdowns, and political instability in Turkey after the 1970s, and the impact of the 1980 *coup d'état* on democracy and civilian-state relations. Mecellem (2018) discusses the continuing political crisis in Turkey's southeast starting in the 1990s and the impact of lockdowns on the human rights of Kurdish minorities.

AFNs (Jarosz, 2008). Case study methodology focuses on an intensive analysis of an individual unit (as a person or community) to understand the particularity and complexity of a phenomenon (Harrison, Birks, Franklin, & Mills, 2017). In the internet age, digital communication through email listservs as well as social media shares also has become part of the natural setting used in the analysis of case study research (DeWalt & DeWalt, 2011).

In this article, our analysis focuses on how these two AFNs responded to COVID-19 between March and May 2020. We examined email exchanges between producers and consumers in the online discussion group of Natural Food Network, and social media announcements of Kadıköy Cooperative between March 13, 2020, and May 25, 2020. In addition, we reviewed articles, reports, and popular news stories in English and Turkish about AFNs (after 2005) and COVID-19. We filtered these sources through keywords, such as food community, food group, food security, small farmer, COVID-19, coronavirus, and social-distancing measure. While the first author interviewed two producers in the Natural Food Network in July 2019 and two moderators in May 2020, the second author has been conducting ethnographic fieldwork with various actors involved in AFNs in western Turkey.

Case Studies

Natural Food Network (Doğal Besin, Bilinçli Beslenme Ağı)

Organizational background

The Natural Food Network was established in 2009 to connect consumers in Ankara with producers who produce according to agro-ecological principles. The producers connect with consumers via an email listserv, WhatsApp, and a phone order system. After receiving orders, many producers ship their produce or processed food items via

courier service or postal shipments. Producers closer to Ankara deliver their products directly to drop-off points using their own vehicles.

There are 25 producers in Natural Food Network; 20 have been members for more than three years. Producers are located at different distances from Ankara, a city in central Anatolia with a semi-arid continental climate. The closest producers are located in the villages of Güneşköy (50 km or 31 miles from Ankara), where there is an eco-village, and Tahtaörencik (104 km or 65 miles from the capital), which hosts a producer cooperative. These villages provide CSAs for vegetables, eggs, meat, cosmetic products, and herbal supplements.

The Natural Food Network provides over 100 different food and food products. While its initial mission was to expand “local production and local consumption,” the limited availability of fresh fruits and vegetables due to the seasonality of production in Ankara requires the procurement chain to include all of Turkey (personal communication,¹³ May 18, 2020). The service area of the Natural Food Network is “local”: as of May 2020, 77% of its consumers are from Ankara, followed by 13% who are from Istanbul. These two urban centers constitute 90% of all its consumers.¹⁴ Periodic consumer surveys since 2016 show that the Natural Food Network has an average of 203 new members per year.¹⁵

The mission of Natural Food Network is multifold; it endeavors to establish trust among consumers and producers through direct marketing, support small producers, expand agro-ecological production, enable consumers’ access to clean and healthy food, support CSAs and other food communities, engage in collective action to address the food system problems, and facilitate PGS that works on a volunteer and decentralized basis (DBB Katılımcı Sözleşmesi, 2019). The Natural Food Network coordinates visits to producers’ fields. Although it does not require organic certification, the Natural Food Network requires producers to

¹³ The research protocol under the institutional review board states that the author would not disclose the identity of the research subjects, so personal communication cited in this article is anonymous.

¹⁴ The total number of consumers in the Natural Food Network is 2,100 (since February 2016). They are distributed across 47 out of 80 cities of Turkey (personal communication, May 19, 2020).

¹⁵ Membership was lower than average in 2009, in its initial year. As discussed below, membership is higher in 2020.

follow agro-ecological principles. These include, but are not limited to, bans on chemical use, artificial insemination, conventional ready-to-use milk supplements for livestock, and added sugar for honeybees. The AFN also encourages the use of local or heirloom seeds, the conservation of local varieties, and the sustainable management of natural resources (DBB Katılımcı Sözleşmesi, 2019). The Natural Food Network requires regular updates from its producers on their production techniques and feedback from consumers about its producers and products. The Natural Food Network does not set prices for products but encourages solidarity in terms of setting prices (Uysal & Bektaş 2016). The assumption is that a fair price will address food security for consumers and livelihoods of producers (personal communication, May 19, 2020).

The Natural Food Network is run by voluntary moderators. As of 2020, there are five moderators, two of whom reside in Ankara. Prior to its recent annual meeting, all moderators were from Ankara. However, with the expansion of consumers to all of Turkey, the emphasis on Ankara has been removed (personal communication, May 18, 2020). The moderators facilitate feedback mechanisms among producers and consumers, and coordinate events and field days.

Since its establishment, the Natural Food Network has collaborated with the Buğday Association on different projects, including a project to provide direct, trustworthy access to natural and local produce project (Gıda Toplulukları, 2020). It cooperates with other food initiatives in Ankara on organizing workshops, special deliveries, and distribution days. It also supports the cooperatives in its network and encourages them to work together. These collaborations are based, in part, on the Natural Food Network's mission to encourage collective-action solutions to food system problems.

The Natural Food Network's response to COVID-19

In the early days of the pandemic, the ability of the

Natural Food Network to continue food distribution without major disruption received attention from Ankara Metropolitan Municipality. Natural Food Network moderators had several online meetings with the municipality and started a new initiative (in cooperation with the Buğday Association) to expand PGS to small producers around Ankara and provide market access for them (personal communication, May 19, 2020). Since the COVID-19 curfews were imposed, some of the Natural Food Network moderators, founders, or active producers have met several times with other AFNs to discuss the impact of COVID-19 and alternative pathways to build a resilient food system (personal communication, May 18, 2020). The Natural Food Network has pursued CSAs as a solidarity mechanism since its establishment and, during the COVID-19 crisis, moderators also called for a solidarity system between producers and consumers and among consumers to address the food security of urban consumers. Consumers paid extra for their purchases, and that revenue was then used to cover the cost of providing food for people in need. The calls were sporadic, and either the producer or network moderators could ask for a solidarity food package to be prepared anytime.¹⁶

The COVID-19 pandemic has increased the number of new members in the Natural Food Network system: March and April 2020 represented two of the busiest months in its previous four years. Several Natural Food Network producers have experienced an increase in sales, sometimes three times their regular sales, with a focus on nonperishable food items, such as flour and cracked wheat (*bulgur*). Some producers shared emails about the rise in demand and the pressure on them for shipment, whereas other producers and consumers also expressed concerns about the curfew measures and their impacts on courier shipments and producers' delivery systems. One producer reported running out of packing supplies and stopping shipments as a result. While most of the producers were able to continue the shipments and

¹⁶ As of May 25, 2020, 1092 Turkish lira (US\$160) was collected in the solidarity system, and packages were sent to nine families, along with additional gifts of soaps and healing creams. In the system, the consumer can choose items or pay 90% of selected items (prepared in advance by the producer). The producer then pays the remaining 10% and ships the items to a family or individual in need, defined by the consumer or the Natural Food Network moderators.

address the rising demand, only one producer reported that he could not continue production and shipments due to COVID-19's impacts on his family (personal communication, May 18, 2020).

A few of the producers shared hopeful comments about the impact of COVID-19 on food systems and transformation potential for local and small production systems. Indeed, the Natural Food Network was approached by a rural development agency that asked it to provide training on how to shorten food supply chains. One moderator added that experts and policymakers “pay attention to [their] messages more carefully” and “work with [them] more closely” (personal communication, May 19, 2020). One producer cooperative member who used to be a moderator reported an increasing number of people from Ankara going to their ancestors' villages to garden. He supported this growing interest, adding, “Although any interest in agriculture, particularly by the youth, should be celebrated, this is not [what we seek to accomplish] for agriculture” (personal communication, May 19, 2020). He emphasized his support for a group of local producers engaged in continuous cultivation of lands rather than retirees as part-time hobby gardeners. Because many of the producers in the Natural Food Network are small producers who rely on household labor, they did not report any challenges on labor shortages. Moderators were not directly involved in checking for sanitation and other practices employed by the producers since this is a decentralized initiative. Moderators shared additional education materials and their perspectives on COVID-19 impacts on the food system, and organized online Zoom meetings on food safety. Overall, the producers and consumers within the Natural Food Network did not report major bottlenecks in terms of access to and distribution of food. The diversity of products in their network, the availability of some products sold by different producers, and the transparency and open communication within the network has allowed its production and distribution systems to continue.

Kadıköy Cooperative

Organizational background

Kadıköy Cooperative started out as an initiative

during the public forums organized in the Caferağa neighborhood of Kadıköy following the Gezi protests in 2013. After several gatherings in 2014 and a brief pause, the constituents convened again in 2015 to strengthen solidarity economies, support local production and consumption, popularize ecological and traditional farming methods, and transform consumption habits. Working closely with other consumer cooperatives in Istanbul and the Confederation of Farmer Unions (Çiftçi-SEN), volunteers compiled a list of producers to organize distribution of food packages in the neighborhood to those in need. After five distributions, the cooperative was officially established in 2016 and a small store opened. Until November 2019, the store was open with limited hours. Since then, a move to a bigger shop enabled the storage of a larger volume of items and longer hours (12–9 p.m. on weekdays, 10–6 p.m. on the weekend), making a larger number and variety of ecologically produced items available for urban consumers.

A nonprofit enterprise, the cooperative works on a volunteer, nonhierarchical, and participatory basis. It currently works with about 40 active volunteers. Five basic principles inform the activities of the cooperative: (1) “working with small producers without intermediaries” enables support for small-scale production; (2) “taking joint initiatives on production and consumption” helps devise collective processes by which to decide what, when, how, and how much to produce, which represents one definition of food sovereignty; (3) “collective work and sharing” create participatory and transparent mechanisms for internal and external organizing; (4) “ecological-social relations” are prioritized to support an ecological framework that cares about labor, nature, and the collective good; and (5) “social solidarity” is exercised to show solidarity with disadvantaged groups (Kadıköy Kooperatifi, n.d.). Any revenue supports the operations and sustainability of the cooperative, with a smaller amount delivered to other nonprofits for solidarity.

Kadıköy Cooperative sells food produced non-industrially from heritage seeds and without chemicals or labor exploitation. There is a preference for producers in the following order: Women producers, organized producers, producers supporting

organized consumer groups, disadvantaged producers, and subsistence farmers. A volunteer is assigned to every producer to maintain communications, place orders, and convey consumer feedback. The mediating work of the cooperative volunteers, who are also consumers, allows for a direct link between consumers and producers whereby producers' needs, worries, and problems can be communicated to consumers and solutions collaboratively found. Thus, the cooperative presents not only a shorter supply chain, but also a collective process to organize production and consumption. The store also serves as a meeting place for consumers and producers.

The store is open to the general public, and anyone who agrees with the above five principles is invited to join. The cooperative continues to procure from 42 producers and producer cooperatives in Turkey and supplies a range of products¹⁷ that include olives, olive oil, legumes, cheese, and fresh fruits and vegetables (when available). Eggs are supplied from one farm in Adapazarı (160 km or 99 miles); walnuts and chestnuts come from a producer in Bolu (260 km or 162 miles). The distance expands as some olive oil is procured from a cooperative in the Aegean coast (748 km or 465 miles), and some legumes come from Turkey's Eastern region (1,228 km or 763 miles). Similar to the challenges facing the Natural Food Network, it is not possible to procure the diversity of products for the cooperative in and around Istanbul. The stories of where products come from and how and by whom they are produced are shared through product labels. As part of solidarity efforts, customers who shop at the store can also buy products to be picked up by someone else. The clientele mostly consists of those who live in the neighborhood. To support localization, the cooperative encourages people coming from other neighborhoods to shop to connect with AFNs in their own neighborhoods.

Prices are higher than those in conventional markets, yet often cheaper than the prices of

organic-certified counterparts. Like the Natural Food Network, where there are no set prices, the cooperative refuses to negotiate with producers for cheaper prices to support their work. While these relatively higher prices limit who can shop at the store, the solidarity practice of buying for someone else so far has helped several people in need. Organizing laterally with other consumer cooperatives and food communities in Istanbul and receiving bulk shipments from producers is a big step toward reducing food prices.¹⁸ Kadıköy Cooperative actively engages in similar organizing efforts with other groups, with the understanding that different levels of organizing—starting from the neighborhood to other scales—is a must for food sovereignty and food justice. This approach places the cooperative as a political project that seeks to create mechanisms to counter structural challenges and to address the needs of consumers and producers together, instead of privileging one over the other, as it has been suggested of some AFNs (Alkon & Guthman, 2017).

Kadıköy Cooperative's response to COVID-19

In response to an increasing number of COVID-19 cases in Turkey, cooperative volunteers performed a thorough cleaning of the store. Kadıköy Cooperative decided to keep the store open only two hours per day, while increasing the number of volunteers on duty from one to two. Because indoor shopping was deemed risky but the weather was still cold, the Cooperative devised a new system. The door was kept closed; no customer could go inside. A list of items available was put in the front window, and some of these were put on a table for display. A flap door allowed the transfer of items to the customer (outside) by the volunteer (inside). Cooperative shifts depend on volunteer presence, and only a handful of volunteers were able to be on duty at the store, as many live with a high-risk senior person, are themselves at risk, or need to commute by using public transportation. Yet, the cooperative was able to stay open most of the days.

¹⁷In addition to food, Kadıköy Cooperative sells ecologically produced soap. Other non-food items produced by nonprofits and disadvantaged groups are also featured and sold to consumers as part of solidarity efforts.

¹⁸For instance, 14 food and consumer groups ordered one and a half tons of lentils from two producers in Kars in 2019, leading to a reduction in transportation costs.

The decision to keep the store open was informed by the needs of both producers and consumers. Cooperative sales generate significant income for many of the producers. Volunteers phoned the producers to check their well-being. The majority continued their production, processing, and shipments. While small producers relied on household labor, organized producers such as producer cooperatives continued to share the work. One producer, a farmer and baker using heritage seeds, stopped baking activities, but later resumed. Some producers over the age of 65 needed to obtain special permits,¹⁹ but, overall, the products sold in the store were easily and quickly replenished. Regarding consumers, it is not possible to tell whether interest increased or how many people came to shop from outside of the neighborhood. While sales did not equal those before the pandemic, two-hour operations often yielded more than half of the sales usually completed in a nine-hour shift.

In short, the cooperative functioned with little disruption by keeping both the volunteers and the consumers safe so long as the producers were able to function. In addition to the already existing solidarity mechanism by which consumers may buy goods for prospective shoppers, the cooperative used its solidarity funds to prepare solidarity packages. Through word of mouth, 36 solidarity packages were distributed to migrants, neighbors who lost their jobs, and others in need, thereby strengthening solidarity in the neighborhood.

Discussion

Both organizations in Turkey have been working to “resocialize” the food system (Jarosz, 2008), with the consumer acquiring a more active role: consumers are asked to work closely with producers and activists (e.g., provide feedback, participate in cooperative activities) and engage with questions of food security, labor justice, and environmental sus-

tainability. This involvement has become particularly important during COVID-19 as the response to a changing regulatory environment and restrictions have required flexible adaptations. While consumers in these AFNs continued to support small producers, they received regular updates about their challenges and possible disruption in distribution. They have also become more attuned to the food security of other consumers.

Both AFNs emphasize a decentralized and nonhierarchical structure. The voluntary moderators in the Natural Food Cooperative or volunteers in Kadıköy Cooperative who keep close communication with the producers ensure that the producers’ livelihoods are protected and their questions and concerns are addressed. In the aftermath of COVID-19, both organizations regularly updated their consumers online and encouraged open communication about possible challenges. These quick, regular updates were critical to keeping the shop open and informing consumers daily (for Kadıköy Cooperative) and alert consumers about potential issues producers faced (for the Natural Food Cooperative). Not only did this close communication enhance the trust that had been built over time before COVID-19, it also allowed producers and consumers to work quickly and closely during times of crisis, such as COVID-19, in the form of preparation and distribution of solidarity packages for those in need. The solidarity packages constitute a new response, but build on and expand the cooperative economy models these AFNs follow.

Small producers within these AFNs in Turkey were able to continue their production and distribution without major issues during COVID-19. They provided their own labor or shared the labor with others (in the case of cooperatives) and did not need to travel far to process their items, which meant that even during the curfew measures they were able to supply fresh, clean, and healthy food to urban consumers. Both Istanbul and Ankara are

¹⁹ There was no cost associated with the special permits to continue cultivation in the fields. Due to restrictions on intercity travel, a producer could go to their fields (in the administrative area of another city) by providing proof of Farmer Registration, land rental documents, and a permit paper issued by the local security forces. For those producers over the age of 65, the permit was dependent on the local security forces. In some places, producers were allowed to go to their own fields by showing Farmer Registration papers. In other places, they needed an additional permit issued by the Governor (which takes about 3 to 5 days for processing) to visit their own fields.

densely populated urban centers that rely heavily on food shipments to the city. During the COVID-19 crisis, Turkey has not yet reported any major challenges in food distribution nor food shortages. Whereas food loss and food waste have been concerns related to COVID-19 disruptions in the global food supply chain, the shorter food chains in the two AFNs discussed here have provided an outlet for small producers to connect with consumers and address the rising demand by urban consumers who had to cook more food at home.

Conclusion

Taken together, the response and initiatives of the two AFNs show that they were able to adapt to the disturbance in novel ways in a short time. Within the new regulatory landscape, they continued to provide economic opportunity for producers and healthy, fresh food for urban consumers. The trust that had been built between the consumers and producers through mutual practices over time proved vital at a time when the health crisis of COVID-19 demanded prompt and consistent responses and the cost of trusting others was particularly high. Both the Natural Food Network and Kadıköy Cooperative have been able to provide assurances to urban consumers and continue their operation. Their producers' responses, in turn, reflected their capacity and willingness to adapt in the face of uncertainty.

As a weakness, both of these AFNs relied on conventional shipment networks for the transport of food from producers to consumers. Pandemic

regulations in Turkey did not have a high impact on the shipment of goods. Shipment companies continued their business without major interruptions, although they ran into delays at times. That Natural Food Network and Kadıköy Cooperative rely on these companies for the procurement of products raises questions about the sustained resilience of their operations: would they have worked the way they did, if shipment companies were to malfunction during the crisis?

As the pandemic continues, the AFNs in Turkey have already started conversations with other state and non-state actors (municipalities, consumer cooperatives, nonprofit organizations) on how to adapt and to make their networks more responsive to disturbances. Whereas there is some discussion on adaptation, we suggest that AFNs in Turkey also engage in further conversation about diversifying their distribution channels and discuss how to make them more adaptable in case of further lockdowns and other safety measures during the ongoing pandemic.

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Lockdown farmers markets in Bengaluru: Direct marketing activities and potential for rural-urban linkages in the food system

SPECIAL ISSUE COSPONSORED BY INFAS:
 THE IMPACT OF COVID-19 ON FOOD SYSTEMS



Inter-institutional
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Abstract

Rural-urban linkages are vital elements in a sustainable food system. As the COVID-19 pandemic unfolded, supply chains were disrupted

and fear of infection impacted food shopping decisions, pushing consumers to seek local and safer options for procuring fresh produce. Direct marketing arose as a promising alternative for both consumers and producers. We undertook a

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study in Bengaluru, India, in order to understand what direct marketing activities have unfolded with the COVID-19 pandemic. Media reports highlighted the plight of farmers struggling to market their harvest during lockdown as well as the farm to fork initiatives and lockdown farmers markets that have been created as a response. We see this moment as an opportunity to develop Bengaluru's food system to be more sustainable, specifically through the City Region Food System framework. This study conducted online and telephone surveys with both consumers and producers in Bengaluru to explore the elements of supply and demand that have fostered and hindered direct marketing schemes. We found that consumers are interested in sourcing fruits and vegetables directly from farmers, but communication and logistics between consumers and producers are major hindrances. Although producers are diversifying their marketing strategies, they need to be implemented at economically viable scales to ensure long-term success. We find that the role of technology, specifically messaging apps, can streamline direct marketing activities and remove the barriers that currently hamper rural-urban linkages. Furthermore, existing community and farmer organizations have the size and scale to make direct marketing schemes a worthy endeavor for both consumers and producers.

Keywords

City Region Food System, COVID-19, Pandemic, Direct Marketing, Farmer Producer Organization, Resident Welfare Association, Rural-Urban Linkages, Supply Chains

Introduction

The COVID-19 pandemic shocked food systems around the world, testing resilience and revealing frailties in the networks that currently connect billions of people to their food. Cities are hotspots of the COVID-19 pandemic worldwide (Mishra, Gayen, & Haque, 2020; Muggah & Florida, 2020) and the lockdowns implemented to curb the spread of the coronavirus exposed weaknesses and vulnerabilities in city functions, especially in local food systems. Market closures and transportation disruptions forced farmers from

the peri-urban and rural areas to reach out directly to urban consumers (Biswas, 2020). The imperative for cities to build resilient, sustainable food systems is more apparent than ever before.

This paper examines changes in the food system during the COVID-19 pandemic lockdown (March to June 2020) in the megacity of Bengaluru, in southern India. The motivation for this study is based on the many media reports on emerging farm-to-fork networks in Bengaluru (Abraham, 2020; Aggarwal, 2020; K. R., 2020a; Kappan, 2020; Karelia, 2020; Rao, 2020). We seek to understand the extent of these networks as well as the barriers preventing them from growing. We use the City Region Food System framework (Carey & Dubbeling, 2017) as our food systems lens point of reference. This framework has the scope to holistically assess the food system and offers practical tools for food system transformation. To better understand the changes that occurred in Bengaluru's food system and the potential for community-based organizations to become more closely linked in the food system, we surveyed urban consumers, resident welfare associations (RWAs), and rural farmer producer organizations (FPOs).

The research questions guiding our work were:

- Has the COVID-19 pandemic led to a rise in direct marketing between urban consumers and local producers?
- Can existing community organizations, specifically RWAs and FPOs, collaborate in neighborhoods to facilitate direct marketing schemes?
- Can the direct procurement practices of urban consumers developed during lockdown be sustained?

To the best of our knowledge there have been no studies on direct marketing linkages between RWAs and FPOs in India. This paper seeks to address this gap by exploring direct marketing activities that occurred during the COVID-19 lockdown and suggesting ways in which these burgeoning rural-urban linkages in the local food system can be strengthened.

Literature Review

City Region Food System

The City Region Food System (CRFS) framework is a food systems approach that comprehensively engages with the complexity of sustainability in urban food systems. It is context-dependent and includes other food systems approaches in its application, including short food supply chains, rural-urban linkages, and alternative food networks (Blay-Palmer, Santini, Dubbeling, Renting, Taguchi, & Giordano, 2018). The CRFS has gained prominence in urban food policy due to the international declarations and agreements created through the Milan Urban Food Policy Pact, the City Region Food Systems Alliance and the Seoul Declaration (FAO, 2018). The CRFS puts forth the crucial need to elevate the ecological, socio-economic, and governance linkages between urban centers and surrounding rural areas to create a more sustainable food system (Dubbeling, Renting, & Hoekstra, 2015).

One component of the CRFS framework is Short Food Supply Chains (SFSCs) (Jennings, Cottee, Curtis, & Miller, 2015). SFSCs are direct connections between producers and consumers that are based on trust and two-way communication; they have a short geographical distance between production and consumption and involve only one, or preferably no, intermediary (Proctor & Berdegué, 2016). The CRFS framework also includes rural-urban linkages, which enhance livelihoods, improve nutrition, and provide net environmental benefits for people residing in urban, peri-urban, and rural localities (Berdegué, Proctor, & Cazzuffi, 2014; Blay-Palmer et al., 2018; Jennings et al., 2015; Proctor & Berdegué, 2016). Alternative food networks, such as community supported agriculture (CSA), are another way for producers and consumers to directly connect. While there are various organizational structures to CSAs, in most cases the consumers pay a monthly membership fee to regularly receive fresh farm products. In this arrangement everyone involved shares the risks and rewards in agriculture (Moore, McCarthy, Byrne, & Ward, 2014).

The CRFS approach takes the above-mentioned food system components and seeks to

embed them into a larger analysis of the flows and scales of operations within the rural to urban food systems, thereby effectively influencing food policy and directing research towards sustainability and resilience (Blay-Palmer et al., 2018).

Direct Marketing and the CRFS Framework

In this paper we use the CRFS framework to examine how urban consumers, RWAs, and FPOs engage in the local food system. Although RWAs are not primarily tasked with procuring food for their residents, some RWAs have engaged with farmers to sell fresh produce to their residents, both before and during the COVID-19 lockdown. Likewise, while FPOs mainly work with government marketing channels, recent agricultural policies have encouraged contracts between FPOs and private bulk buyers (Nikam & Kale, 2020). We describe RWAs and FPOs in more detail in the final paragraphs of this section. Many researchers assert that farm to market linkages and the strengthening of India's FPOs are imperative in transforming local food systems (Chand, 2012; Kumar, Padhee, & Kumar, 2020).

Diversifying marketing outlets bolsters the overall resilience of the food system (Moragues-Faus, Marsden, Adlerová, & Hausmanová, 2020; Worstell & Green, 2017). The dependence of urban consumers on large supermarkets makes them vulnerable to price hikes and shortages, as was seen in the early days of the COVID-19 pandemic (Bengaluru Bureau, 2020). Similarly, the dependence of producers on a single or very few marketing channels increases their vulnerability to shocks and crises, which makes the food system less resilient. Redundancies in the food system counterbalance this dependency and reduce the vulnerability of both producers and consumers (Sukhwani, Deshkar, & Shaw, 2020). Using the CRFS framework, we seek to understand if RWA and FPO linkages can become an alternative marketing channel that make the food system more resilient to shocks and crises.

Food System in India

The Government of India (GOI) has enacted legislation to strengthen the position of Indian farmers, perhaps most notably with the Agricultural Pro-

duce Marketing Committee (APMC) Acts. These Acts mandate the creation of special markets, referred to as APMC markets or *mandis*, where farmers sell their produce through more transparent processes that include open auctions and fair payments (Chand, 2012). The Model Act of 2003 was an amendment to the APMC that created private and cooperative markets where farmers engage in direct marketing (Chand, 2012).

In July 2020 the GOI notified two national ordinances, The Farmers' Produce Trade and Commerce Ordinance and The Farmers Agreement on Price Assurance and Farm Services Ordinance (Mint, 2020). These ordinances allow farmers to sell directly to bulk buyers, outside of the jurisdiction of the APMC markets and throughout the country through barrier-free trading (Babu & Dassani, 2020). In these new ordinances, farmers are also being pushed to utilize e-marketing platforms (Chintala & Mani, 2020). However, many farmers and farmer organizations criticize these new ordinances, arguing that the Minimum Support Price and the role of the APMCs are being diluted, exposing farmers to more risk (Balaji, 2020).

While the APMCs and the associated amendments are well intentioned, it is important to note that in India “the channels for marketing of agricultural produce remain long and fragmented” (Chand, 2012, p. 55). In Bengaluru, farmers typically sell through three channels: Horticultural Producers' Cooperative Marketing and Processing Society (HOPCOMS) markets, APMCs, and farmer networks. HOPCOMS is a cooperative that has retail spaces throughout Bengaluru; its operations bring over 70 tons of vegetables per day to the city (Sami & Surie, 2017). Alternative food networks (e.g. organic food shops) do exist, but cater to urban middle-class consumers (Erler & Dittrich, 2020). The number of intermediaries in the value chain varies depending on the marketing channel. On average, Chand (2012) calculates that between four to six intermediaries are involved before a product reaches the consumer, with little to no value being added. Trebbin (2014) estimates this number to be higher, with up to eight intermediaries, “from village-level consolidators, transporters, wholesalers and commission agents in

state-regulated government markets (APMC markets) to retailers” (p. 39) involved in vegetable marketing chains, resulting in prices inflating 200-300% more than what the farmer earns. This great loss of potential income to farmers is a major incentive for farmers to pursue direct marketing channels and retain a greater share of the value chain (Special Correspondent, 2020c).

Food System in India during the COVID-19 Pandemic

On March 24, 2020, the GOI announced a 21-day nationwide lockdown, providing only four hours of warning (Gettleman & Schultz, 2020). This lack of forewarning resulted in panic buying, the mass migration of informal laborers from cities back to villages, and disruptions in the transportation of essential goods, including fresh fruits and vegetables (Bengaluru Bureau, 2020; Bharadwaj, 2020a; Frayer & Pathak, 2020). The lockdown was extended three times, becoming, at the time, one of the longest coronavirus lockdowns in the world. On June 8, after 75 days, India began a phased reopening (Kumar, D., 2020).

The lockdown began at the peak of harvest for the *rabi* season (winter) crops, forcing farmers to harvest and market their produce in the face of unprecedented challenges: barriers in transportation (road closures, travel permit requirements, police checkpoints), market closures or limited hours of operation, and fewer laborers for both field and market operations due to the mass migration of daily wage earners (Abhishek et al., 2020; Bharadwaj, 2020b; Ceballos, Kannan, & Kramer, 2020; Raj, 2020). Consumer interest in food production grew, both in terms of home gardening and direct purchasing activities (Devy & Casiker, 2020; Kumar, B. S. S., 2020b). RWAs, FPOs, NGOs, and government agencies worked together to create opportunities for direct marketing, mobile marketing, and online marketing schemes, thus benefiting both farmers and consumers (Abraham, 2020; K. R., 2020a; K. R., 2020b; Special Correspondent, 2020a; Sukhwani et al., 2020). For example, ‘lockdown farmers markets’ on social media were created to connect producers with consumers (Aggarwal, 2020; Joshi, 2020; Karelia, 2020; Kumar, B. S. S., 2020a; Narayanan & Saha,

2020; Rao, 2020; Wangchuk, 2020). The number of food shopping apps also increased during the lockdown (Bhatt, 2020; Kappan, 2020; Nainar, 2020; Special Correspondent, 2020b).

Resident Welfare Associations and Farmer Producer Organizations

RWAs are registered community groups that are made of elected volunteers who advocate for infrastructure and public services in their respective neighborhoods. While they have no official governmental power, they are often active in upholding local bylaws and can even hold political sway in local elections (Harriss, 2010). They also tend to cater to the needs of the middle and upper classes (Mahadevia, Bhatia, & Bhatt, 2016). During the lockdown, many RWAs engaged with farmers and FPOs to enable direct marketing to their residents and coordinate distribution of donated food packages to needy families in their areas (K. R., 2020a).

FPOs are registered groups of geographically clustered smallholder farmers who purchase inputs and market their products collectively. Smallholders account for 86% of all Indian farmers (Government of India, 2019), and the development of FPOs has given them better access to both inputs and markets. Bisht, Rana, and Pal Ahlawat (2020) undertook a study on strategies for bringing these 126 million smallholder farmers into the food system in an economically and environmentally sustainable way. Half of the households in their study of 1,000 farmer households preferred forming farmer collectives to meet the demands of urban consumers.

In 2002, the GOI amended the Companies Act of 1956 to allow for the creation of FPOs. FPOs operate as cooperatives in their production, post-harvest, and marketing activities (Chand, 2012). The legislation for FPOs was created to boost smallholder farmers' participation in agricultural value chains (Trebbin & Hassler, 2012). A study conducted in 2019 determined that between January 1, 2003, and March 31, 2019, a total of 7,374 FPOs were registered nationwide (Neti, Govil, & Rao, 2019). In Bengaluru, there are 15 officially registered FPOs spread across rural and urban areas (National Bank for Agriculture and

Rural Development [NABARD], 2020; Small Farmers' Agri-Business Consortium [SFAC], 2016). Their organizational structure can be best described as a "hybrid between private companies and cooperative societies" (Trebbin, 2014, p. 39). FPOs are owned and operated by the member farmers. They receive financial assistance from the government or from donor organizations and their management is often done by professionals (Trebbin & Hassler, 2012).

In the wake of the COVID-19 lockdown, some FPOs have been supported through the Small Farmers' Agri-Business Consortium (SFAC). The SFAC is a government program, supported by the Ministry of Agriculture and Farmers Welfare, that assists FPOs in marketing their products through such initiatives as the use of online portals to manage the supply, demand, and logistics of delivery, the creation of a WhatsApp group with pan-Indian buyers, and the facilitation of direct market linkages with large buyers, retailers, and RWAs (SFAC, 2020). The disruptions in marketing caused by the lockdown affected the operations of all FPOs to varying degrees, however, some demonstrated greater resilience than others and adapted to the situation by engaging in direct marketing to urban consumers (D, 2020; Special Correspondent, 2020c).

Research Methods

In this study, we investigate how the COVID-19 pandemic led to a rise in direct marketing between urban middle-class consumers and local producers. We focus on urban middle-class consumers because they constitute a significant demographic with strong purchasing power, and they are a targetable population for an online survey. We are specifically interested in the marketing and consumption of fruits and vegetables because of the high volume of regional production supplying local markets (Sami & Surie, 2017). Our regional focus is Bengaluru Urban which includes the megacity of Bengaluru, the capital of Karnataka state, and the surrounding peri-urban areas (Government of Karnataka, n.d.). Bengaluru Urban has an estimated population of 12 million inhabitants, making it the third largest city in India after Mumbai and Delhi (World Population Review, 2021).

Online Survey

The online survey was designed using LimeSurvey Version 3.22.17+200525 and was posted online to 12 Bengaluru-based Facebook groups. These groups include Bengaluru resident welfare groups, groups focused on the topics of food and/or gardening, and groups that were created during the lockdown to connect farmers with consumers (see Appendix A). The post with the link to the survey was shared twice, once on July 15 and once on August 5, 2020. The survey was also distributed twice through the email listserv of the Bengaluru-based not-for-profit organization Ashoka Trust for Research in Ecology and the Environment (ATREE). We used a frameless sampling strategy in survey distribution (Fielding, Lee, & Blank, 2016). We then used post stratifying methods to select responses exclusively from Bengaluru Urban residents. The survey was designed so that participants remain anonymous; however, participants had to identify their ward and PIN locations to ensure that all respondents reside within Bengaluru Urban. Data analysis was done using Excel 2019 MSO and Stata 13.

In total we received 236 responses, of which 125 were complete and valid, making the survey completion rate 53%. Of these 125 responses, eight respondents were located outside of Bengaluru Urban and were thus excluded from our study. We use 117 complete responses for our analysis.

RWA Survey

Two online sources, the Bengaluru government website (BBMP, 2016) and the Bengaluru Governance Observatory website (Bengaluru Governance Observatory, 2020), were used to compile a list of 865 RWAs in Bengaluru Urban. We randomly selected 320 RWAs for a telephone-based survey. Of the 320 RWAs contacted, 117 RWA members agreed to participate in the survey. Of the 203 RWAs that did not participate, 158 RWA phone numbers (49%) were no longer functional and 45 RWAs declined to participate.

FPO Survey

We compiled a list of 22 FPOs registered in Bengaluru Urban and Rural from three sources, the Small Farmers' Agri-Business Consortium (SFAC, 2016),

the National Bank for Agriculture and Rural Development (NABARD, 2020) and the Krishijagran website (Krishi Jagran, n.d.). Of these, we were able to conduct our survey with six FPOs by phone. We sent emails to seven FPOs who were not reachable by telephone and one responded with their updated contact information. Because one of the surveyed FPOs does not operate in Bengaluru we did not include them in our analysis; thus, our sample size for the FPO survey is six.

Results

The results are presented in three parts based on the three surveys conducted. We begin with reviewing the results of the online survey, followed by the RWA and FPO surveys. Map 1 shows Bengaluru Urban boundaries and the distribution of respondents to the online and RWA surveys.

Online Survey

The online survey addressed how the COVID-19 lockdown in Bengaluru impacted various aspects of food procurement and consumption. It included the following five sections: food shopping, consumption, direct purchasing from farmers, home gardening, and food safety. This paper and the results presented below are based on the first three sections of the survey. Table 1 presents the demographic results.

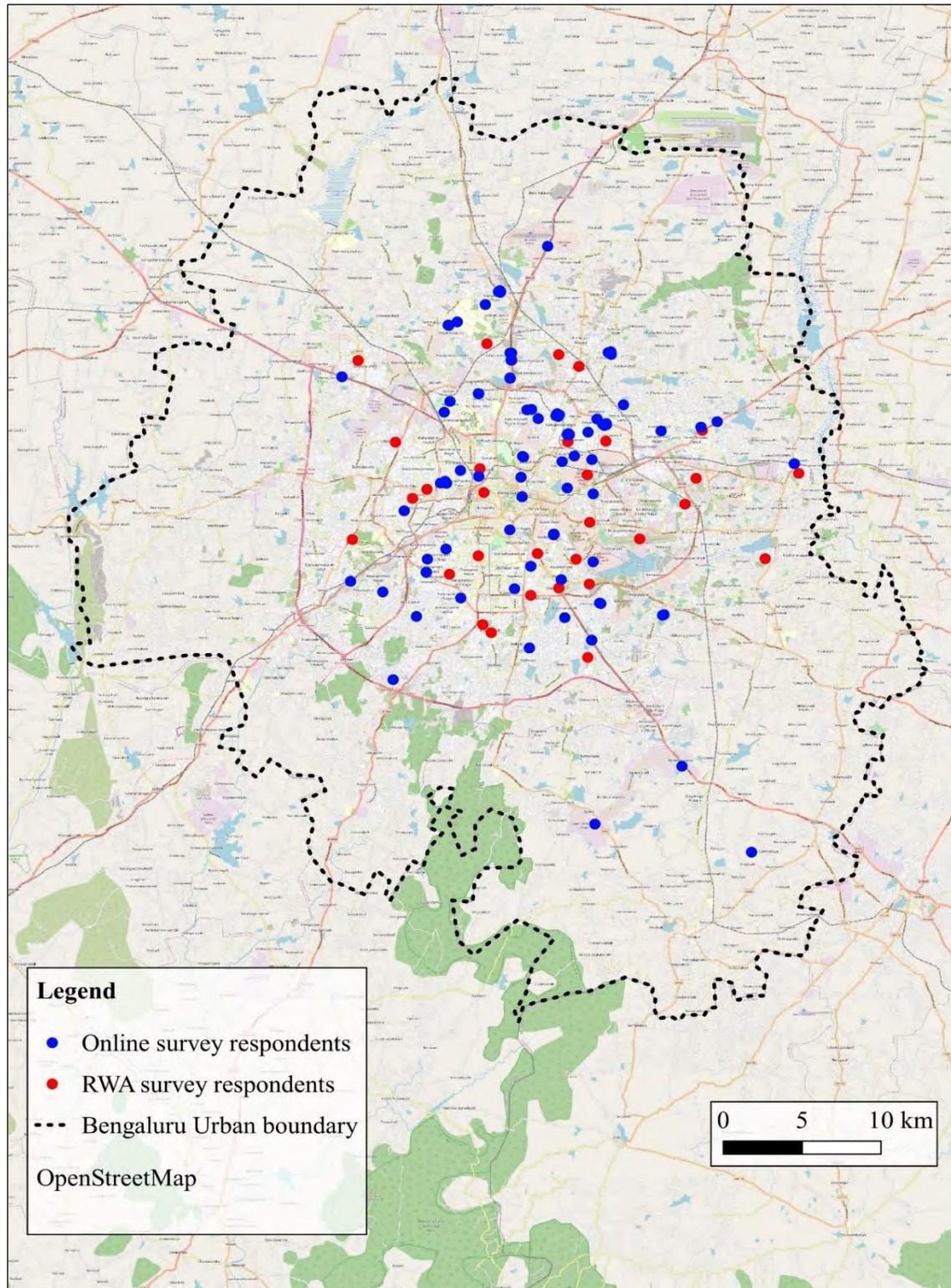
Based on the results in Table 1, we see that our survey reached an almost equal percentage of males and females. In terms of education and income, 92.3% of our respondents are highly educated, with 56.4% belonging to the upper and upper middle classes, earning more than 40,000 Rupees per month (543 USD). Nearly 70% of respondents are currently employed.

Food Shopping Habits

The first section of the online survey addressed food shopping habits and the changes that occurred as a result of the lockdown. Table 2 shows where respondents sourced their fruits and vegetables before and during the lockdown.

We asked respondents to clarify exactly how they contact farmers for direct purchasing. We found that the lockdown had an impact on the

Map 1. Distribution of Online and Resident Welfare Association (RWA) Survey Respondents



mode of contact between consumers and producers (Table 3).

Social media and food shopping apps

When asked if they had joined any social media groups in order to purchase fruits or vegetables directly from farmers, 15 of 117 respondents said that they had. Of these, the majority used WhatsApp (10.3%), with Facebook (3.4%) and Instagram (2.6%) being the other platforms used. Twitter (0%) was not used by any of the participants.

The use of food shopping apps to purchase fruits or vegetables directly from farmers was also quite low, with only nine of 117 respondents saying that they had used an app for this purpose. The Big Basket app was used by three respondents. Two respondents used WhatsApp for this purpose. Zomato, Swiggy, Dunzo, Agrimitra, and KSMDC apps were each selected once, while the Farmer near me, MyBy, and Sabjee apps were not used.

Direct purchasing

In order to understand consumer attitudes towards direct purchasing, we asked respondents to consider six factors as either positive or negative aspects of directly purchasing produce from farmers. The six factors are: variety of produce, locally produced, freshness,

communication with farmer, price, and logistics. Figure 1 shows that the most positive aspect of direct purchasing is freshness, while the most negative aspect is the logistics involved.

Table 1. Demographics of Online Survey Respondents (N=117)

Category		Percentage
Gender	Female	44.4%
	Male	50.4%
	Gender not specified	5.1%
Education	High school certificate	2.6%
	Diploma/PUC	5.1%
	Graduate	60.7%
	Profession or Honors	31.6%
Occupation	Salaried employment, private sector	60.7%
	Salaried employment, public sector	7.7%
	Student	13.7%
	Entrepreneur, self-employed	0.8%
	Housewife/Househusband	5.1%
	Unemployed	6.0%
	Retired	4.3%
	Other	1.7%
Monthly Income *	12,000 to 20,000 ₹	21.4%
	20,000 to 30,000 ₹	8.5%
	30,000 to 40,000 ₹	13.7%
	40,000 to 80,000 ₹	21.4%
	80,000 to 120,000 ₹	15.4%
	more than 120,000 ₹	19.6%

* Amount is total household monthly income. Income groups are based on the modified Kuppaswamy socioeconomic scale (Mohd Saleem, 2019).

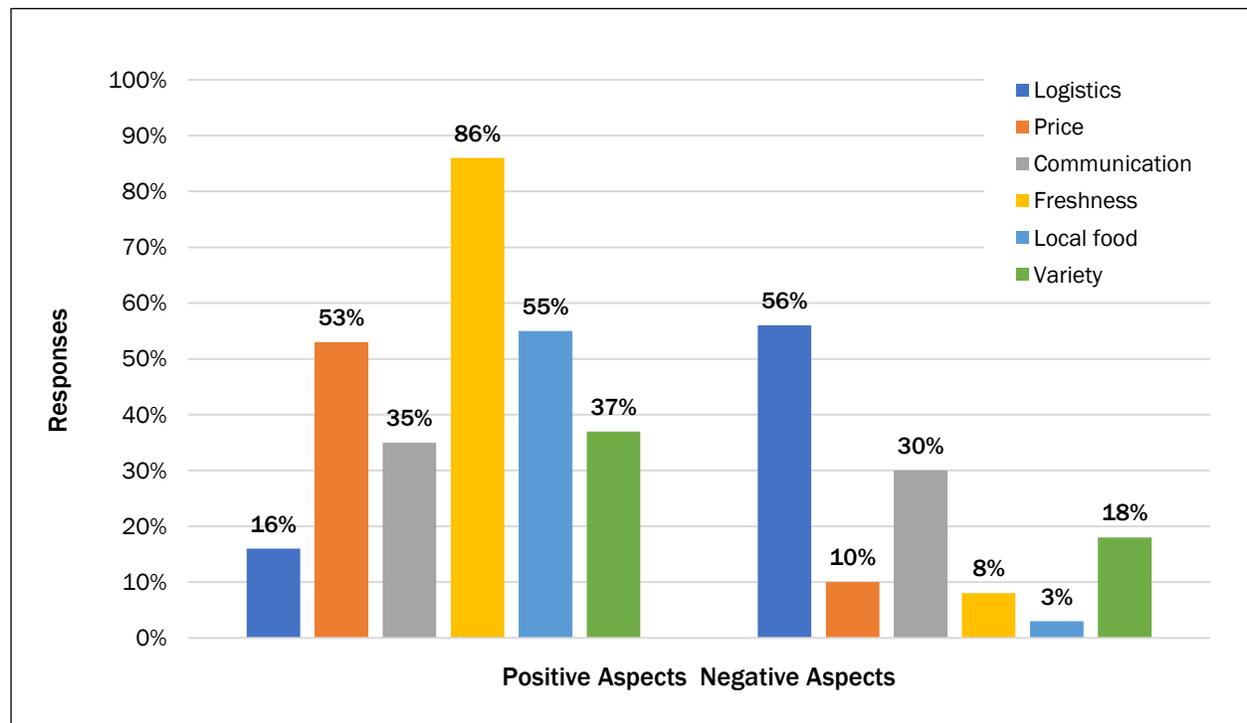
Table 2. Fresh Vegetable and Fruit Purchasing Behavior Before and During Lockdown (N=117)

	Directly from farmer	Supermarket	Market	Vegetable/ Fruit shop	Pushcart vendor
Before lockdown	7.7%	46.1%	37.6%	77.8%	45.3%
During lockdown	9.4%	31.6%	21.4%	69.2%	40.2%

Table 3. Mode of Contact for Direct Purchase from Farmers Before and During Lockdown (N=117)

	Personal contact with farmer	Resident Welfare Association	Social Club	NGO	Social Media	Apps
Before lockdown	4.3%	0.8%	1.7%	0.8%	1.7%	0.8%
During lockdown	2.6%	2.6%	1.7%	0.8%	2.6%	2.6%

Figure 1. Consumer Perspective on Positive and Negative Aspects of Direct Purchasing from Farmers (N=117)



Community supported agriculture

We asked respondents if they are a member of a CSA or if they would like to be. Only three of 117 respondents are currently in a CSA. However, 45 respondents (38%) said that they would like to join a CSA but it is not available in their area.

Results of RWA telephone survey

During the lockdown period, RWAs engaged with residents to assist in procuring essential goods. Out of our sample size of 117 RWAs, 42 arranged for farmers to directly sell fruits and vegetables to residents. When asked if they knew of other RWAs arranging direct marketing of fresh fruits and vegetables, 19 responded yes and 98 responded no.

All of the following results are based on a sample size of 42. Forty RWAs sourced vegetables directly from farmers, however none of the RWAs in our sample worked with FPOs. Two RWAs also worked with HOPCOMS to source fresh produce, while one worked closely with a street vendor, and one with a private driver. When asked how the RWA contacted farmers, 90.5% of RWAs made

the contact either through family or friends.

WhatsApp (42.9%), TV (21.4%), a government agency (19%), and the newspaper (7.1%) were also used to reach farmers. One RWA used a Farmer Producer app. Other options included in the survey that were not used are NGOs, social media, radio, and advertisement.

The main products sold by farmers were fruits and vegetables, including but not limited to grapes, papaya, banana, pineapple, tomatoes, chilies, onions, okra, drumstick, and eggplants. Millets, pulses, and milk were also sold, but only in four instances. None of the RWAs found the prices to be more expensive, with 36 reporting that the prices were lower, and six reporting that the prices were the same as elsewhere. Going forward, only five RWAs are motivated to continue working with farmers to facilitate direct marketing to their residents. Many are unsure, with 26 responding that it depends on circumstances. Eleven RWAs responded that they are not interested in continuing this activity, citing convenience and communication with farmers as the main hinderances.

Results of FPO telephone survey

Telephone-based interviews were conducted with six FPOs that are registered in either Bengaluru Urban or Bengaluru Rural; five have a membership of 1,000 farmers and one has 700 farmers. Five of the six FPOs surveyed sold produce directly to consumers during the lockdown, with three FPOs saying that this was a regular marketing channel for them even before the COVID-19 pandemic. None of the FPOs offer direct home delivery. Five FPOs sold their produce by setting up a stall outside of apartment complexes and three sold through RWAs. These arrangements were organized through personal contact between FPO members and residents (two instances), government assistance (two instances), and WhatsApp (one instance). Five of the FPOs sold fruits and vegetables, with one of the FPOs also selling fresh flowers. One FPO only sold fruits. Four FPOs answered that the price received from selling through apartment complexes and RWAs was the same as through other marketing channels, while one answered that the price was lower. Delivery was done by private vehicles that were owned or rented by a farmer or the FPO. When asked if their FPO would like to continue this kind of direct marketing, three FPOs answered yes and two answered maybe, depending on the communication with RWAs and apartment complexes. Of the three FPOs that answered yes, all of them agree that direct marketing is more profitable and they are happy to communicate with consumers directly. However, none of them recognize it as a benefit that diversifies their market channels, and only one found this type of marketing convenient.

Discussion

Has the COVID-19 pandemic led to a rise in direct marketing between urban consumers and local producers?

Our results indicate that the purchase of fruits and vegetables directly from farmers increased by 1.7% during the lockdown, while purchases from supermarkets, markets, vegetable and fruit shops, and pushcart vendors all decreased (Table 2). However, because our sample is not representative, we also reviewed media reports on fresh produce sales

during the lockdown. According to the media reports, small neighborhood shops experienced a boost in sales at the beginning of the lockdown, but they also struggled to maintain supplies of fresh produce because of restrictions and limited hours of operation at wholesale markets. Shop owners also had difficulties securing travel permits to reach the markets. When they were able to reach the wholesale markets, many found that the price of some vegetables had doubled or even tripled (Bharadwaj, 2020c; Gatty, 2020). Many pushcart vendors also had difficulty accessing the wholesale markets and many faced restrictions on movement (K.C., 2020). Pushcart vendors who were able to access fresh produce benefited from the lockdown because consumers preferred the convenience of shopping from their doorstep (TNN, 2020). Large supermarkets remained open, but many consumers avoided them because of concern for virus transmission due to large crowds forming at the entrance of the stores and a lack of social distancing (Gejji, 2020).

While personal contact with farmers decreased during the lockdown, the role of RWAs, social media, and the use of food shopping apps all increased as modes of contact for purchasing directly from farmers (Table 3). Despite the reported increase, the overall number of people who engaged social media to connect with farmers was low (15 of 117 respondents), and the use of food shopping apps was even lower (nine of 117 respondents). However, the potential for platforms such as WhatsApp to connect urban residents with farmers is promising, especially considering that 42.9% of RWAs used WhatsApp to connect with farmers. The way in which neighbors can combine and organize their orders for fruits and vegetables through WhatsApp groups shows great potential for both rural-urban linkages and SFSCs.

Less promising are the multitude of food shopping apps for purchasing directly from farmers. For farmers, such apps are just another middleman. We cannot explain the low usage of food shopping apps by consumers; however, we see challenges in building trust and connection with the producers through this technology.

In the media, we found abundant reports about direct marketing initiatives, from individuals

starting Facebook groups like *Farm to Fork* and the Twitter handle *Harvesting Farmer Network*, to women’s groups, NGOs, and RWAs organizing farmers to sell to their members in bulk. With headlines in national and international press like “Farm to Home Networks go into overdrive in locked down Bengaluru,” “How Lockdown has helped turn ‘Farm to Fork’ Dream into Reality,” and “Direct-selling helps Indian farmers swerve food waste under lockdown,” it appeared that a revolution was happening in the food system.¹ However, our data show that while these direct marketing activities did occur, they were perhaps not as widespread as reported.

Although we recognize that our sample size is small and not representative, it does include a diverse demographic and geographical base, with online survey responses coming from all areas of the city. Furthermore, we find it significant that 38% of respondents said that they would like to join a CSA. This clearly shows a level of interest and potential demand for direct marketing on the consumer side. The question is whether farmers are able and willing to engage with this demand.

Can existing community organizations, specifically RWAs and FPOs, collaborate in neighborhood-based direct marketing schemes?

The results of the RWA survey show that the main motivation behind direct marketing was to help farmers during the lockdown (Table 4). RWA initiatives to connect with farmers emerged in response to lockdown restrictions and fears of the coronavirus. The lack of enthusiasm among most of the RWAs surveyed to continue this form of direct marketing shows that the effort and level of engagement required to successfully facilitate direct marketing is high. We must remember that RWAs were not created explicitly for this purpose. With the opening up of offices and businesses, the effort by RWAs is likely to dissipate further as most of the members are volunteers whose primary responsibility is responding to infrastructure-related issues within their neighborhood. Nevertheless, the fact that 36% of RWAs in our survey did engage in direct marketing shows that RWAs can be an entry

point for individual farmers or FPOs to reach geographically and digitally clustered consumers.

From the FPO perspective, only three of the five FPOs engaged in direct marketing are interested in continuing this type of marketing. While four out of five FPOs said that they received the same price for their produce as they would elsewhere, this is perhaps not enough profit when considering the communication and delivery costs and the total amount of produce sold. During the lockdown many farmers sold their harvest through such direct marketing opportunities in order to avoid total loss. However, as a long-term strategy, direct marketing must be profitable for them, arguably more profitable than selling through traditional marketing channels.

Can the direct procurement practices of urban consumers developed during lockdown be sustained?

When asked to consider the positive and negative aspects of direct purchasing from farmers, consumers stated that the freshness of fruits and vegetables is the most positive benefit (Figure 1). They also value buying locally produced food and appreciate the lower prices resulting from direct marketing. Communication with farmers was almost evenly split between being a positive or a negative aspect. Logistics of purchasing from farmers is by far the most negative aspect of this interaction. This is indeed a challenge for both consumers and producers. For consumers, the level of engagement required to communicate with farmers and negotiate price, quantity, and delivery

Table 4. Resident Welfare Association (RWA) Motivations for Engaging with Farmers for Direct Marketing (N=42)

Direct marketing motivations	Response=Yes
To help farmers during lockdown	95.2%
To avoid leaving home	88.1%
Afraid to go shopping	83.3%
Produce would be wasted in lockdown	50.0%
Farmer produce is fresher	19.0%
Because shops were closed	16.7%

¹ The headlines are from *Citizen Matters*, *The Times of India*, and *Deutsche Welle*, respectively.

are all time-consuming activities. The quality of the produce and the value-added of knowing where their food comes from must adhere to a high standard for them to pursue direct purchasing (Moustier & Renting, 2015). For producers, the logistical challenges of marketing are manifold and include availability of on-farm labor for crop management, harvest and post-harvest activities, transportation of produce, communication with buyers on quantity and quality, and ensuring a price that affords the producer an adequate profit. Therefore, in order for direct marketing activities to gain a wider consumer base, it must become more streamlined and convenient for all parties.

Conclusion

The resilience of Bengaluru's food system is apparent, not only in the steady availability of fresh foods throughout the lockdown, but also through the efforts and ingenuity of actors all along the food chain to produce, procure, distribute, and consume locally grown foods. "In the context of urban resilience, ensuring a supply of food produced as locally as possible is the key to having a stable food supply that can be distributed to an urban population as quickly as possible—especially critical in cases of extreme weather events or other disasters" (Ballamingie et al., 2020, p. 234). The COVID-19 pandemic certainly falls under the category of other disasters, and this headline from The Hindu newspaper, "Meet India's inspiring farmers who pivot, adapt, and keep supplying fresh produce during the lockdowns", captures the coordinated resilience perfectly.

It is apparent that the lockdown created a situation where consumers and producers are seeking one another out, albeit for different reasons. While consumers are mostly concerned with their own personal health and with helping farmers through these difficult times, farmers are focused on minimizing losses. Farmers are willing to sell directly to

consumers, and consumers value the produce from farmers, but the logistics involved are a deterrent. There are many direct marketing models that can be adapted to meet the local context, however food policies that support such activities must be feasible for smallholder farmers.

RWAs have access to geographically based, and in many cases digitally-connected, consumer groups who can collectively constitute a profitable target for FPOs. The number of FPOs is predicted to increase due to the COVID-19 pandemic and favorable GOI legislation. Linking FPOs directly with consumer groups enables FPOs to market large quantities of produce, thus improving the logistical and economic benefits for both producers and consumers. Instead of home delivery, the pop-up farmers market (for example, selling from a vehicle or a temporary stall) in a neighborhood or in front of an apartment complex is a successful approach to direct marketing.

A larger study of consumer, RWA, and FPO direct marketing activities is needed to more accurately measure the level of interest in direct marketing. Our study is limited in scope and, because we were unable to contact 49% of the RWAs in our sample, we can only draw limited conclusions. Nevertheless, we find the network of RWAs throughout the city to be a promising target for FPOs to reach consumers and diversify their marketing activities, thereby strengthening rural-urban linkages and making the city region food system of Bengaluru more sustainable and resilient.

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Appendix A. List of Facebook Groups Targeted in Online Survey

1. Bengaluru Foodies Club
2. Vidyananyapura Citizens Welfare Association
3. Bangalore Foodies Club
4. Bangalore Foodies
5. Covid-19 Farm to Fork
6. Put me in Touch with Bangalore
7. Terrace Gardening
8. Organic Terrace Gardening Bangalore
9. Bangalore South Organic Terrace Gardening
10. Marathahalli
11. Organic Terrace Gardening
12. Terrace Gardening Bengaluru

Introducing an innovative design to examine human-environment dynamics of food deserts responding to COVID-19

SPECIAL ISSUE COSPONSORED BY INFAS:
 THE IMPACT OF COVID-19 ON FOOD SYSTEMS



Inter-institutional
 Network for
 Food and
 Agricultural
 Sustainability

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Abstract

Food desert communities face persistent barriers in accessing affordable fresh and healthy foods, particularly for the underserved and limited-resourced

minority population. This research brief proposes an integrated design concept examining human-environment dynamics of food deserts to identify

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strategies that would provide effective planning to prevent, prepare for, or respond to disruptive events such as natural disasters or pandemics in the future. The North Carolina example we describe identifies the potential overlapping areas between food deserts and number of COVID-19 cases to demonstrate how an unpredictable event could exacerbate public health in food desert communities to a greater extent than in communities with better food access, availability, and accessibility. The improved understanding of food systems could help in addressing unprecedented challenges such as those due to the COVID-19 crisis.

Keywords

Food Insecurity, Food Desert, COVID-19, Pandemic, Food Systems, Integrated Design

A Brief Overview of Food Issues in the U.S.

Unpredictable events such as the COVID-19 pandemic and market volatility have paralyzed many food supply chains, which also widen the gaps of food insecurity across socio-economic and geographical characteristics (Thilmany, Canales, Low, & Boys, 2020; Ziliak, 2020). There is an urgent need to seek innovative strategies and approaches that will improve well-being and health for individuals, families, communities, and the environment by alleviating gaps corresponding to food access, availability, and affordability.

One of the commonly used community-level measures of food access is the concept of the food desert. According to the U.S. Department of Agriculture (USDA), a food desert is a geographic area characterized by both low income and poor access to healthy food (USDA, 2020). The online Food Access Research Atlas, developed by the USDA, Economic Research Service (USDA ERS), is a tool to map food deserts at the census tract resolution for several alternative measures of low income and low access (USDA ERS, 2020).

In this research brief, we propose a coupled human and natural systems (CHANS) integrated design (Liu et al., 2007) to examine human-environment dynamics of food deserts to identify strategies that would provide effective planning to prevent, prepare for, or respond to disruptive events such as natural disasters or pandemics in the future. The CHANS approach has been identified

as a potent framework to address the design for sustainability of regional planning, agriculture, and soil and water resource management (Kline et al., 2017; Lu et al., 2019). In this paper, we utilize data from North Carolina as an example that highlights how an unpredictable event could exacerbate public health in food desert communities. We then explain how the model focused on food deserts could be developed using a CHANS framework and the types of data that the model could use. The initial concept presented here, if fully developed and implemented, could help to mitigate the challenges of food deserts. What is needed is an integrated system design to provide a platform for communities to do the following four activities:

1. Understand the factors influencing the interactions between human decisions in food production and consumption.
2. Evaluate how our choices in agricultural operations and food consumption relate to changes in environmental quality.
3. Gather and maintain concise and consistent longitudinal data to identify existing practices and policies that support or hinder alleviating food insecurity.
4. Reinvigorate new policies and community practices to assist people and organizations in planning and preparing to avoid and reduce the disparity of well-being and health due to food insecurity.

Summarized Literature Review for Food Deserts

Food access is a critical component in community planning, and the issues are significantly different in rural and urban areas (Pothukuchi, 2009). Mergers and acquisitions in the food retail industry have climbed since the late 1990s, resulting in a higher concentration of sales among fewer chain stores (DePillis, 2013; Harris, Kaufman, Martinez, & Price, 2002; USDA, 2017). Most large chain stores such as supercenters and supermarkets are in areas of high population density, while independent and small-scale neighborhood grocery stores are more likely established in low-income neighborhoods and rural regions (Block & Kouba, 2006; Chung & Myers, 1999; Powell, Auld, Chaloupka, O'Malley, & Johnston, 2007). The shifting concen-

tration of large-format chain stores has created increasing challenges to other types of food stores, which links to problematic food access in over half of U.S. counties (USDA, 2017, 2020). Scholars have pointed out the urgency to conduct more studies examining the potential impacts of the food retail industry on food access, particularly in remote rural areas and low-income neighborhoods (Dunn, Dean, Johnson, Leidner, & Sharkey, 2012; Larson, Story, & Nelson, 2009), and on consumers' decisions in purchasing healthy foods.

The COVID-19 crisis has revealed long-standing food insecurity issues, resulting in immediate change in both the food supply chain and food consumption. The production of fruits and vegetables, one of the most labor-intensive sectors of agriculture, has been adversely affected by the pandemic-induced disruptions in the farm labor supply (Ridley & Devadoss, 2020). News reports and videos have revealed commercial farms dumping excess milk or fresh produce, while grocery stores are left with empty shelves and people waiting in long lines to acquire food assistance (McKay, 2020; Yaffe-Bellany & Corkery, 2020). In response, consumers appear to place less importance on nutritional value, instead purchasing more convenient, comforting food such as pizza and ice cream (Ellison, McFadden, Rickard, & Wilson, 2020). The desperation of seeking food assistance seems to be worse in socially disadvantaged, limited-resourced, and underrepresented communities (Gundersen, Hake, Dewey, & Engelhard, 2020; Jablonski et al., 2020; Ziliak, 2020).

Understanding Issues about Food Deserts

The literature on food deserts keeps expanding (Freedman et al., 2016; Hsiao, Sibeko, & Troy, 2019; Walker, Keane, & Burke, 2010). One of the earlier systematic reviews of food desert research, by Beaulac, Kristiansson, and Cummins (2009), synthesized the findings of studies that used geographic or market-basket approaches published between 1966 and 2007. The review discussed the characteristics of food deserts with a focus on the links to social and economic factors, and pointed out that categories and scenarios of food deserts varied significantly across countries. This early review also revealed that low-income, minority, and

rural populations seemed to face more challenges in accessing affordable foods in the U.S.

Topics of more recent food desert studies range from geographical distribution to socio-economic profiles to human behaviors to health implications, which we will now discuss. These studies have evaluated how food desert incidence is related to the geographic distribution of alternative food retailers (Colón-Ramos et al., 2018; Coughenour, Bungum, & Regalado, 2018; McDermot, Igoe, & Stahre, 2017; Vaughan, Cohen, Ghosh-Dastidar, Hunter, & Dubowitz, 2017), and have documented the shopping behavior of food desert residents with barriers in accessing transportation and varieties of grocery stores (Gray et al., 2018; Hardin-Fanning & Gokun, 2014; Ma et al., 2018; Zachary, Palmer, Beckham, & Surkan 2013). The geographic information system (GIS) is one of the most adopted techniques to measure households' spatial accessibility to food retail stores (e.g., Giang, Karpyn, Laurison, Hillier, & Perry, 2008; Michimi & Wimberly, 2010; Mulrooney, Beratan, McGinn, & Branch, 2017; Xu, 2014; Zenk, Schulz, Israel, James, Bao, & Wilson, 2005).

The disparities in diet and diet-related health outcomes between food desert and non-food desert communities (including the disparities in prevalence of chronic diseases) have been a subject of significant research (Abeykoon, Engler-Stringer, & Muhajarine, 2017; Hanson et al., 2018; Liese et al., 2018; Morris et al., 2019; Testa, 2019). Multiple studies ask questions about the effectiveness of the policy interventions aiming to improve the access to healthy, affordable food for the people living in and around food desert areas (Freedman et al., 2016; Hsiao et al., 2019; Smith, Miles-Richardson, Dill, & Archie-Booker, 2013). Despite the significant academic and practitioner interest, effective approaches to the alleviation of the food insecurity problem are still a puzzle.

We propose a novel approach to examine community food systems that explores the potential to promote and support local farmers so that they increase the supply and variety of fresh produce to community-based food stores. It has been challenging to identify empirical studies that attempted to simulate the potential of shifting existing food production at the local level to accommo-

date small-scale food retail stores in rural or urban areas. A complementary research question arises about the environmental impacts, such as changes in soil and water quality, of re-purposing existing farmland or vacant sites to diversify local food supplies. Answering these questions requires a new approach, one that encompasses the human-environmental relationship of food deserts.

The Relationship between COVID-19 and Food Deserts Using North Carolina as an Example

The COVID-19 pandemic highlighted the vulnerability of food desert communities, and we are proposing a new approach to look at the issue. This research brief reports some baseline information in North Carolina as an example. The state is chosen for its data availability. While food desert maps are available nationally at the census tract level, only some states, including North Carolina, report COVID-19 data at a relatively fine spatial scale, making a spatially explicit, GIS analysis possible.

The following data have been used for creating the example:

- Data for COVID-19, as of July 7, 2020, at the ZIP code level (the finest scale currently available) from the COVID-19 North Carolina Dashboard¹ and linked to polygon zip codes stored in a GIS.
- The food desert/non-food desert designation at a more granular, census tract scale, from the USDA Food Access Research Atlas (USDA ERS, 2020). Low-access regions are distinguished between urban regions (>1 mile or 1.6 km) and rural (>10 miles or 16 km) and agglomerated into a single database representing food deserts.
- These COVID-19 rates and food deserts are highlighted in the map (Figure 1).

Because the scales at which data for food deserts (census tract) and COVID-19 rates (zip code) are collected do not match, GIS methods

Table 1. Comparison of COVID-19 Effects on Food Deserts versus Non-Food Deserts

	Food Desert	Non-Food Desert
Number of Zip Codes	114	649
COVID Rate (per 10,000)	70.85***	55.71***
COVID Rate (with outliers removed)	59.69*	52.70*

Statistically different at the following significance levels: * $p < .1$; ** $p < .05$; *** $p < .01$. Extreme outliers probably indicating isolated outbreaks (>300 incidences per 10,000) have been removed. The test results are statistically significantly different between food deserts and non-food deserts even after removing the outliers. This implies that North Carolina food desert communities have higher number of COVID-19 cases (as of July 2020).

were used to overlay two data on top of each other and to find zip codes that were related to each USDA food desert census tract, highlighting food deserts in this study at the zip code scale. We found that 16.9% of food desert census tracts (367 out of 2,174) were classified as food deserts, while 14.9% of zip codes (114 out of 763) were classified as food deserts.

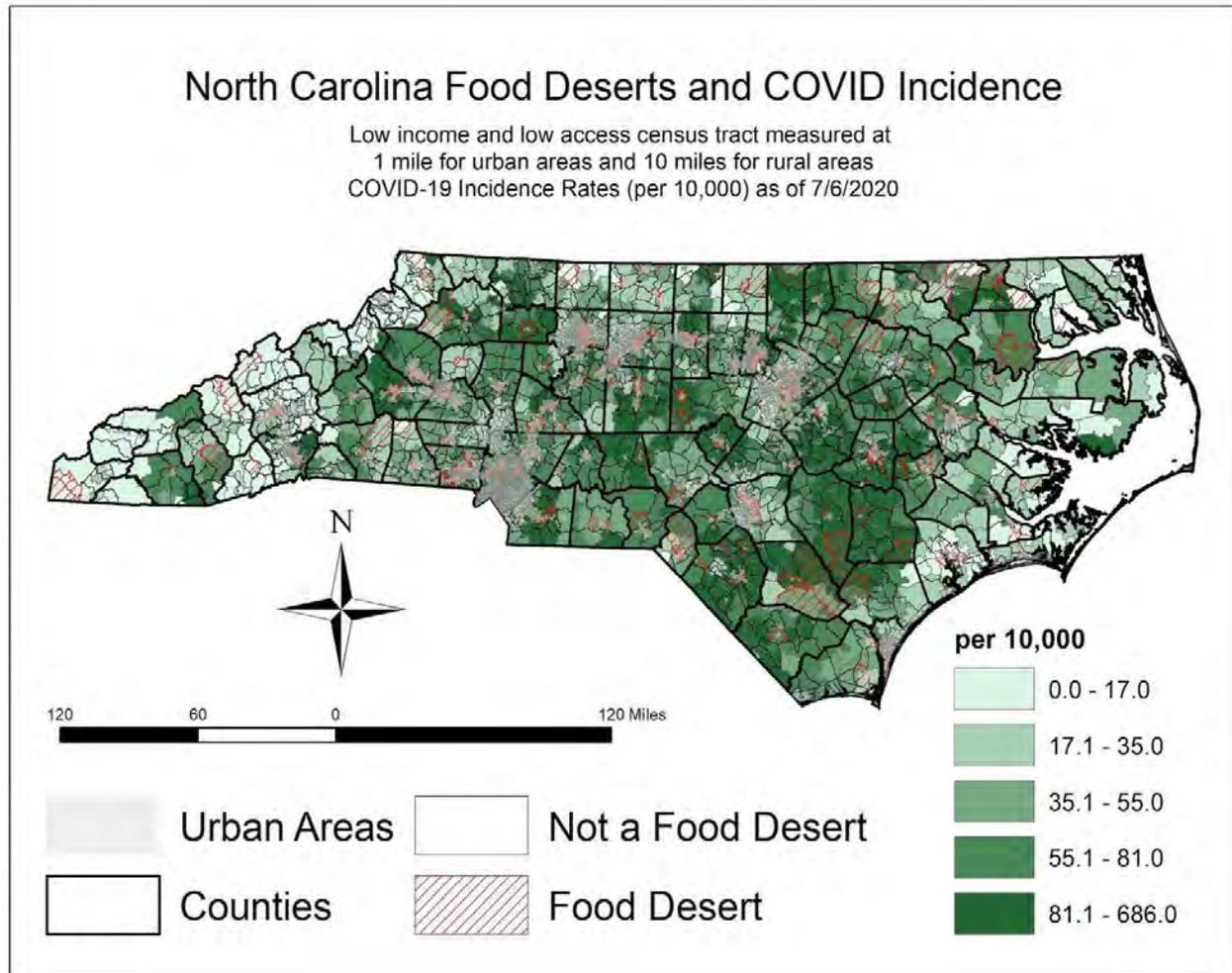
The number of COVID-19 cases was compared between the food desert zip codes and non-food desert zip codes in the study area and analyzed using the two-sample t-test to determine if the two population means are equal. The results showed distinct differences between COVID-19 incidence rates between the food desert and non-food desert areas (Table 1). In North Carolina, the food desert communities appear to have a higher number of COVID-19 cases. This result illustrates that there are overlapping areas between food deserts and the areas of COVID-19 cases and shows how an unpredictable event could exacerbate public health in food desert communities to a greater extent than in non-food desert communities (Figure 1).

Proposing an Innovative Design to Study Human-Environmental Relationship of Food Deserts and to Enhance Community Planning

Agriculture and food systems face a combination of multiple constraints such as weather and climate variations, domestic and international market volatilities, biophysical and/or geographical and tech-

¹ <https://covid19.ncdhhs.gov/dashboard>

Figure 1. The Overlapping Effect Between the Number of COVID-19 Cases and Food Desert Communities



nology restrictions, and mixed scale of operations and management. We hypothesize that analyzing food desert phenomena in an integrated view that couples human and natural systems will significantly improve the understanding of how to achieve a balance between food security, maximizing production, and minimizing negative environmental impacts. It would be beneficial for communities to build an integrated and scenario-adjustable planning framework to include multidisciplinary datasets and analytical and simulation tools to tackle food system issues during the planning process that will consider resiliency in planning for prevention, preparation, prescription, responsiveness, and recovery during a shock like a hurricane or a pandemic like COVID-19.

The development of an integrated research-

based concept for communities to use to examine the interactions between social, economic, and environmental components that correspond to the four objectives described in the introduction could serve as the basis for food systems change that will mitigate the negative impacts of shocks on various community scenarios. The following four stages describe a proposed process to achieve the objectives:

Stage 1: Geo-code the spatial-temporal database for both human and natural factors that jointly influence food availability, accessibility, affordability, and accountability. The human factors might include socio-economic characteristics (e.g., demographics, family compositions) and policy orientations (e.g., zoning, transportation infrastructure).

The natural factors might include land use capacity (e.g., residential versus commercial), land characteristics (e.g., slope, soil), farming activities (e.g., types of farms around the communities), distribution and features of food retailers (e.g., distance and protection from temperature and moisture variations), and community infrastructure such as internet access and communication methods.

Stage 2: Develop an integrated modeling system to link human systems (consumption and production models) to natural systems (land use and GIS models) to better understand and respond to food desert issues. This stage involves a thorough evaluation of existing practices and simulation modeling methods based on research evidence. Some of the robust methods include agent-based modeling (Muto, Bolivar, & González, 2020; Widener, Metcalf, & Bar-Yam, 2013), which applies multiple factors from social-economic-environmental aspects to identify opportunities for balanced and integrated decision-making.

Stage 3: Test the modeling system to validate the reliability and robustness of the method for the study area of interest. This stage involves using data gathered from a food desert community to test the modeling formula and whether the out-

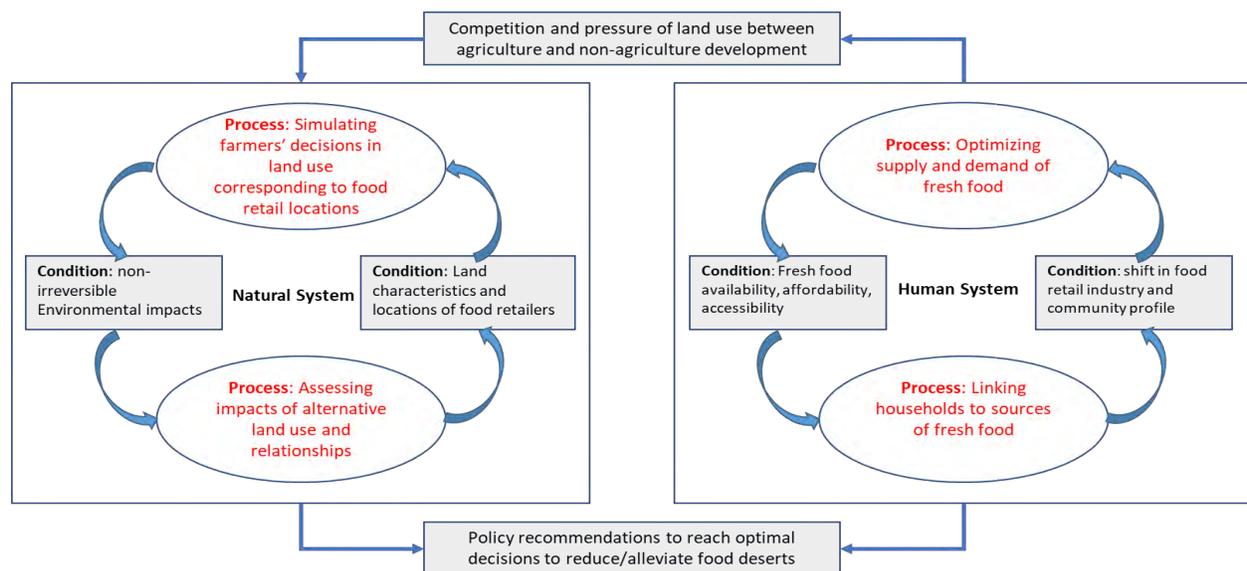
comes are reasonable. There are many datasets publicly available for such works. The datasets will be introduced in the following section.

Stage 4: Disseminate the modeling outcome through outreach activities with stakeholders via hands-on demonstrations, interactive discussions, and visualization maps like Figure 1.

Figure 2 presents an example of what an integrated thinking-design platform could look like. Each community has its characteristics to define conditions, influential factors, and the decision-making process. The key is to make sure each community can recruit ideas across all stakeholders to enlist a comprehensive assessment of gaps and opportunities for meaningful collaborations.

The dynamics within human systems: Given the modeled condition of a shifting food retail industry and profile in each community, it is possible to simulate farmers' production decisions to set aside a certain percentage of land, for example to produce a vegetable mix. Local food retailers provide a reasonable inventory level for purchase by local households. Each household makes decisions on where to buy and what to buy, given the produce prices and food retailers' locations (food

Figure 2. High-Level Schematic of the Dynamics of Coupled Human and Natural Systems



availability, affordability, accessibility). Household decisions on food purchases provide feedback to farmers and food retailers who then adjust their production and inventory levels.

The dynamics within natural systems: Given the condition of land characteristics and food retail locations, the natural system can be modeled using a biophysical model, which considers farmers' decisions to change the use of farmland (for example, for vegetable production or commercialization) and other input parameters such as soil characteristics, crop choices, and climate. The model will capture impacts of farmers' land-use decisions on hydrology and the environment, crop and vegetable yield potential, and land and water quality (soil loss, soil water content, nutrients, runoff) with various spatiotemporal scales.

The plan for evaluation of the platform also needs to be well developed following the standard scientific process (Groenvelde et al., 2017) to

1. Generate and validate individual components of the modeling and decision-making platform using unbiased and representative sets of input and observed historical data;
2. Integrate the components and validate the integrated systematic approaches to benchmark against the USDA's Food Desert Locator and other reliable sources of information; and
3. Use the modeling and decision-making platform to assess the impacts of specific exogenous changes for a set of social-economic-environmental scenarios for food deserts versus non-food deserts. Some examples might include the shifts of community planning priorities, community characteristics, population migrations, resource allocation, and development infrastructure.

The model proposed in this article demonstrates how a long-term planning process could positively influence human behaviors within the balance of natural systems when a pandemic like COVID-19 occurs. Each household needs to acquire sufficient information to identify the most

logical, convenient, and reasonable path to access healthy food. People living in food deserts often lack knowledge and guidance to become acquainted with different types of food and outlets, or such knowledge may be insufficient to change food-purchasing behavior, which in turn, could also be shaped by preferences based on health, culture, religion, and family history. Linking consumers to farmers has grown in interest during the COVID-19 crisis. Local farmers need to weigh the financial outcomes before transitioning into different types of products and practices. Farmers with proper skills sets, knowledge, equipment, and willingness to change might be able to shift land use to produce vegetables when there is sufficient demand from local food retailers and households, or farmers may sell land for commercial development. Once land structures are changed, effects on soil and water quality are created, often irreversibly. When land use is shifted for either food production or commercial development, land characteristics change. Such change may affect long-term soil fertility by switching the crop patterns.

Data Availability to Support This Approach and Next Steps

To design and create an integrated platform takes tremendous time and data. Fortunately, there are multiple datasets that could assist in the development of a platform like the one we propose in this article. Table 1 shows an example of a collective spatial-temporal database that could capture the human systems, natural systems, and their interactions. Additional data and information have been proposed by other scholars using focus groups, interviews, and surveys (Beaulac et al., 2009; Lytle & Sokol, 2017).

Concluding Remarks

This research brief proposes a concept for an integrated design to examine the human-environment dynamics of food deserts and identify strategies that would provide effective planning to prevent, prepare for, or respond to future disruptive events such as natural disasters or pandemics. Scholars have identified concerns and correlations between food access and health disparity for the popula-

tions living in food deserts (Allcott et al., 2019; Coleman-Jensen, Rabbitt, Gregory, & Singh, 2020; USDA ERS, 2019). The North Carolina example we present has identified the potential overlapping areas between food deserts and areas of high COVID-19 cases to demonstrate how an unpredictable event could exacerbate public health in

food desert communities to a greater extent than in more food-secure communities. 

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Food bank drive-through distribution during COVID-19: A reflective essay

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SPECIAL ISSUE COSPONSORED BY INFAS:
 THE IMPACT OF COVID-19 ON FOOD SYSTEMS



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Abstract

The COVID-19 pandemic has created an unprecedented surge in food insecurity and demand for free food. In response, Foodshare, the regional food bank serving Greater Hartford, Connecticut, created a drive-through distribution program to meet the immediate food needs of residents. Our team at Foodshare’s Institute for Hunger Research & Solutions conducted two surveys of people receiving food at the drive-through distribution to help inform Foodshare’s programming and response to the pandemic. Results show that 70%

of households receiving food had never gone to a food pantry or other program to receive free food prior to COVID-19, and 67% said they come at least once a week. Additionally, 86% of guests are not going elsewhere to receive free food and only 37% know of other places to get free food. The majority of people receiving food at the drive-through distribution were people of color, who are those most affected by COVID-19 from both health and financial perspectives. From April to August 2020, Foodshare served an average of 1,500 households each day and more than 150,000 cars total at the drive-through distribution alone.

Despite serving an immediate need for food, the drive-through model presents challenges, particularly during the New England winter with snow and freezing temperatures, and is an expensive endeavor. Foodshare and other food banks will need to pivot again from short-term pandemic assistance to longer-term approaches to create dignified, convenient, and sustainable access to

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healthy food for additional people struggling with food insecurity. Food banks can also leverage their extensive platforms of volunteers and donors to advocate for policy changes that will ensure economic stability and food security.

Keywords

Charitable Food, Food Bank, Food Insecurity, Food Pantry, Feeding America, COVID-19, Pandemic

Introduction

The COVID-19 crisis both highlighted and exacerbated the economic challenges of the average American. The pandemic exposed underlying income inequality and racial and ethnic health disparities that exist in this country. Many Americans were living paycheck-to-paycheck prior to the extensive economic disruption that began in March 2020. In a 2018 survey, the Federal Reserve found that 40% of Americans did not have the financial ability to cover an unexpected expense of US\$400 (Board of Governors of the Federal Reserve System, 2019). Foodshare is the regional food bank serving Greater Hartford, Connecticut. In Foodshare's service area of central and northeastern Connecticut, prior to COVID-19, 11% of households lived below the federal poverty line, and another 29% of households earned more than the federal poverty line but less than the basic cost of living for the area (Hoopes, Abrahamson, Leonard, & Treglia, 2018).

Prior to the onset of the COVID-19 pandemic, over 37 million people experienced food insecurity in the United States, meaning they did not "have consistent, dependable access to enough food for active, healthy living" (Coleman-Jenson, Rabbit, Gregory, & Singh, 2019). Feeding America, the nation's largest anti-hunger organization with a network of 200 food banks, estimates that the number of people experiencing food insecurity will grow to 54 million due to the economic fallout from the COVID-19 crisis (Feeding America, 2020a). In Greater Hartford, the number of people experiencing food insecurity is projected to increase by 41%, from 119,000 people to 167,000 in 2020 (Feeding America, 2020b).

When the COVID-19 pandemic reached the

U.S., widespread business closures led to massive layoffs and furloughs across the country. More than 33 million people filed for unemployment benefits nationally over an eight-week period from mid-March to mid-May, compared to just over 1.5 million over the same period in 2019 (U.S. Department of Labor, Employment & Training Administration, n.d.). By June 2020, approximately 183,200 people in Connecticut were unemployed, higher than the number of unemployed during the peak of the Great Recession (Connecticut Department of Labor, Office of Research, 2020). Three months after the spike in unemployment claims began, delays continued and families were left without the income needed to pay rent or mortgage payments and utility bills, afford prescription medications, and purchase food (Rosenberg, 2020).

Racial and Ethnic Disparities Worsen Due to COVID

The COVID-19 crisis has disproportionately impacted communities of color from both health and financial perspectives, further exacerbating racial and ethnic disparities. Blacks and Hispanics are more likely to be part of the essential workforce. Compared to 16% of whites, 24% of Blacks and Hispanics are employed in the service industry, where employees often cannot work from home, thus increasing exposure to the coronavirus (Artiga, Garfield, & Orgera, 2020). The service industry also experienced deep job loss due to the pandemic. Black, Indigenous, and people of color (BIPOC) are also more likely to have earned incomes that fall below the federal poverty line, making it more difficult to absorb an unexpected financial shock such as job loss or reduction in hours (Artiga et al., 2020).

Prior to the COVID-19 pandemic, BIPOC were more likely than whites to report concerns related to finances, such as worries about paying monthly bills and housing costs (Artiga et al., 2020). Job losses have hit Black people disproportionately across the U.S., with employment loss of 18% among Black workers compared to 16% among white workers (Gould & Wilson, 2020). BIPOC were also more likely than whites to experience food insecurity prior to the pandemic (Coleman-Jensen et al., 2019). As of April 2020,

food insecurity specifically due to the COVID-19 crisis was higher for BIPOC, with Black and Hispanic households with children almost twice as likely as white families to be struggling to get enough food to eat (Evich, 2020; NORC at the University of Chicago, 2020).

Charitable Response to Food Insecurity

While federal nutrition assistance programs like the Supplemental Nutrition Assistance Program (SNAP) are the first line of defense against food insecurity, they often do not meet the full food needs of American families. The charitable food system, composed of food banks, food pantries, and meal programs, helps to fill this gap by distributing billions of pounds of free food each year to households in need. In fiscal year 2020, Foodshare distributed enough food for nearly 14 million meals (one-third of which was fresh produce) through its 260 partner food pantries, meal programs, and Mobile Foodshare, pantry-on-wheels sites (Foodshare, 2020). We also operate a SNAP outreach program to help low-income households apply for SNAP benefits. Additionally, the Institute for Hunger Research & Solutions at Foodshare serves as a resource for the charitable food system by promoting evidence-based programs, conducting research, and building capacity to promote health and long-term solutions to hunger.

Limitations to Charitable Food

The food banking system has expanded over the past 40 years, and it is important to note several concerns about and limitations of the current system's structure. COVID-19 has exposed structural inequalities and systemic injustices that disproportionately increase food insecurity for certain groups, particularly women and BIPOC. Critics argue that charitable food is a short-term response and does not address those underlying, "upstream" factors that contribute to food insecurity. For example, some claim that food banks rely on corporate food donations and fail to hold these companies accountable for low wages and other policies that may contribute to food insecurity (Fisher, 2018). Others argue that food banks take pressure off the government to address food insecurity and ensure its citizens have sufficient food (Riches,

2018). Others highlight how food pantries can create stigma and blame for those seeking assistance rather than focus on food justice and equity (deSouza, 2019).

Many food banks recognize these limitations, and some are working to change the system by advocating for living wages (Oregon Food Bank, n.d.), and promoting holistic food pantry programs that build stability and long-term food security (Martin, Redelfs, Wu, Bogner, & Whigham, 2019; Sanderson, Martin, Colantonio, & Wu, 2020). Feeding America created the Ending Hunger Community of Practice, of which Foodshare is a member, to help address structural barriers to food security. While the pandemic creates an opportunity for food banks to increase their advocacy efforts, the unprecedented surge in demand for food during COVID-19 has prompted many food banks, including Foodshare, to respond quickly with new types of food distribution and outreach to meet the immediate needs of residents.

Foodshare's Response to Increased Need for Food Assistance

Foodshare and our partner programs were met with numerous challenges in responding to the increased need for food assistance during COVID-19. At Foodshare, we depend heavily on volunteers, many of whom were not available due to health concerns related to COVID-19. At the beginning of the pandemic, 20% of our partner programs (51 out of 260) decided to close. These were mostly meal programs where people congregate in large groups and school programs because schools had to shut down. Several food pantries also closed at least temporarily due to concerns about health and safety or lack of volunteers. These closures created a major gap in the local network, which our team sought to fill. However, we were challenged in transforming our typical food distribution methods to accommodate safety measures in response to COVID-19. In response, we created a drive-through distribution site to allow for social distancing and safety based on guidelines provided by Feeding America, guidance from the state, and the CDC.

Starting in early April and through August 2020, we operated a drive-through distribution site

five days a week from 8:30 am to 12:00 pm at a football stadium in East Hartford, Connecticut, that had the parking capacity to host a large influx of cars, staging areas, and distribution trucks. Our communications team leveraged its experience with traditional media and social media to raise awareness of the distribution among those affected by COVID-19, as well as to recruit new food donors, financial donors, and volunteers. Many of our volunteers who were senior citizens or from corporate groups had to cancel during COVID, leading staff to update the Foodshare volunteer website to recruit new volunteers to sign up for the drive-through program. People who were newly out of work or working from home with a flexible schedule became the new volunteer base, thanks in large part to the media attention drawn to the drive-through distribution.

Approximately 20 volunteers assisted at the food distribution each day. Cars lined up as early as 7:00 am and were assigned a line to join based on when they arrived. When the distribution started, people opened their car trunks, and volunteers wearing masks and gloves placed food in the car while assuring safety measures were followed. Clients who took the bus to the distribution site were also served in a socially distanced way.

The drive-through distribution was a new food program for Foodshare, and with so many new people coming to receive food, it created a natural experiment. Recognizing that the drive-through distribution would not be a permanent program, our team at Foodshare's Institute for Hunger Research & Solutions conducted two surveys of people receiving food at the drive-through to inform Foodshare's programming and outreach during the COVID-19 crisis. The goals of the surveys were to understand who was seeking help from Foodshare, where they were coming from, and how they have been affected by COVID-19.

Charitable Food Response during COVID-19

Feeding America reports that there was a 60% increase in food bank visitors across its network as of August 2020 compared to all of 2018 (Stanger, 2020). From March 2020 to August 2020, Feeding America coordinated a Client Impact Survey to gather data from people receiving food from food

banks and pantries using a 3-item questionnaire. Using a convenience sample, 17 food banks administered the survey and over 10,000 clients participated. Internal results from Feeding America showed that almost half (49%) of respondents had not received free food prior to COVID-19. Many food banks nationally have responded to the rise in need by creating similar drive-through distribution programs, including Second Harvest Food Bank of Orange County and Roadrunner Food Bank in New Mexico, to name a few (Elattar, 2020; Morello, 2020). However, to our knowledge, no research has been conducted to examine the demographic characteristics and challenges of those being served at drive-through food distributions. This study helps fill a gap in the literature.

Methods

We conducted surveys of guests coming to Foodshare's drive-through program at two points in time. Data collection occurred between April 10 and May 11 for the first survey, and July 15 to 17 for the second. We asked a few of the same questions across both surveys, but most questions were different to help inform Foodshare's programming and ongoing response to the pandemic at these two different times. Although data were collected at two points in time, they are treated as independent samples rather than a longitudinal study because no identifying information was collected from participants.

We identified survey respondents using a convenience sample of guests receiving food at Foodshare's drive-through program. Our staff and trained volunteers approached guests in their vehicles while they waited in line to receive food. We informed guests about the purpose of the survey and asked if they would be willing to participate. When a guest preferred to answer the survey in Spanish, a Spanish-speaking member of the team administered the survey. When guests were not interested or declined to participate, we thanked them and moved on to other cars. Our team conducted the surveys via SurveyMonkey on smart phones, which took on average three minutes to complete. The questions were closed-ended, but when guests offered additional feedback, we also captured qualitative data. We conducted the sur-

veys for program improvement purposes and did not collect any identifying information. We informed people that they did not have to participate or answer any questions they did not want to answer.

Research Questions

The goal of both surveys was to help inform Foodshare's programmatic response to COVID-19 at different points in time, so questions differed considerably. From April to May, our first guest survey was designed to understand the economic impact of the COVID-19 crisis on guests. The second survey, conducted in July, focused more on determining how we could best serve guests in the coming months, whether through an extension of the drive-through distribution program or in partnership with community food pantries in our network.

Demographics

Survey respondents across both surveys were asked about their race, ethnicity, and if they had children under 18 living in their household. We also asked guests what town they live in so that we could identify the geographic reach of the drive-through distribution. In the first survey, we asked if respondents had adults over age 60 living in their household.

Food Pantry Usage and the Financial Impact of COVID-19

We asked survey respondents in both surveys if anyone in their household had ever gone to a food pantry, Mobile Foodshare site, or other program to get free food before COVID-19. We also asked guests in the first survey whether they had experienced any income loss due to the COVID-19 crisis and if they had had to choose between paying for food and paying for other bills in the prior month. In the second survey, we asked how often guests visit the drive-through distribution site and if they were picking up food for more than one household.

Program Improvement

Recognizing that the drive-through program provides short-term assistance, in the first survey, we asked respondents if they would be interested in

talking with a coach to help with applying for other assistance and setting and working toward financial and other goals. The second survey focused more on knowledge and use of other food distribution sites. We asked guests if anyone in their household currently goes to other food pantries, if they know about other programs in their area where they can get free food, and if they would be willing to go to other sites to get food if we provided them with more information.

Data Analysis

Data were collected via SurveyMonkey, exported to Excel, and then imported into PAWS (SPSS v.18.0). Statistical analyses were performed using SPSS. Descriptive statistics were reported to describe the overall sample. χ^2 tests and Spearman correlations were used to assess bivariate associations. We also created a map in Python to display from which towns guests came. The Plotly library of functions was used to create the map's style, and shapefile data was taken from data.ct.gov.

Results

From April through August at the new drive-through program, Foodshare served an average of 1,500 households each day and more than 150,000 cars total. We distributed more than five million pounds of food at the drive-through distribution alone. Our partner programs team also monitored food pantry closures closely and worked with partners to provide personal protective equipment and additional volunteers to help distribute food. By the end of August, only 23 programs (9%) remained closed. In the spring, 513 unduplicated respondents participated in the survey, and in the July survey, 892 unduplicated respondents participated.

Respondent Characteristics

In both surveys, the majority of the sample identified as BIPOC. Household demographics are provided in Tables 1 and 2 for the two surveys. The spring survey's respondents were 38% Black and 28% Hispanic, while July respondents were 29% Black and 34% Hispanic. About half the sample in each survey were households with at least one child under the age of 18 (50% of respondents in the

spring survey and 51% in the July survey). Additionally, households with a member over age 60 accounted for 47% of the sample in the spring survey.

Food Pantry Usage and the Financial Impact of COVID-19

At both points in time, approximately 70% of households had never gone to a food pantry or other program to receive free food prior to the COVID-19 crisis, composing 68% of the sample in the spring and 71% in July. During the survey in April and May, 72% said that someone in their household had lost a job or had hours cut due to the pandemic, and 69% reported they had to choose between paying for food and paying other bills during the prior month. One guest said, “Having to pay your rent and light bills, those things you have to do and you have to balance paying those bills versus eating. Having the food available can eliminate that stress and that anxiety of wondering how you’re going to eat or how you’re going to provide for your family. I think just one less stressor is always a plus.” Another guest commented, “The food helps me focus on paying other bills.”

The majority of respondents (58%) to the spring survey said they would be interested in talking with a coach over the phone to help apply for state and federal benefits and setting and achieving financial and other goals. One guest said, “It would help to talk to a coach to determine what money to put where for essential bills.”

In the July survey, 15% of respondents said it was their first time going to the drive-through food distribution since it opened in April. Nearly half (47%) of guests in July said they were picking up food for more than one household, further demonstrating the increased need for free food in Foodshare’s community. One survey re-

spondent who visited the drive-through distribution multiple times a week said, “It is a blessing to help others. They don’t drive, so I provide for them daily.”

Table 1. Results of Spring Survey (N=513)

Characteristic	N (%)
Kids under age 18 in household	256 (50)
Race/Ethnicity	
Hispanic/Latinx	144 (28)
Black/African American	193 (38)
White	150 (30)
Asian	10 (2)
Other	10 (2)
Adult over age 60 in household	240 (47)
Lost job/wages lost due to COVID-19	360 (72)
Choose between food and other bills in past month	355 (69)
Never received charitable food	351 (68)
Interested in talking with a coach to set goals	
Yes	261 (58)
Maybe/not sure	29 (7)

Table 2. Results of July Survey (N=892)

Characteristic	N (%)
Kids under age 18 in household	416 (51)
Race/Ethnicity	
Hispanic/Latinx	271 (34)
Black/African American	232 (29)
White	231 (29)
Asian	37 (5)
Other	35 (4)
How often pick up food	
First time coming	131 (15)
2-3 times per month	154 (18)
Once per week	243 (28)
2-3 times per week	268 (31)
4-5 times per week	72 (8)
Pick up for other household	402 (47)
Never received charitable food	593 (71)
Currently going to other food pantries	118 (14)
Currently know about other food pantries	278 (37)
Willing to go to other food pantries	657 (83)

When asked in July how often they visit Foodshare's drive-through distribution site, 67% of guests responded they come at least once a week. Residents of East Hartford, the town where the distribution site is located, were more likely to pick up food more than once a week compared to people living outside of East Hartford (44% compared to 37%, $p < .05$). Hispanic households were also more likely to visit the distribution more than once a week compared to other ethnic groups (45% compared to 35%, $p < .01$).

Program Improvement

The survey in July focused on how best to serve households in need of food over the coming months. Results showed that 86% of respondents were not going to other programs to get free food outside of the drive-through distribution, and only 37% knew of other programs in their area. Hispanic households were less likely to know about other food pantries or meal programs compared to other ethnic groups (30% compared to 42%, $p < .01$). A guest who speaks Spanish said, "Because I do not speak English, it is difficult to communi-

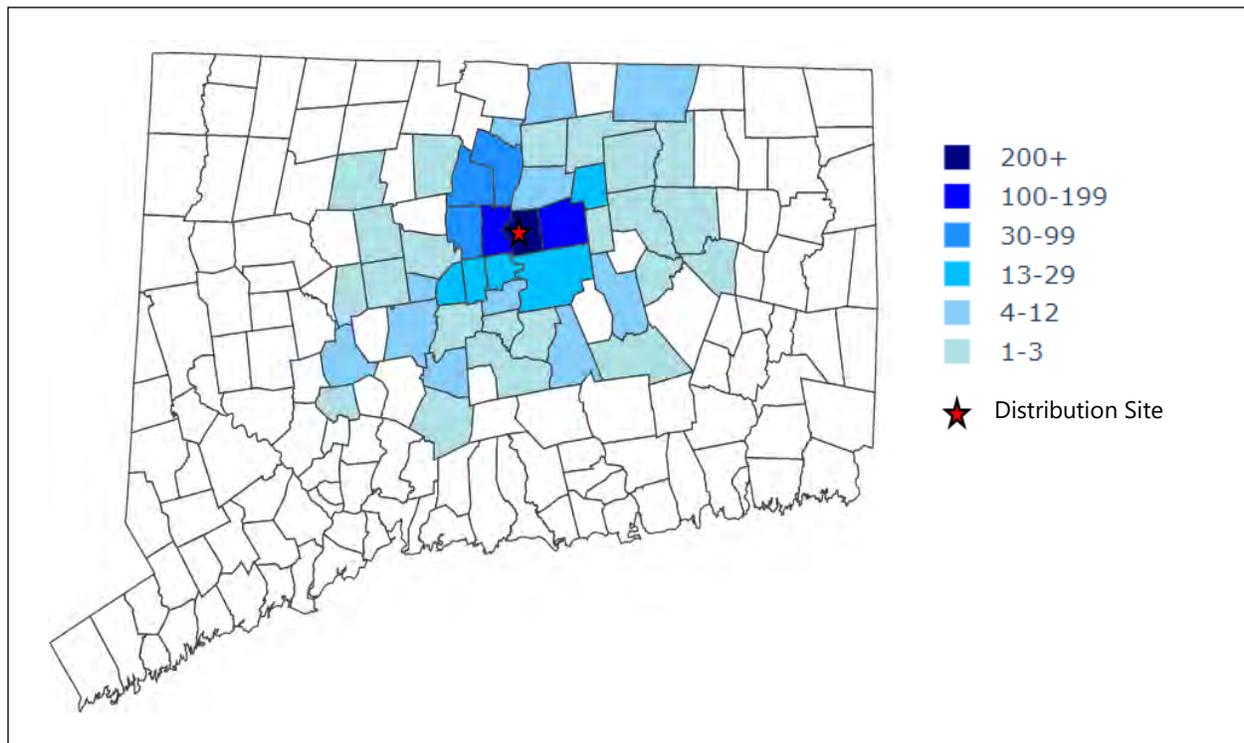
cate at other food pantries. I like staying in my car because it removes the barrier."

We asked respondents in the July survey if they would be willing to go to other food pantries and programs if Foodshare provided them with information, and 83% said yes. One guest described how "The coronavirus is taking away the stigma of getting help." Guests to our drive-through also commented on the kindness of the staff and volunteers. One guest said, "The people are very warm. That makes me feel comfortable to come back." Another guest commented, "The people here are extremely gracious. They don't make me feel less than, and that's really important. The day they make me feel less than, I wouldn't be coming." One guest said they'd want to see the "same type of friendly environment with people talking about us in a good way" at other food pantries.

Geographic Reach

The majority of the sample in both surveys resided in five towns in Foodshare's 42-town service area, and 5% of the sample resided outside Foodshare's service area. Figure 1 shows the towns from which

Figure 1. Number of Cars Visiting Foodshare's Drive-Through Distribution by Town



guests to the drive-through distribution came. In the spring, households from 28 towns were represented, with 74% from five towns. Similarly, in July, survey respondents resided in 30 of Foodshare's service area, with 79% coming from six towns. The main towns represented are most convenient to the drive-through distribution location, and 36% of respondents in the July survey said the convenient location of the distribution site was one of the most helpful qualities.

Limitations

This project has limitations that are worth mentioning. Surveys were meant to inform Foodshare's programmatic response to the growing need for food in the Greater Hartford, Connecticut, region. We used convenience samples for both surveys, and we only conducted the surveys at Foodshare's one drive-through distribution site, weakening the generalizability of the findings to other clients or other distribution programs. There are also limitations to this type of food distribution model. Most importantly, a drive-through distribution system typically requires access to a car. The temporary nature of the program is also expensive, requiring the hiring of staff to direct traffic and the renting of tents and trailers to store food.

Discussion

Our survey findings demonstrate the new demand for free food caused by COVID-19, the impact the pandemic has had on residents in Greater Hartford, and Foodshare's response. With many Americans living paycheck to paycheck before the pandemic started, it is not surprising that a nationwide emergency could expand food lines so drastically. The Foodshare team has adjusted to increased demand before, but the COVID-19 crisis presented new challenges and a significantly deeper need. At the start of the pandemic, staff focused quickly on logistical operations to set up the drive-through model to distribute additional food. In times of emergency, research tends to be overlooked while attention is focused on basic needs. Early data about the people served was helpful to inform donors, staff, and board members about the scope of the need and who we were serving, which led to new outreach and programming.

The majority of people coming to our drive-through distribution site had never received food from a food pantry before. They may have experienced food insecurity and may have participated in federal food assistance programs such as SNAP, WIC, or school meals, but most were receiving charitable food for the first time. A surprisingly large percentage of people (15%) in July came to our distribution site for the first time. It is possible this is because they tried to exhaust other resources before reaching out for help. The data demonstrate that the increased need for free food was not relenting, and Foodshare was serving a new population of people—many of whom were unaware of other charitable food programs in the area.

Following the survey in May, we used the findings to provide outreach and raise awareness about additional services, including SNAP, health insurance, United Way's 211 system of social service programs, voter registration, and information about Foodshare's network of mobile pantries and partner food pantries. Our staff and volunteers handed out informational postcards and promoted the same information using social media. Our SNAP outreach team visited the distribution site numerous times to talk to people about SNAP and inform them of Foodshare's application assistance program. We are helping to support our network of existing food pantry programs to serve additional households by recruiting additional volunteers and providing additional food. We are also using the geographic data to identify towns with great need and help connect individuals to other programs in those towns. In March through June 2020 alone, Foodshare spent US\$1.5 million on purchased food, compared to US\$350,000 in the entire prior fiscal year, to meet the need for free food in Greater Hartford. In response to COVID-19, we estimate we will distribute 19 million meals' worth of food during 2020, a 72% increase over 2019. Our SNAP outreach team assisted over 1,100 households in applying for SNAP benefits between March and December 2020, nearly a 200% increase compared to all of 2019.

Longer-term Lessons

The pandemic presents an opportunity for food banks and food pantries to reduce stigma and offer

a welcoming environment to assist households receiving charitable food for the first time, and to ensure that people feel comfortable coming back for assistance. Each morning before the drive-through distribution, volunteers were gathered for a pep talk, and staff encouraged them to show their empathy so that guests would feel comfortable coming back if they needed. As the pandemic continues, it will be important to incorporate and reinforce these values through trainings and communications in other distribution sites.

The drive-through distribution model created by Foodshare and many other food banks is a temporary and emergency response, involving rental tents and trucks, temporary staff hired for traffic control, and COVID precautions. This model presents challenges, particularly during the New England winter with its snow and freezing temperatures, and is an expensive endeavor. As the pandemic persists, we, along with other food banks, will need to continue to adjust our operations and pivot from short-term pandemic assistance to longer-term approaches. For example, several food banks are utilizing an OrderAhead¹ system using technology to allow individuals to order food from the food bank and reserve a pickup time and location (Northern Illinois Food Bank, n.d.). Foodshare is considering this option to reduce the costs of the drive-through program, and reduce the potential stigma and inconvenience of waiting in line at drive-through distributions.

Providing Wrap-around Services

While our drive-through program provided short-term supplies of food, results from the spring survey show that the majority of guests would be interested in talking with a coach to set goals and be connected to other programs due to the financial challenges presented by the pandemic. Food banks and pantries can serve as an access point to additional wrap-around services, because it takes more than food to end hunger. Food banks can explore programs that use coaches or case management to connect people to other important resources in the community to help them get back on their feet (Martin et al., 2019; Sanderson et al.,

2020). In response to the spring survey results, our team at Foodshare's Institute began partnering with Feeding America and two other food banks to offer a virtual coaching program with referrals to additional services and supports.

Addressing Racial Disparities and Reducing Barriers

The COVID-19 crisis has highlighted and exacerbated racial and ethnic disparities in health, income, and food security. It is more important than ever for the charitable food system to consider how to reduce these disparities and to create long-term food security. Our survey results confirm trends in food insecurity and racial and ethnic disparities resulting from the COVID-19 pandemic. The majority of people receiving food at our drive-through distribution site were BIPOC, the same population disproportionately experiencing food insecurity prior to the current crisis. More food banks and food pantries should consider advocating for stronger federal programs, including a higher minimum wage, to address the root causes of hunger that are the result of systemic inequalities in America.

As the media published images of massive lines of cars receiving food, our food bank benefited from new volunteers and financial support. We engaged new donors who may not have recognized the prevalence and impact of food insecurity prior to the COVID-19 crisis, and a new base of volunteers joined the team. Food banks can leverage this newfound interest by highlighting the underlying causes of food insecurity. Food banks and food pantries have an opportunity to further their impact beyond food distribution by addressing the root causes of hunger. The systemic injustices that continue to deepen in America—from racism to income inequality—are key contributors to food insecurity. Food banks can help tell this story and advocate for living wages and systems change to create long-term solutions to hunger. Historically, food banks have often remained apolitical, not engaging in policy debates. COVID-19 and a surge in food insecurity highlight the need for stronger advocacy and involvement in the policy arena. The Oregon Food Bank can serve as an important

¹ <https://www.orderahead.org/>

model for other food banks in this regard.

The charitable food system has flaws, yet COVID-19 has demonstrated that food banks and pantries are essential frontline services for millions of Americans. The pandemic has shown how nimble and flexible the charitable food system can be. Thousands of people in Greater Hartford who were affected by COVID-19 sought food assistance for the first time. Our team at Foodshare quickly responded to an unprecedented need for food, engaged new donors and new volunteers, and created a new distribution model. Without this response, more families would have suffered financially, physically, and emotionally.

Now is the time for food banks to continue to innovate. Foodshare and other food banks will need to pivot again to boost the capacity of our networks to create dignified, convenient, and sustainable access to healthy food for additional people struggling with food insecurity. Food banks can leverage their extensive rosters of volunteers and donors to advocate for policy changes that will ensure economic stability and food security. The challenges of COVID-19 present opportunities for the charitable food system to ensure that our work does not deepen racial and ethnic disparities but instead works to alleviate them. 

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SNAP participants' purchasing patterns at a food co-op during the COVID-19 pandemic: A preliminary analysis

SPECIAL ISSUE COSPONSORED BY INFAS:
THE IMPACT OF COVID-19 ON FOOD SYSTEMS



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Abstract

The COVID-19 pandemic has affected the food system, increasing barriers to food access and exacerbating food insecurity across the U.S. The Virginia state government initiated a stay-at-home order to help reduce the spread of COVID-19. Prior to the pandemic, the Virginia Fresh Match (VFM) Nutrition Incentive Network partnered with food retail outlets to provide Supplemental Nutrition Assistance Program (SNAP) participants point-of-purchase incentives (e.g., Double Up Food Bucks, SNAP Match), which function as matching discounts on fresh fruits and vegetables (F/V). These can enable participants to increase their purchasing power and potentially reduce food insecurity. In response to COVID-19, VFM removed the limit on incentive discounts (previously \$10¹) to further incentivize the purchase of fresh F/V by SNAP participants. This study sought to characterize the purchasing patterns of SNAP participants at a food co-operative (co-op) partnered with VFM before and during the Virginia stay-at-home order. A total of 654 transactions at the co-op were included. Independent t-tests were utilized to determine differences before and during the order. The results indicated a significant increase in the mean incentive discount received during the order (pre-shutdown=\$3.95, inter-shutdown=\$5.01, $p=0.035$); however, simultaneously there was a decrease in the mean number of fresh F/V purchased (pre-shutdown=3.08, inter-shutdown=2.39, $p=0.015$). Although F/V purchases decreased, the presence of unlimited point-of-purchase incentives at the food co-op may have helped prevent a greater decline in fresh F/V purchases and helped increase access to fresh F/V in this population during the onset of the COVID-19 pandemic.

Keywords

Nutrition Incentive Programs, Food System, Food Insecurity, Fruits, Vegetables, SNAP, COVID-19, Pandemic

Introduction

The spread of COVID-19 and subsequent changes

to working conditions and retail environments have had a substantial impact on the food system (Devereux, Béné, & Hoddinott, 2020; Richards & Rickard, 2020; Siche, 2020; Singh, Kumar, Panchal, & Tiwari, 2020), threatening the food supply chain in multiple ways. Consumers have had to shift toward purchasing a greater proportion of their food from retail outlets, partly due to the limitations placed on restaurants and schools in an effort to slow the spread of COVID-19 (Goetz, Schmidt, Chase, & Kolodinsky, 2020). Sales of food away from home—i.e., foods acquired from restaurants and non-commercial facilities (Elitzak & Okrent, 2018)—totaled about \$66.9 billion in January 2020, and decreased to \$35.7 billion in April (U.S. Department of Agriculture Economic Research Service [USDA ERS], 2020a). Whereas, sales of food at home—i.e., foods acquired from grocery stores and other food retail outlets (Elitzak & Okrent, 2018)—increased from about \$65.2 billion in January to \$69.2 billion in April, with a large spike in March of \$79.3 billion (USDA ERS, 2020a). These purchasing behaviors resulted in demand-side shocks to food supply chains, which had difficulty accommodating unexpected surges in demand from consumers (Hobbs, 2020).

High demand for food items at grocery stores coupled with disruptions in the workforce (Artiga & Rae, 2020; Chadde, 2020; Costa & Martin, 2020) led to reports of agricultural producers disposing of food items (Newman & Bunge, 2020) and meat-processing plants closing due to COVID-19 outbreaks (Gallagher & Kirkland, 2020) in April. The Food and Drug Administration assured the public there were no food shortages at the national scale (U.S. Food and Drug Administration [US FDA], 2020a). However, many American consumers were concerned about the potential for shortages, when more frequently greeted by empty shelves at grocery stores (US FDA, 2020b). Depleted supplies of grocery store food items can cause greater barriers to accessing adequate food and especially threaten individuals with low incomes who may not be able to find affordable products (Feeding America, 2020; Kinsey, Kinsey, & Rundle, 2020).

COVID-19 and its impact on the food system

¹ All currency in this paper is US\$.

have also exacerbated food insecurity (Rami, 2020). The number of households experiencing food insecurity—i.e., unable or uncertain of being able to obtain adequate food during at least part of the year (USDA ERS 2020b)—was expected to rise as a result of COVID-19, especially households with young children, black and Latinx households, and low-income households (Leddy, Weiser, Palar, & Seligman, 2020). In 2019, 10.5% of U.S. households experienced food insecurity (USDA ERS, 2020b). Feeding America projected that food insecurity would increase to about 12.5% of the U.S. population in 2021 (Feeding America, 2021).

Due to the effects of COVID-19, there was an increase in demand for food assistance through SNAP (Leddy et al., 2020), a federal nutrition program that provides low-income families funds to supplement their budget for food (USDA Food and Nutrition Service [USDA FNS], n.d.). To help mitigate the impact of COVID-19 on food insecurity, the Families First Coronavirus Response Act of 2020 allowed states to provide Pandemic-Electronic Benefits Transfer, temporarily increased SNAP benefits for some individuals and families, and expanded SNAP eligibility criteria (USDA FNS, 2020).

In addition to nutrition assistance programs, nutrition incentive programs provide incentives to SNAP consumers in an effort to increase the amount of fruits and vegetables (F/V) they purchase (United States Department of Agriculture, National Institute of Food and Agriculture [USDA NIFA], n.d.). Nutrition incentive programs have also been shown to help decrease food insecurity (Durward et al., 2019; Parks, Stern, Fricke, Clausen, & Yaroch, 2020; Savoie-Roskos, Durward, Jeweks, & LeBlanc, 2016). The Gus Schumacher Nutrition Incentive Program (GusNIP), formerly the Food Insecurity Nutrition Incentive Program (FINI), is a federal grant program to research and expand nutrition incentive programs (USDA NIFA, n.d.). GusNIP provides funding for programs that help SNAP participants purchase F/V through the use of discounts or matching funds from point-of-purchase incentives (e.g., Double Up Food Bucks, SNAP Match, Double-Dollar), which are provided to customers at the time and place of purchase (USDA, n.d.). The subject of this study, Virginia

Fresh Match (VFM), is a nutrition incentive network of a number of Virginia farmers markets and food retail outlets that provide nutrition incentives to SNAP customers. VFM is managed by two non-profit organizations: Local Environmental Agriculture Project and Virginia Community Food Connections (Virginia Fresh Match, n.d.). In 2018, VFM was awarded a \$1.8M FINI grant to expand the VFM nutrition incentive program at farmers markets and to pilot VFM at neighborhood grocery stores. As of May 2020, Year 3 of the FINI grant, there were 75 outlets offering nutrition incentives, including farmers markets, online farmers market platforms, mobile markets, community supported agriculture programs, and neighborhood grocery stores (e.g., food co-ops).

In response to COVID-19, VFM worked closely with all 75 partner outlets to help them continue to meet community food needs. Prior to COVID-19, these partner outlets offered SNAP participants point-of-purchase incentives as a 50% discount on fresh F/V with a limit of \$10.00 in discounts, thus allowing participants up to \$20.00 worth of fresh F/V for the purchase price of \$10.00. After this limit was reached, participants would pay full price for the remainder of the fresh F/V items that they wanted to purchase. As part of the COVID-19 response, VFM allowed all outlets, at their discretion, to increase or remove the \$10.00 point-of-purchase incentive limit. With VFM eliminating the requirement to limit discounts to \$10.00, partner outlets were able to further support SNAP customers who may have needed to purchase larger quantities of F/V in an effort to stock up or to consolidate shopping trips as ways to decrease their potential exposure to the virus. Other U.S. nutrition incentive programs also removed their limits on incentives as a response to the COVID-19 pandemic (Feeding Florida, 2021; Gangwer, 2020). However, no studies have been conducted to see how these may have impacted purchasing patterns of SNAP participants.

With the onset of the COVID-19 pandemic, most states declared restrictions on schools and businesses, with many states mandating closures to non-essential businesses and requiring restaurants to limit operations (Bump, 2020). The governor of Virginia, Dr. Ralph Northam, issued Executive

Order 55, imposing a temporary stay-at-home order for Virginia and limiting business operations effective March 30, 2020 (Office of the Governor, 2020). Understanding how consumers, particularly vulnerable consumers, immediately respond to major disruptions in the food system, such as those resulting from a broad stay-at-home order, is vital for designing efforts to increase food system resiliency. Therefore, the purpose of this study was to characterize the short-term purchasing patterns of SNAP participants at a food co-op partnered with VFM before and during the onset of the Virginia stay-at-home order.

Methods

Study Design

Using a quasi-experimental design, transactions made by SNAP participants at a food co-op were compiled from January 2 through April 30, 2020. The food co-op utilized for this study partnered with VFM to provide SNAP customers point-of-purchase incentives prior to the onset of the COVID-19 pandemic. Historically, the point-of-purchase incentive at this food co-op consisted of a 50% discount on fresh F/V with a limit of \$10.00 in discounts. As of March 27, 2020, the \$10.00 cap was removed to allow SNAP customers to receive an unlimited amount of point-of-purchase incentive discounts.

Study Site

The International Cooperative Alliance defines a co-op as “an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically controlled enterprise” (2018, para. 3). The food co-op in this study states that they follow the seven cooperative principles outlined by the International Cooperative Alliance: voluntary and open membership; democratic member control; member economic participation; autonomy and independence; education, training, and information; cooperation among cooperatives; and concern for community (International Co-operative Alliance, 2018).

The co-op is located in Harrisonburg, Virginia, a college town with an estimated population of

about 53,000 as of 2019 and a 2013 Rural-Urban Continuum Code of 3, indicating that the region can be considered roughly on the border between metropolitan and non-metropolitan (U.S. Census Bureau, n.d.; USDA ERS, 2013). The co-op is in an area that is considered low-income and low-access at one and twenty miles, meaning that a significant number of residents are over one mile (urban) or 20 miles (rural) from the closest supermarket (USDA ERS, 2020c.) In this region, the majority of the residents are white, and the second largest race/ethnicity group is Hispanic or Latinx. The median household income was \$46,679 as of 2015–2019 (U.S. Census Bureau, n.d.). In April 2020, 1,837 households in this region received SNAP benefits (Virginia Department of Social Services, 2020). The local retail environment is characterized by several grocery chain locations, a super center, and other small food retailers. Some grocery stores are located near adequate sidewalks and are accessible by pedestrians, but many are only safely accessible through the use of a vehicle. When shopping at the food co-op, customers had access to local products, supplements, produce, bulk items, a bakery, alcoholic beverages, meats, a deli, and a hot bar. Standard SNAP rules and regulations applied to items purchased at the food co-op and incentives could only be used on fresh F/V (i.e., F/V that were not canned or frozen, and fresh herbs).

Data Collection

Transaction data were compiled from computer receipts that were collected and stored by the food co-op at the time of purchase. The data consisted of the date each purchase was completed, a description of each item purchased, the cost of each item, the payment method(s) used, and the amount that was discounted in the form of point-of-purchase incentives. The receipts were used to estimate the number of unique SNAP customers. No identifier data were collected and no data were collected directly from customers. In accordance with the Virginia stay-at-home order, transactions made before March 30, 2020 were coded as pre-shutdown and those made on and after March 30, 2020, were coded as inter-shutdown. Transactions considered returns or refunds were excluded from analysis. This project was determined not to be

human subjects research by the Western Institutional Review Board.

Statistical Analysis

Statistical data were generated using IBM SPSS 26.0 statistical software. Descriptive statistics were performed to determine the frequencies of variables, including purchases and fresh F/V items. Independent t-tests were used to analyze statistical differences between pre-shutdown and inter-shutdown purchases for the following variables: the amount of SNAP benefits spent, the amount spent on the entire purchase, the total number of items purchased, the gross price of fresh F/V items purchased, the number of fresh F/V items purchased, the percentage of fresh F/V items purchased in relation to all items purchased, the gross cost of all fresh F/V items per purchase, and the amount of money discounted from point-of-purchase incentives. Significance was set a priori as $p \leq 0.05$.

Results

The total number of transactions from SNAP customers at the food co-op from May 2019 through April 2020 was 2,836, totaling \$40,669.60. For this study, 654 transactions from SNAP customers were analyzed, of which 403 were completed pre-shutdown and 251 were completed inter-shutdown. It was estimated that 184 unique SNAP customers completed the transactions.

The 654 purchases totaled \$14,600.37, with \$12,784.74 spent in SNAP benefits. A total of 435 transactions included discounts from point-of-purchase incentives, generating \$2,850.54 in discounts. After the discounts, a total of \$3,836.57 was spent in SNAP benefits on fresh F/V items. Over the course of the study, the included transactions at the food co-op increased from \$1,926.22 in January to \$5,834.06 in April. The monthly amount spent in SNAP benefits also generally followed this positive trend, from \$1,823.83 in January to \$5,310.66 in April. In addition, the total number of monthly SNAP transactions more than doubled, from 105 in January to 242 in April.

Pre-shutdown, a total of 1,240 fresh F/V items were purchased (84.1% of purchases contained fresh F/V items, and 46.3% of purchased items were fresh F/V), with some of the most common

including organic bananas, pints of blueberries, and organic avocados. Items coded as miscellaneous bulk produce, price-reduced produce, and general produce at the food co-op were also among the most commonly purchased items. Inter-shutdown, a total of 600 fresh F/V items were purchased (57.8% of purchases contained fresh F/V items, and 36.3% of purchased items were fresh F/V). Of the 600 fresh F/V items, some of the most frequently purchased were organic bananas, tomatoes, organic avocados, and regular avocados. When comparing the mean gross price of fresh F/V items purchased pre-shutdown with inter-shutdown, the gross price inter-shutdown was significantly higher at $\$4.22 \pm 2.36$ compared to pre-shutdown at $\$3.38 \pm 1.95$ ($p \leq 0.001$).

The mean number of fresh F/V items purchased and the mean percentage of fresh F/V items purchased in relation to all items purchased were both significantly lower during inter-shutdown as compared to pre-shutdown ($p < 0.05$); however, the mean amount of money discounted from point-of-purchase incentives was found to be significantly higher during inter-shutdown ($p < 0.05$), with a maximum discount received of \$44.88 (see Table).

Discussion

The significant reduction in the number of fresh F/V items SNAP participants purchased inter-shutdown, both in count and as a percentage of all items purchased, may indicate that the stay-at-home order influenced purchasing patterns. Although there is limited data from which to draw conclusions as to the plausible causes of these differences, the results demonstrate that there was a significant increase in the mean gross price of fresh F/V items purchased and there was not a significant change in the gross cost of fresh F/V items per transaction, signaling that the significant decrease could be the result of customers balancing the cost of the fresh F/V items with the quantity due to budgetary concerns. This was further exemplified by the changes in the most commonly purchased types of fresh F/V items. An additional explanation for the decline in the number of fresh F/V items purchased is that some households may have prioritized shelf-stable F/V items, like canned

Table. Differences in SNAP Purchases made Pre-shutdown And Inter-shutdown Secondary to COVID-19 ^a

Transaction Details	Pre-shutdown Purchases (n=403)		Inter-shutdown Purchases (n=251)		Mean Difference		Significance
	Mean	(SD)	Mean	(SD)	Mean	(SE)	p-value ^c
SNAP Spent (\$)	19.18	(27.49)	22.22	(29.60)	3.04	(2.28)	0.182
Transaction Total (\$)	21.29	(29.80)	24.47	(32.30)	3.17	(2.48)	0.200
Total Items Purchased (n)	6.64	(7.13)	6.58	(7.70)	-0.06	(0.59)	0.916
Gross F/V Cost (\$)	10.30	(11.32)	10.10	(16.97)	-0.20	(1.11)	0.857
F/V Items Purchased (n)	3.08	(3.26)	2.39	(3.86)	-0.69	(0.28)	0.015
F/V Items vs. Total Items (%)	56.35	(39.55)	33.19	(37.15)	-23.16	(3.11)	<0.001
Incentive Discount (\$) ^b	3.95	(3.74)	5.01	(8.84)	1.05	(0.50)	0.035

^a SNAP: Supplemental Nutrition Assistance Program; F/V: Fresh fruits and vegetables

^b In pre-shutdown, the discount from point-of-purchase incentives was capped at \$10; in inter-shutdown the cap was lifted.

^c Bold p-values indicate significance.

and frozen options (Cranfield, 2020). However, data on purchases of canned and frozen F/V were not compiled in this study. Consumers could have also shifted their purchasing patterns because of perceived shortages in food supply, due to reports of low or empty stock of certain items at food retailers over the course of the pandemic (U.S. FDA, 2020a). These potential explanations cannot be tested in the present study because no personal information or survey data was collected. Other unknown environmental factors may have also impacted the purchasing behaviors demonstrated by the data, and significant changes in purchases might have occurred prior to the stay-at-home order. As these data are from one food co-op, the results may not be generalizable. In addition, the research team was unable to compare the sales data from the food co-op during the same time frame for the previous year (January-April 2019) or to overall store purchases. Although these are limitations, the focus of this study was to analyze the immediate impacts of the stay-at-home order on SNAP purchases at the food co-op, which was accomplished through assessing transactions pre- and inter-shutdown between January and April 2020.

The overall increase in the total amount spent at the co-op during inter-shutdown is representative of the data that has found that household spending at grocery stores increased compared to earlier in 2020 (Baker, Farrokhnia, Meyer, Pagel, &

Yannelis, 2020). The current findings also demonstrate a significant increase in the mean amount of money individuals received in discounts from point-of-purchase incentives. This was expected due to the removal of the incentive cap as of March 27, 2020. Previous research has shown point-of-purchase incentives can increase F/V purchases (Polacsek et al., 2018; Steele-Adjognon & Weatherspoon, 2017); therefore, access to these incentives during a time of heightened food insecurity might have helped to prevent a more substantial decline in fresh F/V purchases by SNAP participants. No formal advertising or marketing for the incentive cap removal had been conducted at the time of the study, but some customers purchased fresh F/V items in quantities that allowed for a significantly increased mean discount. This may demonstrate that some customers were buying larger quantities of fresh F/V items in order to stock up due to the stay-at-home order in Virginia, with the point-of-purchase incentives helping to reduce the financial burden of this change in purchasing behaviors. The presence of point-of-purchase incentives at the co-op may have also helped to lessen food insecurity for SNAP participants, as these types of incentives have been shown to do in previous research (Durward et al., 2019; Parks et al., 2020; Savoie-Roskos et al., 2016).

An advantage of nutrition incentive programs during crises such as COVID-19 is their ability to increase food purchasing power while other emer-

gency food programs may be experiencing disruptions. COVID-19 exposed vulnerabilities in the food bank distribution system, with food banks experiencing difficulty maintaining adequate stock once donations waned (Bublitz, Czarkowski, Hansen, Peracchio, & Tussler, 2020). There was also an increased demand for food bank services and a shortage of volunteers (Kulish, 2020). Nutrition incentive programs did not face these same challenges, and accordingly demonstrated the ability to quickly respond to COVID-19 and provide SNAP participants the opportunity to consistently purchase additional fresh F/V items.

Interest in local foods may increase in response to COVID-19 (Hobbs, 2020). When responding to the pandemic, retailers selling local food items may have an advantage maintaining their stock because their supply chains are not fully dependent on imports or interstate commerce, which may experience disruptions more readily. Consumers may also experience stronger motivation to support local economies, due to COVID-19 (Hobbs, 2020). Indeed, some community-supported agriculture programs and farmers markets experienced heightened sales during the early stages of the COVID-19 pandemic (Kolodinsky, Sitaker, Chase, D, & Wang, 2020). However, smaller food retailers selling local foods, such as the co-op in this study, may be unable to offer a wide variety of products in ways that are as cost-effective as larger grocery store chains (Hobbs, 2020). Considering that the pandemic resulted in job losses and reduced incomes (Board of Governors of the Federal Reserve, 2020), many individuals might have sought more affordable food options at larger grocery chains. Cost-effective products may have been especially crucial to SNAP consumers during the pandemic, given the importance of prices and sales on their food purchasing decisions (Mabli & Worthington, 2015). The present study did not assess changes in local food purchases at the food co-op.

These findings provide support for increased point-of-purchase incentive discounts as a way to encourage SNAP customers to buy fresh F/V items from food co-ops. This form of response to COVID-19 and future crises might help maintain

local businesses and farmer/producer operations while improving access to fresh F/V items.

Conclusions

This has been the first study to examine changes in the purchasing patterns of SNAP participants during the initial phase of a COVID-19 stay-at-home order. Overall, the results indicate that total monthly sales increased at the food co-op after the initiation of the Virginia order in April. Customers significantly reduced the number of fresh F/V items they purchased, which may have been the result of consumers desiring shelf-stable products or purchasing different types of fresh F/V items that were less cost-effective.

The results of this study demonstrate how the Virginia stay-at-home order immediately impacted food purchasing at the food co-op, providing insight into how SNAP participants responded to the abrupt change—or their fear of change—in the food supply chain. Other studies should assess the long-term impacts that COVID-19 may have on the food purchasing patterns of SNAP participants. Future research should also directly investigate the potential impact that COVID-19 may have on local food purchases. Additionally, qualitative data collection from customers would help determine the decision-making processes and motivations behind the behavior changes demonstrated in this study. It is expected that many consumers will revert to pre-COVID-19 behaviors, but some behavior changes may remain (Sheth, 2020), and this study provides important baseline results, allowing for the future comparison of short-term and long-term COVID-19 impacts.

This study provides preliminary evidence that nutrition assistance programs, such as SNAP, and incentive programs funded by GusNIP, like VFM, may act as buffers to shifts in consumer purchasing patterns in response to the volatility of the food system, as has been seen during the COVID-19 pandemic. 

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(see References, next page)

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Media coverage of a pandemic's impacts on farmers and implications for agricultural resilience and adaptation

SPECIAL ISSUE COSPONSORED BY INFAS:
 THE IMPACT OF COVID-19 ON FOOD SYSTEMS



Inter-institutional
 Network for
 Food and
 Agricultural
 Sustainability

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Abstract

The COVID-19 crisis has revealed weaknesses and placed great stress on the agri-food system in the U.S. Many believe that it could be a catalyst event that leads to structural changes to improve the food system's resilience. We use a sample of 220 articles published in prominent national newspapers and agricultural trade journals from March to May 2020 to explore the extent to which farmer responses to COVID-19 covered in the media represent examples of resistant, adaptive, or transformative strategies. The pandemic disrupted the U.S. food system and impacted farmers by reducing access to markets, lowering commodity

prices, restricting access to farmworker labor, and shifting consumer demand. Media coverage of farmer responses to these stressors were coded into three alternative pathways: (i) reactive or buffering responses, (ii) adaptive responses; and (iii) transformative responses. Most news media coverage focused on the pandemic's disruptive impacts on the U.S. food system, related negative impacts on farmers, and short-term responses by institutional actors, including policy-makers and food supply chain industry actors. Farmer responses to pandemic stressors were mentioned less frequently than farmer impacts and responses by institutional actors. The most common examples of farmer responses highlighted in the media reflected farmer reactive and buffering behaviors, which were mentioned significantly more frequently than adaptive or transformative

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responses. National newspapers were more likely to cover farmer responses and present examples of adaptive and transformative strategies compared to agricultural trade journals. Our findings suggest that news media coverage in the early months of the pandemic largely characterized the event as a rapid onset ‘natural’ disaster that created severe negative impacts. Media devoted more attention to short-term policy responses designed to mitigate these impacts than to farmer responses (in general) or to discussion of the deeper structural causes of and potential solutions to the vulnerabilities revealed by the pandemic. In this way, both national newspaper and agricultural trade journal coverage seems to promote frames that reduce the likelihood of the pandemic becoming the seed of a more resilient system.

Keywords

Adaptation, Buffering Behavior, COVID-19, Pandemic, Farmers, Farming Systems, Framing, Impact Pathways, News Media Coverage, Resilience

Introduction

The COVID-19 outbreak in early 2020 created sudden and severe shocks to the U.S. food supply chain (Nicola et al., 2020). In mid-March 2020, stay-at-home orders led to a dramatic shift in the ways in which households purchased and consumed food (Bomey & Tyko, 2020; Michelson, 2020). Additionally, reduced travel by U.S. residents translated directly into a lower consumption of ethanol, leading to dramatic impacts on demand for corn from U.S. farmers (Fatka, 2020a; Meyer, 2020). Changes in consumption patterns and outbreaks among food supply chain workers led to significant disruptions in food supply chains (Corkery & Yaffe-Belany, 2020b; Hearden, 2020). The pandemic also disrupted international shipping and trade (Swoboda, 2020b).

The increased visibility of food system vulnerabilities and failures have led many observers to question whether the pandemic might serve as a catalyst event leading to a fundamental transformation of farming and food supply chains. In the first few months of the pandemic, a number of scholars and organizations used resilience frameworks to

assess the vulnerabilities, impacts, and responses in food systems (Food and Agricultural Organization of the United Nations [FAO], 2020; Hilchey, 2020). The concept of ‘resilience’ refers to the ability of individuals, communities, or systems (particularly ecosystems) to ‘bounce back’ or sustain their essential functions in the face of disturbance (Folke, 2006; Gunderson & Holling 2002; Walker, Holling, Carpenter, & Kinzig, 2004). Resilience frameworks understand the world as a complex adaptive system. They focus on dynamic co-evolutionary processes in socio-ecological systems through which actors and institutions resist, adapt, or transform themselves in order to survive or thrive under uncertain or changing environmental conditions (Rammel, Stagl, & Wilfing, 2007).

Questions about the resilience of modern agriculture and the global food supply chain began long before the COVID-19 pandemic (Eriksen, 2008; Kahiluoto et al., 2019; Puma, Bose, Chon, & Cook, 2015). Nevertheless, many think the pandemic exposed the lack of social and ecological resilience of the dominant food system and predict significant transformations as part of a long-run social-ecological adaptive process (Kahiluoto, 2020; Worstell, 2020). Others are more sanguine and view it as an opening that will not necessarily generate deeper structural changes (Michelson, 2020; Moran, Cossar, Merkle, & Alexander, 2020; Orden, 2020).

Key drivers of the resilience of a food system are the decisions and behaviors implemented by farm operators in response to changes in social, economic, and climate conditions. Darnhofer (2014) has developed a useful framework for categorizing the different capabilities or strategies farmers have that can contribute to their resilience. These include *buffering* (absorbing a perturbation without a change in structure or function by reallocating resources, mobilizing financial or labor reserves, or using excess capacity or inventory); *adaptation* (adjusting in a manner that adapts to new conditions while staying within the current regime, for example using new technologies or marketing channels, investing in storage, or pooling resources with other farmers); and *transformation* (implementing radical changes that lead to a transition to a

new farming system, often through changes in farm enterprise type, establishing new production and marketing relationships, reorganizing the flow of labor and financial resources, and altering the balance of farm and off-farm activities).

Collectively, analyses of farm and food system resilience published in the early months of the pandemic provide useful and provocative hypotheses about the short- to long-term outcomes for food systems. However, most of these papers are conceptual and rely on limited empirical data or anecdotal information to construct their narratives or support their conclusions. While government statistics and primary research data takes time to be collected, processed, and released, much of what we know is through the window of media coverage of the event. Since the novel coronavirus first appeared, media outlets in the U.S. have published or produced thousands of articles and broadcast reports about the pandemic, many of which have focused on farming and the food system.

Media coverage is an important and ‘real time’ source of information about the world, but it also reflects the cognitive and cultural filters and biases of news reporters, media companies, and broader society (Murukutla, Kumar, & Mullin, 2019; Shih, Wijaya, & Brossard, 2008). Media coverage usually utilizes narrative frames that reflect and help reproduce dominant discourse and public understanding of important social, economic, and environmental problems (McEvoy, Fünfgeld, & Bosomworth, 2013). Media framing studies have distinguished between generic-frames that represent cross-cutting tendencies of the media to focus on particular questions, and issue-frames that highlight which aspects of a specific news topic are highlighted or ignored (Kozman, 2017). Typical generic frames in the media focus on the presence of conflict, attribution of responsibility, economic or material outcomes, human interest stories, and ethical or political morality dimensions of any topic (Semetko & Valkenburg, 2000). Issue-frames provide concrete examples of how these generic frames are manifest surrounding a specific news issue, with an emphasis on media tendencies to “select some aspects of a perceived reality and make them more salient in a communicating text” (Entman, 1993, p. 52). Patterns of media coverage

have been shown to impact public belief and enable or constrain processes of social change (Happer & Philo, 2013).

There is relatively little published research on how news media covers pandemics or disease outbreaks. In one paper, Shih et al. (2008) note that news coverage typically shifts from documenting the source and spread of the disease to greater coverage of the impacts and societal responses. A portion of the largest and most systematic body of research on media coverage of sustainability and resilience topics comes from studies of how climate change has been framed in different news outlets. With respect to media coverage of agriculture, one recent study showed how coverage of the 2012 midwestern drought generally emphasized short-term impacts and recovery efforts, while downplaying connections to long-term climate change, thus minimizing the potential for generating adaptations that might increase resilience (Church et al., 2017). In addition, the authors found that some national newspapers (*New York Times*) were more likely to mention human-induced climate change in connection to the drought than other national newspapers (*Wall Street Journal*) or agricultural trade journals (Church et al., 2020). In both cases, a lack of attention to broader structural changes in global climate dynamics served to reinforce the idea that short-term buffering or adaptive responses were most appropriate for farmers (rather than provoking more transformative changes in farming systems or practices).

Media coverage of farming and food issues are important in shaping how farmers, experts, decision-makers, and the general public think about challenges faced by the agricultural sector and the appropriate public policy responses (Cahill, Morley, & Powell, 2010; McEvoy et al., 2013; Reisner & Walter, 1994; Stevens, Aarts, Termeer, & Dewulf, 2018). Accordingly, media coverage of the pandemic has created important frames that help people construct and represent meaning surrounding this particular external shock. These frames shape our understanding of how farmers, food system actors, and policy-makers have responded to the outbreak. In this paper, we present a systematic analysis of news media coverage of the impacts of the COVID-19 pandemic on farmers. We focus on

issue-framing and explore how different media outlets highlight or downplay different aspects of the issue. Our analysis is explicitly guided by resilience concepts that focus attention on the ability of farmers to utilize buffering, adaptive, or transformative strategies to respond to the challenges presented by stressors and shocks like the pandemic (Darnhofer, 2014; Meuwissen et al., 2019). Specifically, we examine news media coverage to answer the following questions:

- How did news media describe the impacts of the crisis on farmers?
- How did news media characterize farmer responses to these impacts?
- How do national newspapers and agricultural trade journals differ in their coverage of the pandemic's impact on farmers?
- To what extent does news media framing encourage or frustrate a social-adaptive process leading to a more resilient farm and food system?

Methods

We employ a qualitative analysis of news media articles to document how they covered the impacts of the COVID-19 outbreak on U.S. farmers and the ways in which farmers and other food system actors responded in the early months of the pandemic. We systematically sampled news coverage from print media outlets that represent both mainstream national newspapers and industry-focused agricultural trade journals. We used content analysis methods to identify examples in media coverage of the impacts of the pandemic on farmers, and to categorize farmer responses to the pandemic into resistant, adaptive, and transformative categories.

Sampling

Instances of media coverage were identified using a systematic sampling of print news media articles indexed in the ProQuest LLC database. ProQuest LLC is a global information-content and technology company that archives newspapers, periodicals, and other media in a searchable database. To capture a representative range of national media frames, we initially conducted a full text query of the ProQuest databases for articles from three

prominent national daily newspapers: The *New York Times* (NYT), the *Wall Street Journal* (WSJ), and *USA Today* (USAT). We utilized a keyword search to capture articles that included both terms related to agriculture (“Farmer” or “Farming” or “Agriculture”) and terms related to the pandemic (“COVID-19” or “Coronavirus”). We limited our search to news articles published between March 1, 2020, and May 15, 2020, and content published in English. The newspapers included in our analysis are all considered reliable sources of information and represent a mix of moderate political biases, according to the nonprofit Ad Fontes Media (2020). We recognize that differences in political bias by media coverage can easily be overstated (Budak, Goel, & Rao, 2016), but we feel that these three papers present a representative mix of perspectives (Feldman, Maibach, Roser-Renouf, & Leiserowicz, 2012; Gentzkow & Shapiro, 2010) and have strong national visibility and reputations for objectivity compared to more polarized outlets (Boykoff & Boykoff 2004).

To capture the types of media coverage that are more likely to be seen or read by farmers and other agribusiness actors, as opposed to the general public, we also queried the ProQuest database of Agricultural Trade Journals (ATJs) for news articles using the same keywords that were published over the same time period. ATJs in the ProQuest database primarily include nationally syndicated articles published in a network of ‘regional’ or ‘commodity’ magazines by The Farm Progress Network (FPN) (e.g., Southeast Farm Press, Southwest Farm Press, Western Farm Press, Farm Industry Needs, Corn and Soybean Digest, Beef, and National Hog Farmer). These articles represent a mix of original journalistic content from network reporters and material submitted to the FPN from independent journalists, farm organizations, and applied academic researchers and extension personnel. Frequently the same article was published simultaneously across multiple magazine outlets by the network. Because nearly 90% of unique articles meeting our criteria in the ProQuest ATJ database came from magazines in the network, we limited our analysis to FPN magazines. While similar ratings of the reliability and potential bias of ATJs was not determined, based on previous published research

we assume that they reflect perspectives and editorial biases that are pro-industry and ‘leaning conservative’ (Church et al., 2020).

After eliminating duplicate versions of the same articles from the newspapers and ATJs, a sample of 735 nonduplicate examples of print media was produced (Table 1). Both authors then screened each of these articles to remove stories that (a) were not news coverage (e.g., op-eds, commentaries, or obituaries; $n=26$), (b) focused only on impacts outside of the U.S. ($n=53$), (c) addressed topics outside of our focus area (e.g., were spurious and did not include any mention of COVID-19’s impacts on agriculture or food; $n=285$), or (d) only addressed COVID-19’s impacts on other aspects of the U.S. food supply chain, but did not include any mention of farmer impacts or responses ($n=151$). In total, 68% of the articles that met our initial search criteria were excluded, resulting in a final sample size of 220 unique instances of news media coverage that addressed COVID-19 impacts on U.S. farmers and agriculture and/or farmer or food system responses to these impacts.

Data Analysis and Coding

Content analysis is typically a reflective and iterative process whereby analysts code for the presence and absence of key themes or concepts in written text or transcribed discourse (Erlingsson & Brysiewicz, 2017). We utilized an applied deductive design in which research questions and initial theoretical categories (such as Darnhofer’s resistance

capability categories) were used to direct the initial coding phase, but an inductive process allowed the final coding categories to evolve to better reflect the content found in the articles (Beal, 2013; Elo & Kyngas, 2008). We (both authors) began by reading and rereading the text from our full useable sample of media articles to understand the range of perspectives and content. We then conducted an open coding of examples of sentences or paragraphs within each article into categories or themes within each of three focused topics: (a) information about how pandemic shocks to the U.S. farm and food system directly or indirectly impacted farm operators and farm families (FARM IMPACTS); (b) examples of how farmers responded to these impacts (FARMER RESPONSES); and (c) information about other short-term policy and market reactions to COVID-19’s impacts on the farm sector (SUPPLY CHAIN RESPONSES). Examples within each of these three coding themes were then organized into a set of emergent subthemes (axial coding) that were reflective of the data but informed and shaped by concepts from the resilience frameworks outlined above. For example, when coding for farmer responses, we looked for examples of farmer responses to the pandemic’s impacts that represented buffering, adaptive, and transformative strategies. Within each of those categories, we identified clusters of similar material that represented more specific subthemes.

To ensure validity and reliability in the coding process, open and pattern coding was done itera-

Table 1. Number of Articles in Sample Based on Inclusion and Exclusion Criteria

Characteristic	NYT	USAT	WSJ	Combined Newspapers	ATJs	Full Sample
Nonduplicate Sample Size	186	178	81	445	290	735
Disqualified (by reason)						
Not News (op-ed, obituary, etc.)	12	3	0	15	11	26
No U.S. focus	36	2	10	48	5	53
Off-Topic (no discussion of COVID-19 and U.S. food/ag system)	94	112	21	227	58	285
Other COVID-19-Food Supply Chain Focus (but did not include farmers)	22	19	17	58	93	151
Total disqualified	164	136	48	348	167	515
Percent disqualified	88%	76%	59%	78%	58%	70%
Qualified Sample Size	22	42	37	102	123	220

tively and reflexively by both authors to gradually identify areas of disagreement and to clarify the criteria for classification in the final theme assignments (Lai & To, 2015; Miles, Huberman, & Saldaña, 2014). Specifically, each article was coded and revisited several times to verify that each body of selected text was coded accurately into the final categories. In the presentation of results below, we select a few representative examples from the full set in each category to illustrate the deeper meanings behind each of our coded themes and sub-themes. We also tabulate the number of media articles from each source that included one or more examples of each coded theme. All of these steps help increase the trustworthiness of the study (Elo, Kääriäinen, Kanste, Pölkki, Utriainen, & Kyngäs, 2014).

The full sample of media articles included coverage of COVID-19 impacts and farmer responses from across the U.S. Most examples described events or quoted farmers from identifiable locations, and we coded these by state whenever possible. Overall, the combined sample included at least one example of farmer impacts or farmer responses from 34 different states. Both national newspapers (29 states) and ATJs (22 states) presented examples from most major agricultural areas in the U.S.

Results

Impacts on Farmers

Efforts to control the virus inevitably caused a range of economic and social shocks that affected the functioning of agricultural and food systems (Stephens, Martin, van Wijk, Timsina, & Snow, 2020). Our analysis of national newspapers and agricultural trade journal coverage identified 135 articles that presented information about the direct impacts of the pandemic on farmers (Table 2). These were coded into five main subthemes: loss of market access, depressed income, loss of farmworkers, increased demand for certain types of products, and direct impacts on farmer health and well-being. The frequency of different subthemes

in national newspapers and ATJs is shown in Table 2. While national newspapers in our sample were slightly more likely to include examples of direct impacts on farmers (65% vs 59%), this difference was not statistically significant. However, the types of impacts covered in each type of media did vary in important ways.

Loss of market access

Changes in food consumption patterns and supply chain disruptions caused many farmers to lose access to key markets for their farm products. Our newspaper sample was significantly more likely to highlight examples of loss of market access associated with these food system shocks. Overall, 39% of newspapers provided examples, compared to 18% of ATJ articles. Among articles from each source that highlighted any examples of farmer impacts, newspapers included information about market access problems twice as often (60% of the time compared to 31%).

Examples of market shocks included instances where disruptions in processing plants and distribution networks associated with the shift from food service to food retail outlets resulted in farmers being unable to sell their milk, livestock, and fresh fruits and vegetables (e.g., Bradley, 2020^{ATJ}).¹ One article reported on a dairy processing plant that was unable to take milk from farmers due to a disruption of transport and distribution networks, and quoted one farmer as saying “There are not a lot of other places to go with it if your buyer can’t take it” (Bunge, Maltais, & Newman, 2020^{NWP}, p. 2). Many stories highlighted bottlenecks caused by closure of meat packing plants due to illness among workers (Molina, 2020^{NWP}; Radke, 2020a^{ATJ}). In one example, reporters noted that “...pork producers face the possibility of...the loss of 25% of the nation’s processing capacity as meat-packing plants have slowed or closed due to COVID-19” (Eller, 2020b^{NWP}, p. 3).

Farmers who previously relied on direct sales to large institutions and restaurants were also affected by sudden loss of access to their traditional markets (O’Leary, 2020^{ATJ}; Severson,

¹ To enable the reader to track the media sources for individual examples presented in this section, we have used superscript tags to reflect the four media outlets: “NWP” for newspapers and “ATJ” for agricultural trade journals.

Table 2. Number and Percent of Articles Coded on Each Theme, by Source

Content Theme	Combined Media Sample			New York Times			USA Today			Wall Street Journal			Trade Journals			χ ² p-value
	Count	% of all coverage from source	% of coverage within major category	Count	% of all coverage from source	% of coverage within major category	Count	% of all coverage from source	% of coverage within major category	Count	% of all coverage from source	% of coverage within major category	Count	% of all coverage from source	% of coverage within major category	
Stressors Associated with the Pandemic	140	54%		11	48%		27	64%		26	70%		76	48%		0.045
Impacts on Farmers	147	57%		14	61%		23	55%		26	70%		84	54%		0.301
A Loss of Market Access	63	24%	43%	9	39%	64%	16	38%	70%	13	35%	50%	25	16%	30%	0.001
B Income and Economic Hit	79	31%	54%	4	17%	29%	11	26%	48%	12	32%	46%	52	33%	62%	0.422
C Loss of Farm Labor	19	7%	13%	2	9%	14%	3	7%	13%	5	14%	19%	9	6%	11%	0.434
D Increased Demand for Some Products	22	8%	15%	5	22%	36%	5	12%	22%	6	16%	23%	6	4%	7%	0.004
E Farmer and Household Health and Well-being	16	6%	11%	2	9%	14%	3	7%	13%	2	5%	8%	9	6%	11%	0.938
Farmer Responses	96	37%		16	70%		23	55%		17	46%		40	25%		0.000
A Farmer Reactive or Buffering Responses	79	31%	82%	12	52%	75%	22	52%	96%	13	35%	76%	32	20%	80%	0.000
1 Destruction, disposal or donation of products	59	23%	61%	9	39%	56%	18	43%	78%	10	27%	59%	22	14%	55%	0.000
2 Hunkering down	27	10%	28%	5	22%	31%	7	17%	30%	5	14%	29%	10	6%	25%	0.045
3 Debt relief bankruptcy	13	5%	14%	5	22%	31%	2	5%	9%	1	3%	6%	5	3%	13%	0.002
B Farmer Adaptive Responses	25	10%	26%	9	39%	56%	5	12%	22%	3	8%	18%	8	5%	20%	0.000
1 Adjust direct sales to be socially distanced	8	3%	8%	5	22%	31%	2	5%	9%	1	3%	6%	0	0%	0%	0.000
2 On-farm PPE use and social distancing	12	5%	13%	1	4%	6%	3	7%	13%	2	5%	12%	6	4%	15%	0.829
3 Other adaptive	6	2%	6%	4	17%	25%	0	0%	0%	0	0%	0%	2	1%	5%	0.000
C Farmer Transformative Responses	11	4%	11%	5	22%	31%	2	5%	9%	3	8%	18%	1	1%	3%	0.000
1 Institutional direct shift to individual direct	10	4%	10%	4	17%	25%	2	5%	9%	3	8%	18%	1	1%	3%	0.001
2 Conventional farms starting direct sales	3	1%	3%	1	4%	6%	1	2%	4%	1	3%	6%	0	0%	0%	0.158
Farm and Food System Responses	145	56%		14	61%		31	74%		19	51%		81	52%		0.066
Total	259	100%		23	100%		42	100%		37	100%		157	100%		

2020^{NWP}). In one story, a farmer who manages 10,000 acres said that “The demand [from the large customers] just went to zero...and not only did we lose restaurants and schools, but people were going to the grocery store buying nonperishable stuff to put in the pantry. They were not buying leafy greens” (Kesling, 2020^{NWP}, p. 1). In another article, a farmer who relied on sales to restaurants reported that “...demand for our products evaporated by 70% almost overnight” (Newman, 2020b^{NWP}, p. 1). Meanwhile, a senior analyst was quoted as saying that “school shutdowns will affect the approximately 7% of fluid milk consumed by school lunch programs, ... and a drop-off in restaurant activity will cut into the 40% of cheese sold to food service outlets” (Bunge, Maltais, Newman, 2020^{NWP}, p. 2).

Income losses: Declining commodity prices, rising costs of production

COVID-19 was a demand-side shock that reduced demand faster than producers could cut supply, adversely affecting the prices of many crop and livestock products. The most common type of impact reported in our media sample addressed the loss of farm income (included in 28% of newspaper and 38% of ATJ articles). Farmers quoted in the media often focused on low prices for their products. In one typical example, a grain farmer was quoted as saying “The pricing specifically on corn and soybeans have just been decimated” (Walsh, 2020^{ATJ}, p. 3). Referencing an Iowa cattle producer, another article noted that “with the current market disruption, his family will lose US\$250 to US\$300 per head. Cattle prices have fallen 25% to 30% since January” (Eller, 2020a^{NWP}, p. 3). Experts in much of the media coverage validated these farmer reports. The *Wall Street Journal* reported that “Prices for corn, cattle, hogs and milk have dropped as demand from restaurants, colleges, schools and other institutions has evaporated. Production on farms was already high, meaning the nation started the crisis with stockpiles” (Gasparro, Kang, & Stamm, 2020^{NWP}, p. 1). A senior analyst for agricultural lender Rabobank reported that “Dairy farmers face the prospect of milk prices collapsing by as much as

25% this year, falling to levels last seen during the 2008 financial crisis” (Bunge, Maltais, & Newman, 2020^{NWP}, p. 1). Another analyst predicted that future price declines would be about “12% for corn, soybean 7% and cattle 25%” (Maltais, 2020b^{NWP}, p. 4).

To make matters worse, costs of production for many producers went up in the early months of the pandemic. Constraints on international trade led to a spike in fertilizer prices (Knorr, 2020^{ATJ}), while the closure of ethanol plants forced dairy and beef producers who had relied on distiller’s grain (a byproduct of ethanol production) to find more expensive feed alternatives (Maltais, 2020a^{NWP}). The net effect was a major drop in projected net income for U.S. farmers. Several articles reported dramatic drops in producer economic outlook indices (SWP, 2020a^{ATJ}; Swoboda, 2020a^{ATJ}), and several articles reported net losses reaching the tens of billions in 2020 (N. Anderson, 2020^{NWP}; Fatka, 2020a^{ATJ}; NHF, 2020a^{ATJ}).

Loss of farm labor

In the initial weeks of the pandemic, immigration restrictions and embassy closures designed to prevent cross-national movement of the virus were imposed by the U.S. government, threatening the supply of immigrant farm workers. Farmers quoted in our sample of media articles often expressed concern about impacts on their workforce (Hart, 2020^{ATJ}; Newman, 2020a^{NWP}). One major U.S. potato grower stated, “We’re in a terrible fix if they shut the Mexican border off” because his operation relies heavily on immigrants holding temporary farm-work visas (Bunge, Maltais, & Newman, 2020^{NWP}). While less common than concerns about immigrant visas, news reports of illness among farmworkers disrupting farmers’ ability to plant and harvest crops were not uncommon. One article noted that “In some cases, that glut could turn to a production crunch if the foreign migrant laborers that farmers increasingly rely on to pick produce and milk cows fall sick or stay home amid lockdowns to contain the virus” (Gasparro, Kang, & Stamm, 2020^{NWP}). Coverage of farm labor impacts was equally common across the two types of news media.

Increase in demand for some products

While many large farms were negatively impacted by disruptions in conventional food supply chains and sales to global commodity markets, some media reports highlighted examples where smaller-scale farms that market direct-to-consumers were flourishing under the pandemic (Barnard, 2020^{NWP}). This type of positive impact on farmers was covered more frequently in national newspapers than in the ATJ sample. In one example, an agricultural economist was quoted as saying that “the lasting effect of the virus is to provide a new opportunity for local farming ... involvement in community-supported agriculture, often in the form of farmers markets, has ‘blown up’ in the last month. By buying direct from farmers, consumers cut out much of the complex supply chain that’s causing problems during the virus” (Walsh, 2020^{ATJ}, p. 3). Another farmer who markets through a New York farmers market reported that “Our sales are up 25 or 30 percent from what we would normally do this time of year” (Robey, 2020^{NWP}, p. 1). While much of the coverage of increased demand focused on local foods, rising consumer demand for a few key products in grocery stores (flour, bread, peanut butter, rice, orange juice) led prices for a few mainstream commodities to increase during the early pandemic (Maltais & Wallace, 2020^{NWP}; Zeitlin, 2020^{NWP}).

Direct impacts on farmer and farm household well-being

Finally, apart from impacts on farm businesses, media coverage of the pandemic included a few examples of direct impacts of the virus on farmer well-being. This includes the fact that many farmers are in high-risk categories for COVID-19 complications due to age and pre-existing conditions (Bechman, 2020^{ATJ}; Smith, 2020^{ATJ}). Farmers and their families also endured impacts of school closures (NHF, 2020^{ATJ}), as well as anxiety, stress, and other mental health challenges (Barrett, 2020^{aNWP}; Corkery & Yaffe-Bellany, 2020^{bNWP}; Smith, 2020^{bATJ}). One farmer pointed out that “I’ve tried to maintain a level of positivity as the COVID-19 pandemic continues to wreak havoc on our livelihoods, security, freedoms and mental and physical health. However, as this pandemic contin-

ues, I’ve got my fair share of concerns. ... I’m a mom. I’m a rancher. I’m a consumer. I’ve got skin in the game here” (Radke, 2020^{bATJ}, p. 1).

Farmer Responses

A total of 90 articles presented at least one specific example of farmer responses to COVID-19 impacts. Overall, both types of media were more likely to include descriptions of the impacts of the pandemic on farmers than on how farmers were responding to this crisis. However, coverage of farmer responses to the pandemic’s impacts was much more frequent in national newspapers than in ATJs (58% vs. 28%; Table 2). Farmer responses in the first few months to the stressors and impacts caused by the pandemic were coded into three categories that reflect examples of each of the three farmer capabilities outlined in Darnhofer’s resilience framework: reactive, adaptive, and transformative. As she notes, “the term capability is used to denote that it is not an asset or an automatic response that can be deduced by the characteristics of the farm, but the ability to identify opportunities, to mobilize resources, to implement options, to develop processes, to learn as part of an iterative, reflexive process” (Darnhofer, 2014, p. 467).

Farmer reactive or buffering responses

Reactive or buffering responses were coded when we found examples of farmers seeking to cope with or temporarily buffer themselves from the immediate impacts of a stressor without changing their basic approaches to farming or marketing in any significant way. These examples reflect farmer efforts to minimize or absorb the impacts of COVID-19 without changing the commodities they raise or the outlets they use to sell their products. Reactive or buffering responses were by far the most common type of farmer response covered in our sample, accounting for over 80% of all articles that reported on *any* type of farmer response in both national newspapers and ATJs (Table 2). We clustered these into three buffering subthemes: destruction or disposal of farm products, seeking debt relief, and ‘hunkering down.’

Destruction, disposal, or donation of farm products

In the pandemic’s first few months, a significant

amount of media coverage (38% of national newspaper articles and 15% of ATJ articles) highlighted examples of farmers dumping or destroying agricultural products. One article profiled a farmer in Arizona who experienced a 70% drop in demand for his products and responded by destroying 250 acres of produce worth US\$1.3 million. In the farmer's words, "we're leaving perfectly good product in the field. . . . It's a complete and total loss" (Newman, 2020b^{NWP}). Another article described a major poultry company in Mississippi that responded to a 60–65% drop in demand from its restaurant customers by breaking eggs rather than hatching them and raising the chicks for slaughter (Severson, 2020^{NWP}). The *New York Times* reported on farmers in Idaho, Florida, and Georgia who buried millions of pounds of produce and noted that millions of gallons of milk—equivalent to 5% of U.S. daily production—were being discarded (Yaffe-Bellany & Corkery, 2020^{NWP}). A *Wall Street Journal* article related the case of two New York dairy farms that had to dump more than dozens of truckloads of milk because the cheese plant they sold to was unable to ship to restaurants and scaled down operations (Vielkind, 2020^{NWP}). The shutdown of meat processing plants forced some farmers to euthanize hogs that were at market weight but for which they had no outlet (Corkery & Yaffe-Bellany, 2020a^{NWP}).

Because of oversupplies and the closing of restaurant and institutional buyers, some farmers donated their products to food banks and other charities. One article shared the story of a New York dairy farmer who had a local processor bottle his milk in gallon containers that were given away through a local butcher shop (Bowman, 2020^{NWP}). Several articles highlighted efforts by Publix (a grocery chain) and Dairy Farmers of America (a dairy co-op) who organized efforts to deliver hundreds of thousands of pounds of produce and gallons of milk to food banks in several states (Fanning & Herald, 2020^{NWP}; SWP, 2020b^{ATJ}). In Florida, a local farmer donated eight semi-truck loads of tomatoes to a local foodbank (B. Anderson, 2020^{NWP}).

Debt payment relief, bankruptcy, and suicide

The sudden shortfall in farm income contributed

to media reports of farmers being unable to stay current on debt payments due to the coronavirus outbreak. In response, some farmers were highlighted for their efforts to seek debt relief from their lenders. One Iowa farmer told a reporter that "he's talked with his lender about deferring some principal payments on his debt for a year. Other farmers he's talked with are doing the same" (Eller, 2020c^{NWP}, p. 1). Some of the media coverage noted how the economic challenges associated with the pandemic were compounding pre-existing financial problems in the sector, which has led to a rise in farm bankruptcies (Barrett, 2020b^{NWP}). One article reported on rising suicides among Wisconsin dairy farmers (Searcey, 2020^{NWP}). In another story, a second-generation pig farmer from Minnesota who was trying to find ways to avoid killing a backlog of more than 1,000 pigs said, "There are farmers who cannot finish their sentences when they talk about what they have to do. . . . This will drive people out of farming. There will be suicides in rural America" (Corkery & Yaffe-Bellany, 2020b^{NWP}, p. 1).

Hunkering down: Storage, slowing production, and cutting costs

Finally, 25 articles (18% of newspaper and 7% of ATJ articles), wrote about how farmers were planting crops and carrying on with business as usual in spite of the pandemic (Haire, 2020^{ATJ}). In the words of one farmer, they have little choice but to "hang on tight until things get better" (Leake, 2020^{NWP}, p. A1). Many stories reported on ways in which farmers were 'hunkering down' by storing fewer perishable products, slowing production, or cutting costs to weather the crisis. Grain farmers with on-farm storage were reportedly using it to hold onto their harvest until prices improved in the future (Lusk & Croney, 2020^{ATJ}). Several articles reported on hog and cattle farmers who were altering diets for their herds to slow growth rates (Bagenstose, Bomey, & Chadde, 2020^{NWP}). Others noted that some dairy farmers were drying off cows early to reduce output (Torres, 2020^{ATJ}). Finally, some news articles profiled examples of farmers seeking to cut costs by cutting workers, reducing input use, or simply 'hunkering down' to weather this period of intense stress (Newman, 2020c^{NWP}; Wilson,

2020^{ATJ}). In one story, an Iowa farmer related how his multi-generational farm survived the Great Depression and 1980s Farm Crisis and noted that “My family has been farming here for over 100 years. I don’t want to be the one to screw up” (Eller, 2020^{cNWP}, p. 2).

Farmer Adaptive Responses

Adaptive responses are characterized by examples of farmers proactively seeking out ways to sustain farm income by making short-term incremental adjustments in their production or marketing practices to adapt to COVID-19 conditions, without changing their overall farming strategy. To be coded as an adaptive response, the responses had to have a sense of being temporary, meaning that farmers would likely go back to business as it was before the pandemic once COVID-19 disappears. We grouped examples into two main subthemes: adjusting direct sales to be more socially distanced and expanding protective measures like the use of PPE on-farm. Adaptive responses were much less widely reported than reactive and buffering responses, and they were more likely to be covered by national newspapers than ATJs (18% vs. 5%; Table 2).

Adjust direct sales methods to be more socially distanced

Several articles highlighted examples of farmers who already sold directly to individuals and institutions exploring creative ways to adjust and expand these markets during the pandemic. All of these examples were found in national newspapers (e.g., none were covered in ATJs). One article stated that farmers markets were “transforming into laboratories for new communal safety habits... Shoppers cannot touch the produce and must stay six feet from one another. Tables must have plastic coverings. Workers must wear protective gear” (Barnard, 2020^{NWP}, p. 1). Berry growers in Tennessee reportedly set up drive-up options and socially distanced U-Pick approaches to reduce risks to farmers and customers (Hance, 2020^{NWP}). Other stories profiled a farmer who had launched a new website to allow for online ordering in response to the temporary closure of his farmers market (Simon, 2020a), and a farm that had closed its farm stand and “retooled the

farm’s website to offer pickup options, so customers could show up, immediately get their vegetables and go home” (Robey, 2020^{NWP}, p. 2). One California farm was highlighted because it had started “shipping produce boxes anywhere in the United States except Hawaii, via FedEx... But some shoppers are prepaying and driving to the farm, then waiting safely in their car with the trunk popped open, while the food is dispatched” (Rao, 2020^{NWP}, p. 1).

Expanded use of PPE on-farm

In response to the potential loss of their farm labor force to the virus, some news media reported on examples of farmers requiring their workers to use personal protective equipment (PPE) and other protective measures. These types of on-farm adaptive responses were described in just over 10% of the news articles that covered any type of farmer response (in both national newspapers and ATJs). Two articles described efforts by specialty crop producers to require their immigrant workers to quarantine for two weeks, limiting their trips to grocery stores, and utilizing PPE (Newman, 2020a^{NWP}; Pratt, 2020^{ATJ}). Others reported on large farms taking steps to create small groups of employees who would not interact to reduce the chance of large-scale impacts on their workforce (James, 2020^{NWP}; Schrotenboer, 2020^{NWP}). Even farmers who rely primarily on family labor were presented as using adaptive measures to protect against on-farm spread of the virus (Ward, 2020^{ATJ}).

Farmer Transformative Responses

Transformative responses are when individual farmers responded to the pandemic by initiating fundamental and potentially long-term changes in their production or marketing practices that reflect a significant break from the past. In Darnhofer’s words, “a transformation implies a transition to a new system... a qualitative change in which the farm adopts new basic operating assumptions, new ‘rules of the game’...” (2014, p. 468–469). Our coding criteria sought examples of changes that we might expect to continue after the COVID-19 crisis (if they are successful). Compared to reactive and adaptive responses, we found very few

examples of transformative farmer adaptations in our sample of news media articles. Any transformative adaptation examples were seen nearly exclusively in national newspapers (ATJs included only one example). Most common examples of transformative responses were cases where farmers who had previously sold their products directly to institutional buyers (schools, restaurants, etc.) reorganized their operations to sell directly to individuals. A few articles profiled conventional farmers who had always sold through mainstream commodity market channels who responded to the pandemic by initiating direct sales to individual customers.

Shifting from institutional markets to direct sales to individuals

Over the last 20 years, there has been rapid growth in the number of farmers who market directly to restaurants, schools, and other institutions. Farm suppliers to the ‘farm-to-table’ and ‘farm-to-school’ supply chains were directly affected by the sudden closure of these institutional buyers, and national newspapers covered numerous examples of farmers reconfiguring their marketing strategies to focus more on sales to individuals (either face-to-face or via online marketing channels). One article described a produce producer in New York City who had relied on restaurants for 60% of his business, but who collaborated with a wholesaler to start a home delivery system, using the trucks that used to supply restaurants to instead deliver directly to individual homes (Severson, 2020^{NWP}). Another article highlighted a small farm in California that usually sold its specialty produce to restaurants that shifted to preparing and distributing “prepaid boxes” to individuals (Rao, 2020^{NWP}). A third profiled a Florida poultry producer who had developed a profitable market selling custom-fit specialty birds to chefs and restaurants. “That came to a screeching halt’ as COVID-19 began to infiltrate Florida, [the farmer] said. Then, the unthinkable happened: Crazy Hart Ranch began to see its best chicken sales in at least five years. ‘Our sales have been pretty much off the charts...It’s good for us,’ she said, referring to other local producers she knows who have seen surging sales during the coronavirus pandemic. ‘We’re all going crazy”

(Leake, 2020^{NWP}, p. 2). None of the ATJ articles described this type of farmer response.

Conventional farms starting direct sales

Both the national newspaper and the ATJ samples included at least one article highlighting conventional farmers who normally marketed through mainstream commodity channels, but who opened up to the public for U-pick and direct sales for the first time due to COVID-19 (Fanning & Hearld, 2020^{NWP}). One article described hog farmers in the Midwest who were selling live pigs to people over Facebook and Craigslist (Corkery & Yaffe-Bellany, 2020b^{NWP}). Another described chicken processors who previously had shipped entirely to the food industry that were initiating sales of butchered birds directly to the general public out of the back of refrigerated trucks (Wernau, 2020^{NWP}).

Broader Food System and Policy Responses

While roughly 60% of national newspapers and 30% of ATJ articles described examples of individual farmer responses to the stressors and impacts from the pandemic, a larger proportion of articles in each media source (66% and 58%, respectively; Table 2) presented examples of how other food supply chain industry and policy actors responded to the crisis to help ameliorate the impacts on farmers. We coded these institutional and structural responses into three categories: state and federal policy responses, market or industry responses, and advocacy by farm and other organizations for additional policy or structural changes.

Federal and state policy responses to help farmers address the impacts of the pandemic were covered in roughly 40% of both national newspaper and ATJ articles. Most common were reports about the extensive federal government programs that were designed to provide emergency financial aid to farmers such as the Coronavirus Aid, Relief, and Economic Security (CARES) Act; Paycheck Protection Program Loans (PPPL); and Coronavirus Food Assistance Program (CFAP). The federal government also expanded authority to the USDA Commodity Credit Corporation to provide another round of Market Facilitation Program (trade war) compensation payments and created programs to purchase food directly from farmers

to distribute through food banks and other food assistance organizations (USDA Farmers to Families Food Box program). All told, by May 2020, the U.S. Congress had allocated US\$23 billion in direct aid to farmers and US\$3 billion to purchase fresh produce, dairy, and meat for distribution to food pantries (Fatka, 2020b^{ATJ}). Stories about these federal farmer direct and indirect financial relief programs appeared in roughly 25% of both national newspaper and ATJ articles in our sample. Coverage of state programs was less common but there was mention of both a New York program to subsidize food processors to enable them to distribute surplus foods to needy families (Corkery & Yaffe-Bellany, 2020a^{NWP}) and a California executive order to provide paid sick leave to farmers, farm workers, and other food system employees (Canon, 2020^{NWP}).

A significant amount of coverage (19% of national newspapers and 15% of ATJ articles) reported on the use of Presidential executive orders to require the reopening of meat packing plants (e.g., Swanson & Yaffe-Belany, 2020a^{NWP}) and on decisions to ease visa restrictions or relax minimum wage requirements for H-2A immigrant farmworkers to ensure a supply of labor for farm work and meat processing (e.g., Pratt, 2020^{ATJ}).

In addition to describing state and federal policies that were adopted during this time frame, a sizeable number of articles reported on adjustments made by other food supply chain industry actors—mainly food processors and restaurants—in response to the pandemic. Food supply chain industry responses were quite common in national newspapers (covered in 37% of the articles) but only infrequently described in the ATJ sample (5% of articles). Typical examples include providing food processing workers with PPE and other protections (Bagenstose, Chadde, & Wynn, 2020^{NWP}), retooling food processing facilities to adapt to changes in consumer food consumption behaviors (Bunge & Newman, 2020^{NWP}), and making structural and management changes in restaurants and farmers markets to protect workers and customers from the spread of COVID-19 (Newman, 2020b^{NWP}; Simon, 2020b^{NWP}).

Finally, 34 articles (9% of national newspapers and 20% of ATJ articles) had coverage of calls

from politicians, farm organizations, and other groups seeking additional direct relief payments for farmers, structural changes in federal policies surrounding marketing of beef and dairy products, and other adjustments to state or federal farm programs. While most examples of advocacy focused on expanding traditional farm support programs, we identified 12 articles that reported on farmers and farm and food system activists who were advocating for deeper structural reforms to transform the U.S. farm and food system in response to the problems revealed by the pandemic. Examples included calls to address concentration in the meat packing industry (Fatka, 2020c^{ATJ}), support for a wholesale overhaul of the U.S. farm programs (Khanna 2020^{ATJ}), and criticism of large corporate farming (Anderson, 2020b^{NWP}). Nearly all of the calls for more radical reform of the agri-food system appeared in the ATJ sample.

Discussion and Conclusions

The global coronavirus COVID-19 pandemic caused supply chain disruptions, changes in food consumption patterns, and altered immigration patterns, each of which impacted farmers both directly and indirectly (Stephens et al., 2020). Many scholars have written about how the pandemic revealed systemic vulnerabilities in our farming and food systems, and some have suggested that the pandemic could serve as a catalyst for fundamental changes in the organization of agriculture and food supply chains. While government datasets and other systematic primary research on COVID-19's impacts and farmers' responses are beginning to emerge, it has been common for academics and policy-makers to rely on journalists and mass media coverage to provide information about the ways the pandemic has affected farmers and food systems (Lusk et al., 2020). At the same time, decades of studies on media framing remind us that the media reports are not an unfiltered window into the world. The selection of topics and decisions to include certain voices and experiences while ignoring others reflect the influence of competitive commercial pressures, political power, and dominant societal discourses and cultures (Happer & Philo, 2013).

Our systematic analysis of national print media

coverage of the pandemic demonstrates that farming and food system topics received extensive attention and highlighted a wide range of issues in both national newspapers and agricultural trade journals. During the first three months of the outbreak, news reporters in these outlets were most likely to write about the economic shocks caused by the pandemic (and the public health policies that were adopted in response), with particular focus on how it changed food consumption patterns and disrupted food processing and supply chains. They also focused attention on the significant negative impacts of these economic shocks on farmers (a drop in demand from processors, loss of institutional markets, depressed commodity prices, and problems accessing farm labor). While most coverage highlighted negative impacts, a subset of articles described ways in which the pandemic increased demand for some products (mainly through a surge in local and/or direct sales to households). The emphasis on negative shocks and impacts is consistent with results of other media studies, where conflict and crises receive much greater coverage than stories about positive changes or outcomes (Shih, Wijaya, & Brossard, 2008).

Is There Evidence of Farmer Adaptive Behavior?

The centerpiece of our study was to explore the extent to which media coverage provides evidence that the pandemic is precipitating deeper structural changes that could lead to a more resilient farm and food system. Using Darnhofer's (2014) resistance capacity framework, we looked for examples of three types of farmer responses to the pandemic which reflect different resilience pathways: buffering, adaptation, and transformation. We found that national newspapers were much more likely to cover farmer responses to the crisis than the agricultural trade journals (which focused more specifically on impacts on farmers and the larger policy or market responses, not individual farmer responses). Overwhelmingly, the most common examples of farmer responses covered in both types of media were buffering strategies: dumping or destroying products, seeking debt relief or filing for bankruptcy, or simply hunkering down by slowing production and cutting expenditures until

the markets recovered. Buffering strategies reflect farmer efforts to weather the storm without making any fundamental changes in the types of commodities raised or marketing strategies used. Buffering strategies also reflect treatment of COVID-19 as a short-term crisis in which actors expect to return to business as usual once the pandemic subsides.

At the same time, our sample included some articles and news reports of farmers using an adaptive strategy—particularly by small and medium-sized produce and livestock farmers who were better positioned to take advantage of the rapid rise in demand for food purchased directly from farmers through development of direct marketing outlets (e.g., online ordering, drive-by pickup, and home delivery). Adaptive responses were covered in about one in five national newspaper articles, but only one in 20 ATJ articles. Adaptive responses reflect efforts by farmers to adjust to changing patterns of consumer demand for food as well as the risks the virus poses to themselves and their farm workforce. These types of responses also appear to be short- or medium-term strategies that may well disappear once the pandemic recedes, rather than significant long-term changes in farming operations.

Interestingly, our review of these two types of news media did not identify many examples of farmers who were actively pursuing a more transformational pathway. There were virtually no articles or reports of people dramatically changing their farm enterprise mix or indicating plans to radically restructure their production and marketing practices for the long-term. The most common examples were stories about farmers who had previously invested heavily in direct sales to restaurants and institutions, who were restructuring their farms to focus more (or exclusively) on direct sales to individuals in the future. In three cases, coverage focused on mainstream conventional commodity farmers who were experimenting with direct sales to consumers (with some sense that this might be a part of their marketing strategy over the long run). All but one of the examples of transformative responses appeared in national newspapers (not ATJs).

While not a formal aspect of our analytical

framework, we observed associations between how farmers were impacted by and responded to the pandemic, and key farm characteristics (particularly the perishability of commodities raised and relative reliance on conventional vs. alternative markets). For example, vegetable farmers from southern states whose products were ripe and ready for market in the spring were immediately hit by supply chain disruptions and were therefore more likely to be forced to destroy their crops. Similarly, dairy and livestock producers whose products were ready to sell were unable to hold their output until processors were able to reopen and accept their products. Meanwhile, farmers with less perishable crops (e.g., grain growers in the Midwest) were most often described as ‘hunkering down’—maintaining business as usual in their farming and cropping enterprises in the hope that they would be able to outlast the crisis. In all three cases, mainstream commodity farmers were described as adopting coping strategies that addressed the short-term crisis, but few were described as making long-term changes that might make them less vulnerable to similar shocks in the future.

U.S. farmers who already sold directly to consumers appeared to be in a strong position to respond to the surge in demand for their products. Media coverage of their operations focused on ways in which they were able to adapt to the pandemic by implementing more socially distant methods to sustain this market in safe manner. In contrast, farmers who had organized their business model around sales to restaurants, schools, and other institutions were forced to innovate and adapt when these outlets closed and demand for their products fell. Unlike conventional commodity farmers, media stories about these ‘alternative supply chain’ oriented farmers included many more examples of adaptive and transformative farmer responses, particularly direct sales farmers who were able to adopt socially distanced sales, and institutional sales farmers who were able to refocus their attention on the growing individual direct sales consumer market.

The predominance of reactive and buffering responses by farmers in the media (and the relative absence of stories about farmers making more radical adaptive or transformative changes) may be

partly because of massive federal short-term coronavirus aid programs that provided short-term compensation to farmers (particularly to those who sell in conventional mainstream markets) and executive orders by President Trump to reopen meat processing plants and ensure a supply of immigrant workers. Both of these institutional responses likely deflected pressures on U.S. farmers to consider more systemic changes in response to market shocks.

Taken as a whole, the narrative frames used in both national newspapers and ATJs reflect a bias toward short-term impacts and responses by individual farmers, with relatively little coverage engaging the possibility of long-term adaptive changes on farms and/or reflections on how systemic problems in the food system revealed by the pandemic might require transformative or structural solutions. This preference to frame the pandemic as a short-term crisis (rather than as evidence of deeper problems requiring a change in the status quo) is consistent with media framing used in reporting on climate change, flooding, and other natural disasters (Ford & King, 2015; Happer & Philo, 2013; Leitch & Bohensky, 2014).

Does Media Coverage Support or Slow Social-Adaptive Processes?

Our study complements the large body of discussion and commentary essays that have explored the potential role of CV19 as a catalyst for increasing the resilience of food and farming systems. Given the nature of media coverage of the pandemic’s impact on the U.S. farm sector, it is worth considering the role that news media play in accelerating or slowing broader social-adaptive processes that could lead to a restructuring of the farm and food system. Media studies scholars have long identified the important role that media has in shaping public understanding of important current issues and the range of alternative policy solutions that are considered reasonable or mainstream (Happer & Philo, 2013). The important role of media in contemporary society has led to calls for better integration of research from mass communications and journalism fields into science and policy designed to improve social and environmental sustainability, particularly related to

climate change adaptation (Lindenfeld, Smith, Norton, & Grecu, 2014).

Our findings suggest that news media coverage in the early months of the pandemic in the U.S. has largely characterized the event as a rapid onset ‘natural’ disaster that created severe disruptions in food supply chains. The media therefore devoted more attention to the short-term policy and market responses designed to mitigate these impacts than to farmer responses. Most coverage of farmer responses focused on immediate survival or adaptive strategies, with relatively little attention to examples of transformative responses that might reflect movement toward a reorganization of farming systems and/or commodity supply chains that could make the system more resilient in the future. This preference for treating the disaster as (a) outside of human control, and (b) a deviation from normal is similar to how media have covered floods and other natural disasters (Bohensky & Leitch, 2014; Devitt & O’Neill, 2017) and air pollution (Murukutla, Kumar, & Mullin, 2019). As the crisis unfolds, however, it is possible that the media will shift attention to deeper analysis of the institutional and societal roots of food system vulnerabilities and stimulate public consideration of alternative institutions and structures (Kaufmann, Lewandowski, Choryriski, & Wiering, 2016). In this way, media coverage seems to promote conservative frames that reduce the likelihood of the pandemic being the seed of a more resilient system.

We also found that the national newspapers cover the issue in ways that differ from the agricultural trade journals. Specifically, newspapers were more likely to highlight disruptions to traditional commodity markets and increased demand for direct sales than ATJs. Newspapers were twice as likely to cover any type of farmer response, and much more likely to include examples of adaptive or transformative responses than ATJs. While both outlets placed heavy emphasis on coverage of policy and market responses, national newspapers

gave more attention to the adaptive strategies used by food processors and other supply chain actors, while ATJs were more likely to print articles highlighting calls for more transformative reform of the structure of agriculture or federal farm policies. Differences in patterns of coverage across these two outlets can exacerbate the gaps in understanding of food and agricultural issues between farmers and nonfarmers (Boogaard, Bock, Oosting, Wiskerke, & van der Zijpp, 2011; Reisner & Walter, 1994; Sharp & Tucker, 2005). While the focus of our work was on traditional print media sources, it would be interesting to expand the analysis in the future to capture the role of social media (Stevens, Aarts, Termeer, & Dewulf, 2018) and other alternative sources of news (like specialty magazines and e-journals).

In practice, the different farmer resilience pathways described in the first few months of media coverage of the pandemic likely reflect early stages in a cyclical or nonlinear process of adaptation to a major system shock. Although U.S. farmers were able to weather the pandemic’s shocks and stressors initially through buffering behaviors, the experience may have deepened farmers’ understanding of structural vulnerabilities of the dominant farm and food system. This experience could eventually contribute to a shift toward greater utilization of alternative food supply chains and open up new avenues for more ‘generative’ processes of resilience (Darnhofer, 2020). This could include expanding farmers’ imagination of new possibilities in response to the unimagined level of crisis, and producing new ways of thinking, not only new structures (Grandori, 2020). Additionally, future work could explore the intersection of individual farmer responses and larger processes of change in political and economic structures. Khatri-Chhetri, Pant, Aggarwal, Vasireddy, and Yadav (2019) have suggested that resilience processes in complex systems should be examined across multiple-scales that capture the feedbacks between changes made at the individual, sectoral, and systems levels.

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Cass Clay Food Partners: A networked response to COVID-19

SPECIAL ISSUE COSPONSORED BY INFAS:
THE IMPACT OF COVID-19 ON FOOD SYSTEMS

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Abstract

The Cass Clay Food Partners is a network of professionals, stakeholders, and residents serving Cass County, North Dakota, and Clay County, Minnesota, in creating a healthier, more just local

food system. During the COVID-19 pandemic, the Cass Clay Food Partners quickly implemented a multipronged response that leveraged three critical assets of our network: (1) our unique structure, (2) our nuanced understanding of the social ties across overlapping networks, and (3) our ability to quickly

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pivot our work to address community needs. In this paper, we describe how our network responded to both the challenges and opportunities presented to our food system by the COVID-19 crisis. We also provide tools and recommendations for other food policy and food network practitioners.

Keywords

Food Network, Food Policy Council, Food Governance, Urban Agriculture Ordinance, COVID-19, Pandemic

Introduction

The COVID-19 pandemic has revealed fissures in the global food system and supply chains, negatively affecting vulnerable populations (Aday & Aday, 2020). Food insecurity, for example, affected 13.6% of U.S. households with children before the pandemic, and increased to 27.5% of families in June of 2020 (Silva, 2020). As the Cass-Clay region of North Dakota and Minnesota became a COVID-19 hotspot during the summer and fall of 2020, community leaders and policy-makers came together to support the local food system in order to bolster the physical health and mental well-being of residents during the pandemic.

In this paper, we draw on the perspectives of leaders from one network in particular—the Cass Clay Food Partners (CCFP)—to describe how our work changed to meet emerging food system needs during the COVID-19 pandemic. We offer our reflections on the successes and challenges we experienced between March and December 2020, and provide recommendations related to the tools and assets we had in place before the pandemic that enabled us to implement a robust response. We build on

existing literature about other food networks and networking mapping—especially social network analysis (SNA)—through an in-depth case study demonstrating how policy-focused SNA can inform how food networks respond to a crisis in the food system.

CCFP operates in the fertile Red River Valley of Minnesota and North Dakota, in a northern Midwestern landscape dominated by conventional agriculture, including world class sugar beet production. Our network is considered multijurisdictional because it encompasses five municipalities (see Figure 1), as well as the governing bodies of Clay County, Minnesota, and Cass County, North Dakota. The combined Metropolitan Statistical Area population for the region was estimated to be 257,000 in 2019 with the largest regional population centers of Fargo at 124,662, West Fargo at 38,718, and Moorhead at 44,753. The “Fargo-Moorhead” community, as it is commonly referred to as, is a major population center in the region.

CCFP can be best described as a network of networks (Figure 2). As detailed by Gold and Harden (2018), the purpose and structure of the network has evolved significantly over 10 years in a constant rebalancing of grassroots and top-down food systems change efforts. The CCFP is designed to bring together representatives of

Figure 1. The Fargo-Moorhead Metropolitan Area Developed by the Metropolitan Council of Governments (MetroCOG)

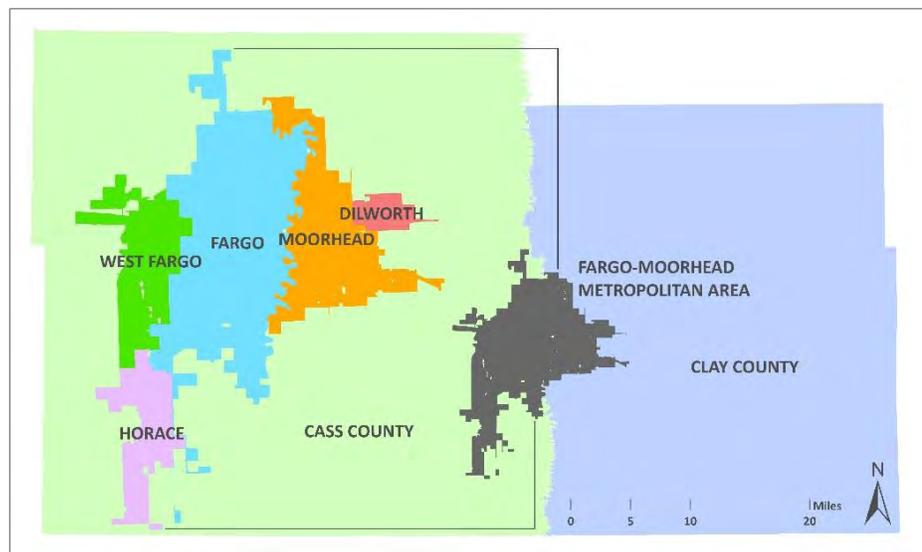
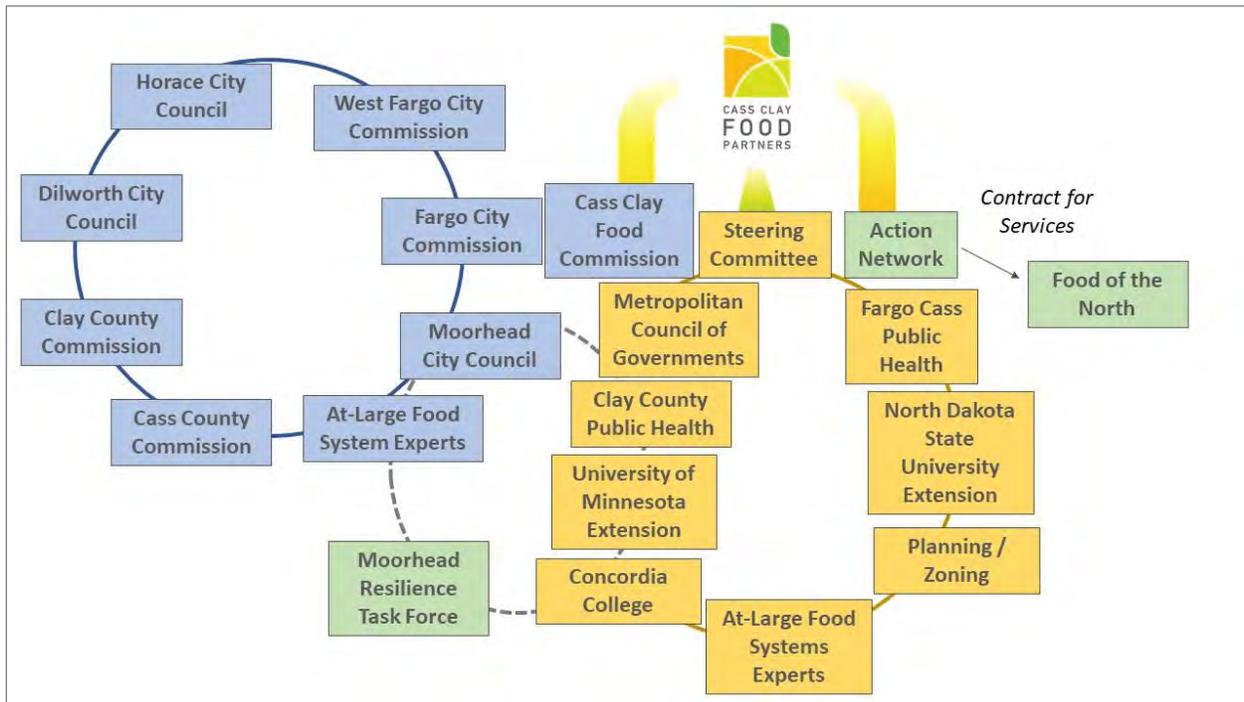


Figure 2. Network Map of Cass Clay Food Partners, Including the Steering Committee (Yellow), the Food Commission (Blue), and Partner Networks (Green)



organizations like public health, Cooperative Extension, and planning, while also tapping into other existing cross-sector networks like Food of the North and the Moorhead Resilience Task Force. Our network is organized around three main components that form a web of relationships across the Fargo-Moorhead region: a steering committee, the Cass Clay Food Commission, and the Action Network.

The leadership of CCFP is embedded within both local government and academia. Our steering committee is the core of the network and is led by two co-chairs from Fargo Cass Public Health and University of Minnesota Extension (staffing the network as part of their regular duties in their respective organizations), with less than US\$10,000 in financial support from the state of North Dakota. Network funding is used to contract for staff services from the Metropolitan Council of Governments (MetroCOG) and for community engagement with a nonprofit, Food of the North. The steering members set the agenda for Food Commission meetings and serve in an *ex officio* (nonvoting) capacity.

The Food Commission is an advising body formed through a Joint Powers Agreement between the City of Fargo, Clay County, and the five other governing jurisdictions included in the CCFP region. In addition to one elected representative selected internally by the seven local governing bodies, there are also six at-large members who serve on the Food Commission who are selected through an application process administered by the steering committee. The Food of the North is a separate nonprofit organization that executes a paid contract from the Cass Clay Food Partners to fulfill the deliverables of the Action Network. In this paper, we also discuss the Moorhead Resilience Task Force as a critical partner network during the COVID-19 pandemic, though it is not formally contained in our network structure.

As described by Gold and Harden (2018), CCFP strengthens connections between community leaders, elected officials, local government, urban planners, and the public to implement policies that support community food resilience by increasing local food production and creating a healthier, more sustainable, and more just food

environment. Since 2015, the network has focused on research briefs and policy blueprints (City of Fargo, 2020a), approved by the Food Commission that cover a range of food topics including:

- Urban agriculture and gardening (2015–2016)
- Healthy food access and environments (2017–2018)
- Environmental sustainability and agroecology (2019–2020)
- Integration of food systems research into local planning efforts (2021–2022)

Beginning in March 2020, COVID-19 presented new challenges to CCFP's established work, resulting in new or strengthened opportunities to address community needs through a networked approach. In this paper, we describe this response, highlighting lessons learned about the strengths and weaknesses of our network as we attempted to address new food systems stressors brought on by the pandemic. We share tools and highlight assets that were useful to our network and community during the pandemic, concluding with recommendations for steps that food networks and food policy councils can take now to be better prepared to respond to future disruptions to food system resilience.

Literature

The global pandemic could double the number of people worldwide experiencing acute food insecurity, with a disproportionate impact on vulnerable populations such as children and historically marginalized groups (Silva, 2020). Food networks and policy councils like CCFP are positioned to act locally to play a role in addressing food insecurity through informed governance and substantive organizational collaboration (Carboni, Siddiki, Koski, & Sadiq, 2017). While government and nonprofit actors like food banks focus, by necessity, on operations and meeting immediate community needs during a crisis, food policy councils take on important secondary functions like sharing information, amplifying communication across multiple networks, and proactively advancing mid- to long-term strategies for co-creating a more

resilient food system with the community (Guarino, Windings, & Endres, 2020).

A food policy council (FPC) is a type of food network that seeks to change food-related policies in a defined geographic community (Schiff, 2007). The strength of an FPC rests on the connections between members, which combine to form a network map based on relationships and shared purpose that can be visualized and measured using social network analysis (SNA) to map the connectedness of members and stakeholders of FPCs (Ohio Food Policy Network [OFPN], 2017). SNA can transform knowledge about the underlying structure of a network and can help leaders identify key actors who can move initiatives forward based on how many interpersonal connections and the type of connections that actors have to each other (Wasserman & Faust, 1994).

When creating an FPC or other food system coalition, SNA can help determine which individuals in a community should be brought together for grassroots efforts to tap into the politics at play (Freedman & Bess, 2011; Hauck, Schmidt, & Werner, 2016; Moragues-Faus & Sonnino, 2019). SNA can be used by networks for evaluation, to operationalize inclusivity, to drive social movements, and/or to bring diverse stakeholders together for creative problem-solving during a crisis (Carboni et al., 2017; Saunders, 2007). Studying FPC characteristics through SNA can determine what makes a successful and high-functioning network (Dharmawan, 2015). The research literature overall points to limited use of SNA by FPCs, and little existing evidence of SNA analysis being used to drive policy conversations between decision-makers in a food policy network who are connected to each other in specific ways.

FPCs across the United States responded to COVID-19 in a multitude of ways that demonstrate their unique ability to leverage connections and apply knowledge of food supply chains and systemic drivers of food inequities (Palmer et al., 2020). State and local government took immediate policy action in response to the COVID-19 pandemic, sometimes with support of FPCs, to establish a variety of food-related businesses as essential services, regulate food pricing, manage supply chains, procure food for emergency needs, support

food assistance programs, and other actions to support healthy food access (Healthy Food Policy Project [HFPP], n.d.). In Madison, Wisconsin, for example, the city partnered with the Madison Food Policy Council to allocate US\$50,000 in seed funding to projects supporting food education, access, and security (HFPP, n.d.). In larger cities, including Atlanta, Georgia, and Columbus, Ohio, local government allocated additional funding for food support programs for vulnerable populations like seniors and children (HFPP, n.d.).

In contrast, CCFP responded to the pandemic through secondary FPC functions such as communication, network weaving, and support for expanding on policy work related to local food production. As experienced elsewhere in the United States, community gardening and urban agriculture have gained traction in the Fargo-Moorhead metropolitan area as a central strategy to promote equitable access and food justice for residents, particularly those of BIPOC (black, indigenous, and people of color) communities. Glowa (2017), for example, has described gardening in cities like Oakland, California, as “one response from communities facing food injustices within urban neoliberal regimes” (p. 235). In 2020, CCFP continued to pursue strategies like urban agriculture policies as part of broad, ongoing efforts to increase food justice, with a heightened sense of urgency brought on the concurrent crises of COVID-19 and racial equity efforts as described by Palmer et al. (2020). This paper demonstrates how CCFP, equipped with a policy-focused SNA and an ability to tap into overlapping networks, successfully implemented a robust local, equity-driven response to community food resilience during the COVID-19 pandemic.

Methods

In this paper, we use qualitative methods to construct a narrative reflection on our experience in responding to food system challenges during COVID-19 between March and December 2020, written by our steering committee members and other network leaders most actively involved in this work. We draw on our minutes from public meetings, articles, and letters in the local newspaper (the *Fargo Forum*), and many forms of informal com-

munications (email and phone calls) that have guided our decisions during the pandemic. We also present information from an SNA conducted before COVID-19, the results of which provided insights that informed our policy response to the pandemic.

Social Network Analysis Pre-COVID

In the spring of 2019, North Dakota State University conducted a social network analysis (SNA) examining the relationships across the leadership of CCFP and the seven local government bodies that our network serves (Figure 1). An online survey was distributed to a pool of 68 people, including elected officials and key administrators in each policy jurisdiction, citizen at-large members of the Cass Clay Food Commission, one leader from Food of the North (representing the CCFP Action Network), and members of the CCFP steering committee. Fifty-three people responded to the survey. The survey asked respondents to review a list of the individual names of the other survey respondents, and indicate which option best described how they interacted with each person specifically regarding food policy issues in Cass and Clay counties. The options were:

- No interaction.
- We communicate. We exchange ideas and information.
- We cooperate. We have independent goals and agree not to interfere with each other.
- We coordinate. We coordinate our work to achieve a common goal.
- We collaborate. We work or have worked together to create something new that neither of us could have created on our own.

The scale used for the level of connections was based on the four Cs of interorganizational partnering: communication, cooperation, coordination, and collaboration (Martin, Nolte, & Vitolo, 2016). The four Cs represent a continuum of increased interorganizational “embeddedness in partnering activities” (Martin et al., 2016, p. 621), so they work well as a scale to indicate strength of connection between the policy jurisdictions and the leadership of the CCFP. The survey results were analyzed

using the social network analysis software InFlow (Orgnet, n.d.), which allowed researchers to create maps showing the connections between individuals in the survey pool and the level of each connection. These maps contain both nonrespondents and respondents. Nonrespondents were represented in the map only if one of the respondents indicated a relationship with them (see Figure 3).

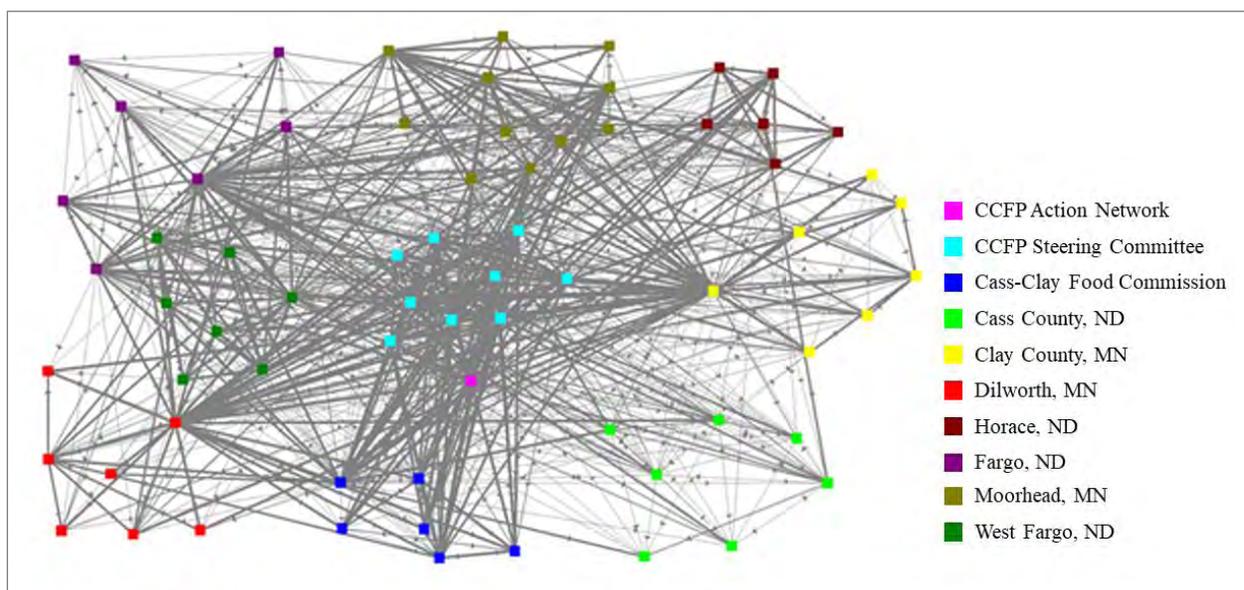
Statistical analysis of the survey results indicated the connections across this network of potential food policy influences were relatively sparse. Of 4,556 potential ties, the network had 1,055 actual ties, indicating a density of 23.2%. The average path length (the average number of steps on the shortest path between any two nodes) was 2.18. The shortest possible average path length of a network is 1, while the longest possible average path length of the network in this study is its diameter of 4. While the average path length of the CCFP network may seem short, it is not far below the median of the range of possible average path lengths. Shorter average path lengths have been associated with more efficient diffusion of information (Leavitt, 1951) and innovations (Peres, 2014) across a network.

The SNA revealed a lack of connections, especially at the “we coordinate” and “we collaborate” levels between some policy jurisdictions and CCFP leadership. The SNA also revealed few connections related to food policy within certain jurisdictions. The SNA results further demonstrated the lack of collaboration between planning departments in the jurisdictions. For example, there were no “we collaborate” ties indicated between individuals in the Moorhead policy jurisdiction and the Fargo policy jurisdiction. There was only one, asymmetrical “we coordinate” tie between Moorhead and Fargo. Thus, the SNA showed little evidence of coordination or collaboration on food policy *between* policy jurisdictions. The weaknesses within our network exposed by the SNA helped us understand why we were not influencing decision-makers, at least not in a way that was producing new policies or policy changes, aside from one back-yard chicken ordinance adopted in Fargo in 2017.

Based on this more nuanced understanding of our network, the CCFP developed a plan to intentionally engage key decision-makers in each of our seven jurisdictions. The map included the identification of conversation “clusters,” or combinations

Figure 3. Social Network Analysis of Cass Clay Food Partners and Local Governing Bodies

Each colored square (node) in this map represents a person in the survey pool and is color-coded to indicate affiliation with a policy jurisdiction or CCFP. The lines between the nodes indicate connections, with thicker lines representing higher-level connections. The arrows on each line represent the direction of the indicated connection. Lines with arrows in both directions indicate symmetric connections in which each respondent indicated the same level of connection with the other.



of individuals from each jurisdiction and the steering committee selected based on (1) ability to influence food policy decisions, and (2) pre-existing relationships that could be leveraged. The seven-jurisdiction outreach process was just beginning in March 2020. Although the SNA was not designed as a response to COVID-19, the analysis and resulting outreach plan were useful tools as we launched a body of new pandemic response work beginning in March 2020, which ultimately built upon and replaced the outreach plan designed around the SNA analysis.

Results

Activating Our Network of Networks to Respond to COVID

Community food resource list

Beginning in March 2020, the CCFP embraced several new actions to respond to the effect of COVID-19 on our food system (see Figure 4). Our first step was to quickly compile a crowd-sourced, open-access community food resource list that provided critical information to residents and service organizations in real time (City of Fargo, 2020d), brought community attention to immediate issues

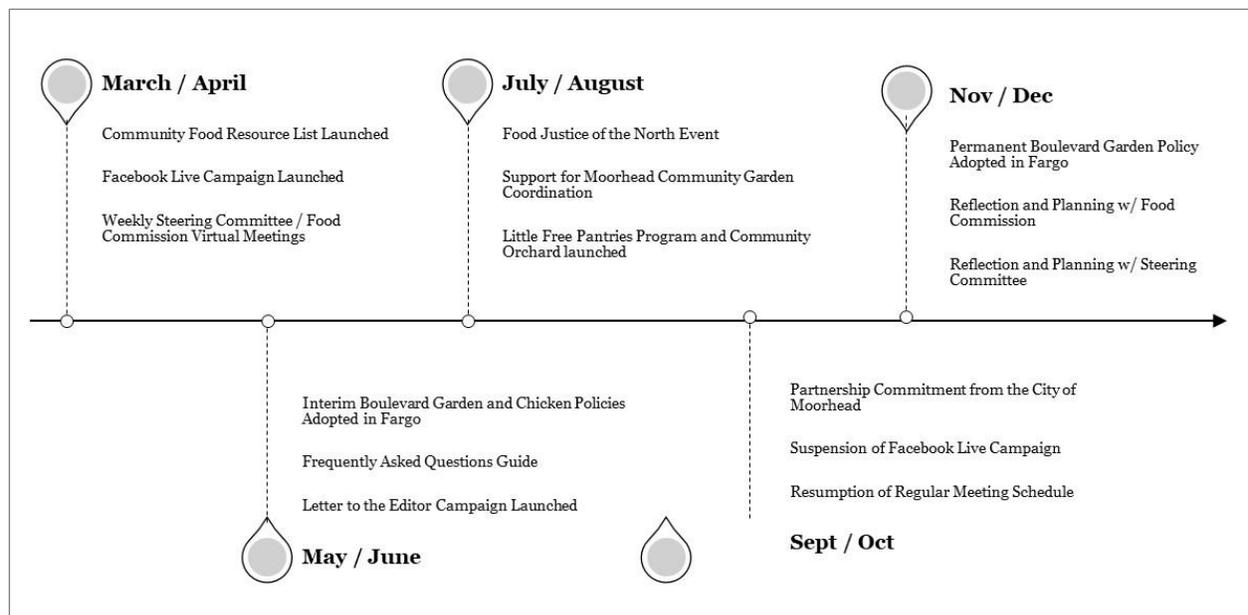
and CCFP efforts related to food access (Amundson, 2020e), and served as a call to action for network leaders to come together to begin weekly meetings to share and address emergent needs.

Facebook Live campaign

During the first steering committee meeting to address COVID-19 challenges, we decided to launch a series of video updates through social media at the end of March 2020, using an established (but infrequently used) Facebook page (CCFP, n.d.). These updates enabled our network to efficiently share information about the rapidly changing food environment during the pandemic, including emergency food sources and grocery delivery options, and created an opportunity to educate the public about broad systemic challenges like meat processing and food justice. The five most popular (i.e., widely viewed) topics included:

- Emergency food resources in the community
- Federal and state food support programs
- Local grocery delivery options
- Little Free Pantry Program launch
- Frequently Asked Questions Guide public launch

Figure 4. Timeline of COVID-19–related Cass Clay Food Partners’ Activities, March–December 2020



The campaign was managed using a shared Google document file and by granting administrative privileges to the page to more than a dozen network members. One steering committee member coordinated this effort, writing 121 pages of script for the Facebook Live broadcasts. Social media engagement also enabled residents to send questions or share posted information with friends, family, and neighbors. The Facebook Live campaign helped increase our presence—measured by the number of “likes” on our page—by 72% (from 581 to 803).

Qualitatively, the online presence increased engagement with our network, enabling residents who had never participated before to contribute meaningful ideas, such as identifying potential new partnerships. For example, one resident of Moorhead reached out through a comment on Facebook Live to share additional emergency food resources, which led us to partner with that resident for regular updates to our community food resource list. In another case, a local produce farmer contacted us to ask for help with determining whether he could legally set up a farm stand in Moorhead. We were able to serve as a bridge between the farmer and the city planning department to ensure the farm stand was properly permitted.

Virtual events

Leveraging CCFP’s Action Network was also a key element of our COVID-19 response. Since 2018, CCFP has contracted with a separate organization—Food of the North—to serve as the action network by fostering a grassroots organizing space for CCFP. This function has primarily occurred through a monthly event, First Fridays, that brings together community members, food network leaders, and area decision-makers for learning and networking. The event also generates interest around the food policy related work spearheaded by CCFP (Food of the North, n.d.-a).

At the start of COVID-19, First Fridays shifted to a virtual format and pivoted the April 2020 topic to focus on the Cass and Clay counties’ community response and needs related to the pandemic. This event featured a leader from the Great Plains Food Bank (which serves all of North Dakota and Clay County, Minnesota), a local res-

taurateur, and a member of the CCFP steering committee. This conversation illuminated the many challenges in our local, regional, and national food system, and proposed food system alternatives that have been promoted by CCFP for nearly a decade, including a more local and regionalized approach to food production. All First Friday virtual events during 2020 included an update and call to action from CCFP, which helped to further increase our support and grassroots advocacy from the community.

Comprehensive Communication Strategy

During COVID-19, CCFP and Food of the North found new ways to leverage each network’s focus (policy and grassroots engagement, respectively) to build a more cohesive network communication strategy. CCFP and Food of the North launched a newspaper letter-writing campaign to garner support for urban agriculture initiatives in Cass and Clay counties. Throughout the summer, nine letters to the editor were published in the *Fargo Forum* articulating various reasons that area residents appreciated expanded urban agriculture practices, like the new boulevard garden policy in Fargo, and desired to see more. Many referred to concerns over stability in the U.S. food supply because of COVID-19 and a need for more personal autonomy in their food production. Food of the North and CCFP also collaborated to clarify local food policies for residents through the combined efforts of the CCFP steering committee in communications with local government, and the user-friendly website launched by Food of the North during the pandemic (Food of the North, n.d.-b).

Partnering for Food Resilience

CCFP also used its influence to help other community-based networks adapt to the challenges posed by COVID-19. This approach of “network weaving” creates opportunities to amplify connected work (Holley, 2012). CCFP’s work with the Moorhead Resilience Task Force (MRTF) illustrates the collaborative power of having multiple networks work on issues affecting food systems. The MRTF is a coalition that seeks to address climate and social resilience through an array of strategies, with involvement from local elected officials, commu-

nity leaders, academics, and representatives of business and public service entities. The CCFP has strong representation on the MRTF. The existing synergies between these two groups were instrumental in helping MRTF respond to the crises caused by COVID-19 and engage in longer-term planning.

In response to COVID-19, CCFP helped the MRTF create tangible projects to address pressing community problems. As the disruptions to the food chain became apparent in the early days of the pandemic, members of the CCFP were able to tap into their collective expertise and social networks to identify problems in the local supply of fresh produce, and to address these by expanding community gardens in Moorhead. CCFP collaborated to help establish a new paid position within the MRTF, the Moorhead Community Garden Coordinator. This position has provided critical support to help one garden program continue during 2020, and to help two gardens expand their size to grow more produce for community members in need.

In the long term, CCFP provided guidance on how to leverage communitywide networks to create lasting changes. As the MRTF began the work of analyzing Moorhead's current assets and vulnerabilities, CCFP provided concrete information about where the community stands, what has been attempted in the past, and where the MRTF should put its resources. Given CCFP's history of work in the community, we helped the MRTF think more seriously about the long-term impacts of their work, particularly in relation to policies surrounding food security. From this encouragement and the knowledge that CCFP provided, the MRTF has shaped its action plan to address areas of overlapping interest and has chosen to focus on policy changes to further these goals.

Efforts to activate our network of networks helped the CCFP build a stronger voice in the community. However, the strain of this commitment over the course of months, on top of the personal and professional challenges brought on by the pandemic, whittled away at our network's capacity to embrace our new role in the spotlight. Therefore, it may be more significant that three partnering networks—CCFP, Food of the North,

and the Moorhead Resilience Task Force—established new modes of working together and sharing in operational tasks like communication (such as the letter-writing campaign) and influencing local decision-making in order to build future awareness of the food system (such as leveraging the Virtual First Friday events to encourage engagement around policy issues). An area of future growth is to secure funding for a full-time food systems coordinator for the CCFP, a position that could be shared across multiple networks working toward a common purpose.

Innovating Across Boundaries

Decentralized Emergency Food Distribution

The weekly virtual CCFP meetings during the pandemic helped incubate new initiatives led by steering committee members as part of their own professional pandemic response. A CCFP steering committee member from North Dakota State University (NDSU) Extension learned of the high rate of demand for mobile food pantries due to COVID, with a 79% increase reported statewide in North Dakota in summer 2020 (Great Plains Food Bank, 2020). After investigating the issue, she brought an idea to the steering committee to replicate a decentralized emergency food distribution program from other cities known as Little Free Pantries, which was officially launched in summer 2020.

A Little Free Pantry is a custom-built pantry or cabinet structure stocked with shelf-stable food and daily essentials. It operates under the motto, “take what you need, leave what you can.” Individuals in need are free to take from the pantry as they pass by. To date, six sites in the Fargo-Moorhead area have committed to hosting a pantry. CCFP's network created a viable avenue for vetting the idea, promoting this effort, and garnering support from local stakeholders and partnering organizations.

Community Orchard

CCFP members from NDSU Extension have also been successful in leveraging the community momentum around community-based agriculture in the aftermath of COVID-19. Members of the

steering committee secured a grant from the North Dakota state government during the summer of 2020 for the formation of a community orchard. The location of the orchard was selected due to the population currently facing poverty and marginalization residing in that area. The neighborhood is also home to several immigrant or refugee families. The community orchard thus helps to bridge the gap between food access and food justice for a population of residents who were also disproportionately impacted by the health and economic consequences of the pandemic.

The orchard grant included funding for outreach education to promote local food systems; staff time for planting, maintaining, and harvesting orchard produce; and educational resources about the importance of pollinators. Due to pandemic-related limitations in group gathering, educational efforts have centered on signage for community members to read when visiting the park. CCFP's network was again vital in the summer of 2020 in mobilizing multiple organizations and agencies to expand the orchard to include additional pollinator plantings and native berries. At full maturity, the orchard will produce an estimated US\$10,000 worth of produce per year which will be free and available to the public.

Equity event

The pandemic, as well as the anti-Black violence exposed by the murder of George Floyd, revealed major racial and economic inequities across social systems. CCFP, Food of the North, NDSU Extension, and University of Minnesota (UM) Extension hosted a virtual conversation in July 2020 to address food justice and equity issues related to both the pandemic and systemic racism. The event included speakers from UM Extension sharing stories and experiences from working on food justice and equitable access with diverse populations in Minnesota and was moderated by a North Dakota state legislator. Responses to the follow-up survey demonstrated that in the aftermath of the pandemic, participants wanted to see our community look at food justice on a more systemic level, create more opportunities for culturally based foods to be grown and distributed in the area, and make it easier for residents to produce their own food.

These three examples highlight the ways that members of the CCFP network came together in new ways to address emergent issues in the local food system through new projects and initiatives to support food security, improve access to locally grown fruit, and raise awareness about social justice issues in the food system all as part of a systemic response to the pandemic. We acknowledge that these efforts alone are not enough to counter the effects that COVID-19 has had on our food system, economic health, and mental well-being, and that our intent as a network is to focus on policy efforts that support the broader systemic changes needed to create a more equitable and healthy food system (Gold & Harden, 2018).

Translating and Changing Policy

Bridging Role in Food Policy and Planning

Through our expanded communications efforts during COVID-19, we began to gain more support from city and county government, including both employees and elected officials. In turn, we became more effective in advocating for clarity around existing policies. For example, a staff person from the city of Moorhead began participating in our virtual weekly Cass Clay Food Commission meetings and was instrumental in ensuring that we received prompt responses during the development of our frequently asked questions guide. The FAQ guide provided residents of all of our jurisdictions with a simple factsheet to navigate complex city codes related to gardening and urban agriculture, such as “Can I garden in my boulevard?” or “Can I raise chickens on residential property?” (City of Fargo, 2020c). We also worked with city staff in Fargo to confirm that beekeeping is allowed within city limits for personal use (which previously had been addressed in an ambiguous case-by-case basis requiring residents to contact the city directly). These two examples demonstrate how our network helped residents more easily understand and navigate city codes and legal interpretations related to food.

Urban Agriculture Ordinances

In the city of Fargo, our network also championed two temporary ordinance changes in response to

COVID-19 aimed at expanding residents' ability to produce their own food and to partake in the mental and physical health benefits of gardening while social distancing. Both were successfully passed in the spring of 2020, although not without controversy. The first was an expansion of the backyard chicken program to allow an increase in the number of chickens allowed from four to six (City of Fargo, 2020e). The second policy was a new program allowing residents to grow food and flower gardens in the boulevard adjacent to their residential property (City of Fargo, 2020b). Both policies were approved, with a 3-2 vote on chickens (Amundson, 2020a) and a 4-1 vote on boulevard gardens (Amundson, 2020b).

There are three key reasons we were successful in these policy efforts: (1) the power we built during COVID-19 as a network, (2) having a champion within the Fargo City Commission, and (3) our nuanced understanding of the relationships across city staff and of the relationships across the city commission provided by the SNA. When the Cass Clay Food Commission was first formed, it was with the intent to introduce more regional uniformity in the adoption of food-related policies across the Cass Clay region. In other words, we had hoped that if one jurisdiction adopted a new ordinance, the others would learn from that experience and consider making similar changes. As the SNA revealed, this would not happen as naturally as we had previously thought. The boulevard garden policy in Fargo was likely only modeled after the one in Moorhead because of our role as a bridge between the two communities. By making this connection between the jurisdictions, we were able to leverage what we had learned in the SNA (weak connections across jurisdictions) to help shape our policy approach during COVID-19.

Challenges to our Policy Advocacy during COVID-19

Because the new boulevard garden program was introduced early in the pandemic (May 2020), commissioners questioned whether this was the right time to use city staff time or financial resources to create a new program that would only be temporary and would have minimal impact on food security. One commissioner even called the effort "ridiculous" and "a waste of our time"

(Amundson, 2020d, para. 10–12). There was some validity to these critiques; only three families in Fargo ended up implementing the boulevard gardening program in 2020. While the program did not bear any direct costs or require budget allocations, it did require some dedicated staff time (approximately value of US\$775) that had to be provided through one of our network leaders as part of her duties in the public health department.

We also were caught off guard by vocal opposition from individuals with associations to the NDSU Extension Master Gardener program. Proponents (some of whom were also connected with Master Gardeners) expressed a desire to see more gardens throughout the community, while opponents were concerned that boulevards (typically adjacent to a street) would not provide a suitable growing environment, especially for vegetables intended for human consumption. Our network addressed these latter concerns by including information to program participants for mitigating soil contamination in boulevard gardens.

Despite these challenges to the new program, in December 2020, the Fargo City Commission voted 5-0 to make the boulevard garden program permanent and requested that city staff explore opportunities to make the program more accessible to residents by reducing the administrative requirements (Amundson, 2020c). None of the city commissioners, including the one who had previously voted against the policy in May 2020, expressed any opposition to the program. In fact, the discussion around the issue was lighthearted and positive, suggesting that the timing of the matter and competing priorities in the first weeks of the pandemic were more likely the source of earlier opposition than politics. Or perhaps, after the weariness of the pandemic and burden of taking on more controversial topics like mask mandates, business shutdowns, and major budgetary decisions, expressing support for a low-risk gardening initiative was a much easier sell to city leaders, especially since there were minimal complaints about the program during the summer pilot.

Discussion

During COVID-19, our network successfully pivoted and increased our work to meet food access

and health challenges being experienced in our community. We were poised to take on this work because of 10 years of adaptive development that included ongoing evaluation and tools like SNA that we used to systematically analyze and respond to the strengths and weaknesses of our network. These successes included an increase in public support and engagement, online resources that provided help to residents during the pandemic, new programs related to emergency food and community-based agriculture, and policy changes in the city of Fargo. Our work during the pandemic also strengthened the relationships across key food policy actors in our region.

Throughout this paper, we have highlighted how SNA conducted before COVID-19 enabled our network to be poised to act and leverage key relationships with local policy-makers and planning departments. While other food networks have used SNA to gain a broader understanding of all the key players in a geographically defined food system (e.g., Dharmawan, 2015; OFPN, 2017), our experience highlights how SNA focusing on the food policy arena, and including stakeholders not directly involved in food systems work (e.g., elected officials not serving on the Food Commission), can inform advocacy efforts. We also have demonstrated that our response to the global pandemic required quick action informed by a solid grasp of how and who makes decisions; therefore, network leaders are best served if they implement some form of network mapping on a regular basis (annually or biannually), so they are poised with a nuanced understanding of decision-making structures and relationships before a crisis ensues.

As discussed in the commentary by Palmer et al. (2020), FPCs in 2020 have leaned into new roles to address the *concurrent* crises of the year: a pandemic compounded by issues of racial inequity. For food system practitioners, this has brought heightened attention to food justice as a body of work that addresses economic, racial, and other systemic disparities that limit residents' ability to access or produce healthy, culturally based food. While CCFP's work has included equity as a core value since 2017 (Gold & Harden, 2018), network leaders were able to communicate more publicly about social issues than in the past due to the relatively

conservative political and cultural context in the Cass Clay region. The Food Justice of the North equity event represented a milestone for CCFP in terms of our network's first public discussion about how structural racism shapes our local food system. Future work for our network lies in accountability measures for equity and inclusion in our network and in the Food Commission work. As Carboni et al. (2017) have found, SNA presents a tool for our network and other FPCs to develop a baseline understanding of how the governance process around food policy often precludes meaningful involvement from marginalized groups.

In our community, urban agriculture and community gardens are central to food justice efforts because many immigrant and refugee families have the skills, knowledge, and desire to produce their own food, but are unable to access land and other essential resources. Nevertheless, a classist undercurrent of the resistance to urban agriculture policies is sometimes presented as an attitude that agriculture should only be in the countryside, not in the city. One commissioner stated this sentiment clearly during one of the discussions of the boulevard garden policy: "We live in North Dakota. You go about two miles out there and there's unlimited farmland. This isn't Manhattan" (Amundson, 2020d, para. 10). This paradigm assumes that anyone can afford to purchase, rent, or otherwise access farmland or products grown on nearby farms, ignoring the economic and social realities of most residents, especially those facing food insecurity or representing historically marginalized groups.

Furthermore, this disdain for agriculture within the city limits by those who do not face food security challenges themselves is laden with tensions between competing "land politics," with the institutionalization of private property rights, racial exclusion, neoliberal governance on the one side, and collective food sovereignty, social equity, and re-envisioned public land usage on the other (Glowa, 2017, p. 232). The COVID-19 pandemic has created opportunities for food networks to help community leaders to deconstruct this dichotomous land politic as the public consciousness has shifted to be more supportive of urban food production systems, and of the social injustices that these systems often seek to help resolve.

Recommendations for Other Food Network Leaders

As we have reflected on this body of work in 2020, we offer recommendations to leaders of food networks and FPCs. In our network, we have adopted a practice of regularly debriefing with one another to process next steps, celebrate victories, and reflect on lessons learned. During the first three months of the pandemic, the network co-chairs were in contact almost daily to stay abreast of the changing food system dynamics and the network's increased workload, and to reflect on longer-term strategies to leverage our strengthened platform. In November and December 2020, both the Food Commission and steering committee engaged in facilitated dialogue to dissect the accomplishments of the year and look ahead to the next two years of work. Given this time and mental space to reflect on our pandemic response, we offer five recommendations to other food system change agents.

Learn Your Network Now

Before COVID-19, to better understand and communicate with key stakeholders in our network, our network invested in four types of engagement activities, including:

- Community surveys and engagement events,
- Food system planning with the Metropolitan Council of Governments,
- Strategic communication development with a paid consultant, and
- Social Network Analysis of policymakers and other key stakeholders.

We recommend that network leaders start with using simple tools like online surveys and conversations with friendly policy-makers to get a regular pulse of the community's level of support for food policy issues. Networks maps and flowcharts (such as Figure 2) can be instructive in identifying gaps and potential partnership and are less intensive to implement than SNA. Our SNA ended up being a very useful tool for two primary reasons. First, we focused on mapping political relationships and leverage points versus a map of our entire food network or local food system. Second, the timing of our SNA analysis and follow-up communications

coincided with the start of the pandemic in such a way that we were able to pivot and use our SNA results to inform our COVID-19 response while they were still relatively current.

Invest in Small, Immediate Wins

Our network's pandemic response began humbly, with one leader identifying a need for a comprehensive food resource list, creating a document to fill that need, and sharing it immediately with other network leaders for input and to avoid duplicative work. When this resource received coverage from local media and was widely shared across multiple networks, it activated not only our network members but also generated a much greater level of engagement with the community. By leveraging an early success to build credibility and community support, CCFP was able to successfully advocate for policy changes in May and December 2020. We recommend that other networks leaders not overlook the value of small victories and the snowball effect of leveraging these victories to boost network visibility.

Help Emerging Leaders Shine

The pandemic created many new opportunities and increased the motivation for more of our CCFP network leaders to take on specific pieces of work such as communications, public relations, project development, and network weaving. Relatively simple, one-time tasks like delivering an update on Facebook Live or speaking with media could be easily delegated to steering committee members, Food Commission members, and student interns. Network leaders seemed to express a sense of benevolent self-interest in wanting to be able to pitch in and help the community during a time when volunteering in-person was often infeasible. The co-chairs of the network could then focus on policy proposals, communications management, and facilitation of network meetings.

We recommend that other leaders take time to invest the necessary time and energy in ensuring that emerging network leaders are comfortable and prepared when taking on new tasks. This entails coaching, developing scripts and talking points, phone calls, and troubleshooting technology. This time spent on minutia pays off even if the actual

time saved in the end is insignificant, because even the public perception of distributed leadership has inherent value in bolstering network credibility and reach. For example, having several well-equipped network spokespeople enables network leaders to delegate advocacy and public awareness efforts to the best messenger. Each time someone new delivered a Facebook Live update, our CCFP page received a significant bump in “likes” and “views.”

Become a Valuable Asset

Before the pandemic, the CCFP had spent five years producing evidence-based policy blueprints and other documents, vetted and approved in a formal process through the Food Commission. This work did not translate to policy change immediately, but over time left us poised to be a credible asset for local government and community members at a time when food system challenges became elevated in the public consciousness. Timing is imperative when engaging in policy work so that advocacy efforts can strengthen rather than diminish political capital. We recommend that food network leaders play the long game in system change efforts, investing in relationships, research, and communications, while recognizing when contexts in the community shift to create opportunities to present policy solutions. During the pandemic, our investments in relationships and research paid off when we received invitations to present ideas and solutions from within the Fargo City Commission and the Moorhead City Council.

Use a Holistic Humanistic Approach

In our politically bifurcated community, we have found that policy efforts around food and urban agriculture can often bring together the political right and left. Broad appeals to humanistic values—feeding hungry families, granting homeowners the freedom to produce their own food, supporting mental health through gardening—coupled

with practical insights on overcoming logistical hurdles and overhead costs create a compelling narrative that is difficult to refute. A powerful example of this type of appeal came from a Fargo city commissioner during the boulevard garden policy discussion in May, who described his support for the policy with this statement: “If you are hungry, it’s an emergency. ... We need to show that we are a community of compassion” (Amundson 2020a, para. 7–9).

When we returned to the Fargo City Commission in December prepared with more data on the program, not only was there no opposition, but the discussion around the policy change was met with humor and lightness that was not existent during most of the other discussion that evening. It was clear that what once was brushed off as a “feel good” measure had gained traction as a program with an undeniable public benefit. Our recommendation to fellow food network leaders is to recognize that humanistic appeals, especially when delivered by an effective messenger at the right time, are just as important as data and research in capturing the public’s imagination in way that influences policy-makers over time.

Conclusion

When COVID-19 threatened our community’s food system, CCFP answered the call to action. Our years of self-assessment, adaptive development, and attention to interwoven networks enabled us to act quickly to implement a mixture of effective strategies that no single organization, jurisdiction, or other entity could have accomplished alone. Despite the energy infused into our work during COVID-19, we have much more to accomplish to create a healthy, just, and equitable food system. We look forward to leveraging the power we have built to focus our efforts even more keenly on those who are most vulnerable and oppressed in our community.

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COVID-19 and school food: The impact of the early stages of the coronavirus pandemic on student nutrition programs in Ontario

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Abstract

This paper is an exploration of the impact of the early stages of the COVID-19 pandemic on emergency food supply to school-aged children in Ontario, Canada. Using surveys in the framework of a bounded qualitative case study, we investigate how Student Nutrition Program (SNP) support staff have responded to the changed circumstances of the pandemic. Results indicate that program support staff were able to shift the SNP’s focus from universal access in-school nutrition programs

to targeted food security initiatives for families. This shift was possible due to the complex web of relationships within which SNPs in Ontario operate. Additional data and findings are discussed in the article, relating to the prepandemic operation of SNPs, how programs have been affected, and the concerns of SNP support staff about future issues as the programs restart in the new school year under pandemic conditions.

Keywords

School Nutrition Programs, Student Nutrition

Disclosures

Indra Noyes is a former employee of the Peterborough Child and Family Centres, having worked closely with many of the research participants regularly in her role as student nutrition support staff. Nicola Lyle is currently the regional manager of student nutrition programs in Central East Ontario through Peterborough Child and Family Centres.

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Programs, COVID-19, Pandemic, Qualitative Research, Food Security

Introduction

Early Impact of COVID-19

As the COVID-19 pandemic wreaks havoc on contemporary food systems, it reveals inherent flaws and weaknesses of these systems (Altieri & Nicholls, 2020; Clapp, 2020; Clapp & Moseley, 2020). The initial global lockdown to slow the spread of COVID-19 affected food systems and disrupted the complex, global food supply networks. Noteworthy examples of this disruption include large-scale logistic barriers, resulting in the dumping of fluid milk (Yaffe-Bellany & Corkery, 2020a) and mass slaughter of livestock (Yaffe-Bellany & Corkery, 2020b). Furthermore, the pandemic highlights the essential role of migrant farm labor (Hennebry, Caxaj, McLaughlin, & Mayell, 2020) and food processing facilities (Hailu, 2020) in contemporary food systems. Beyond such immediate shocks to the food system, it is estimated that the number of people living in acute hunger globally will double to 265 million people as a result of the pandemic, according to the United Nations' World Food Program (Anthem, 2020). According to the United Nations' Food and Agriculture Organization (FAO), the growing food insecurity and hunger impact of COVID-19 is particularly prevalent in less wealthy countries and amongst vulnerable populations (FAO, 2020).

This global trend is also reflected in the Canadian context, where the shock of the COVID-19 pandemic has had particularly deep reverberations through the emergency food supply system (Deaton & Deaton, 2020). With the beginning of the lockdown in March 2020, and in subsequent months, food banks saw a surge in demand (Food Banks Canada, 2020). City of Toronto food banks saw an increase of 25% in the number of food bank visits per week, alongside a 200% increase in new clients (Daily Bread Food Bank, 2020). This increase in food bank use was also reflective of an increase in child hunger in the city of Toronto. The Daily Bread Food Bank noted an increase from 4% to 8% of children (of families accessing the food bank) experiencing hunger two times a week or

more (Daily Bread Food Bank, 2020). It is estimated that children made up 33% of food bank users in Ontario before the beginning of the pandemic (King & Quan, 2018). As the pandemic continues, and the economic impacts grow, so will the number of food-insecure households and children (Food Banks Canada, 2020; Paslakis, Dimitropoulos, & Katzmena, 2021).

Ontario Student Nutrition Programs

Before the start of the pandemic, children in Ontario living in food-insecure households were able to access emergency food supplies through two avenues: food banks and schools. Schools function as an essential infrastructure in emergency food supply to children by way of operating school food programs (Ralston, Treen, Coleman-Jensen, & Guthrie, 2017). In Ontario, these school food programs are called Student Nutrition Programs (SNPs). The mandate of SNPs is to serve meals and snacks in a nonstigmatizing environment, creating regular and reliable access to healthy food for children (SNP Guidelines, 2016). A summary of SNP operational structure can be found in Table 1.

These nutrition programs were established as grassroots community initiatives, which accounts for the multitude of stakeholders, as they have evolved substantially over the years.

The pandemic and its impacts are continually evolving, as is our understanding of how COVID-19 containment efforts are changing the world. With the sudden closure of all schools in Ontario in March 2020, SNPs lost their venue of operation. In this paper, we examine the impact of the early stages of the COVID-19 pandemic on food supply to schoolchildren in Ontario. Focusing on the first months of the pandemic (March 2020 to August 2020), we surveyed Student Nutrition Ontario (SNO) staff in order to investigate how the pandemic has impacted food supply to Ontario SNPs.

Methods

This article presents the findings of a qualitative research case study, designed as a single instrumental case study. The survey included six questions focused on understanding the major concerns of staff before the pandemic, how the pandemic impacted programs, how staff responded, and what concerns

Table 1. Student Nutrition Programs (SNPs) in Ontario

Funding	Student Nutrition Programs operate with core support from three levels of the public sector: the Ontario Government, regional Public Health units, and local schools and school boards (De Wit, 2012). The programs receive funding (and report to) the Ontario Ministry of Children, Community and Social Services (OMCCSS) and are hosted in the physical jurisdiction of the Ministry of Education. Additional funding is secured and stewarded through the provincial Student Nutrition Ontario network and on the community level (SNO, n.d.). Governmental funding is “seed funding” in that it is a small portion of full operational cost that is provided reliably.
Operational Model	SNPs are well-established community initiatives that exist in the majority of public schools throughout the province (SNO, n.d.). SNPs rely extensively on in-kind support from school staff, Public Health Units, and community volunteers. The programs face systematic operational barriers associated with the high cost of healthy food, heavy reliance on volunteerism, and school-level stigma (Vine, 2014a)
Governance	SNPs are supported and administered through 14 lead agencies, which are community organizations mandated to deliver SNPs in their region by acting as flow-through organizations for ministry funding (Ministry of Children, Community, and Social Services, 2016). Lead agency staff work in collaboration with community-level organizations, schools, and other stakeholders to flow funding, report to funders, and provide SNP volunteers and schools with all essential operational supports.

exist for the future of nutrition programs.¹ Surveys were sent to all 14 SNO lead agencies in late April 2020. A total of 16 responses were received (N=16) from 11 regions (response rate 79%). Research design, coding of results, and analysis of data were conducted as per Creswell & Poth (2019).

Results

Prepandemic

This section reflects themes that emerged from the data in regards to prepandemic SNP staff work. Table 2 highlights the major concerns that program staff identified in the ongoing operation of SNPs in prepandemic Ontario.

Our findings indicate that SNP staff operate in an underresourced environment, with staff focused on addressing the gap between funding received

and program expenses, as well as the daily operations of program delivery, as discussed below.

Lack of Resources

The majority of research participants responded that the primary concern in their work was about lack of resources and working to acquire new resources. This finding is in line with evidence from a variety of other research into school nutrition programs that has found them to be chronically underresourced (De Wit, 2012; Russell, Evers, Dwyer, Uetrecht, & Macaskill, 2008; Winson, 2008). A participant summarized the continual struggle with resources as follows: “Lack of ownership of SNP in one [institutional] home that takes full responsibility (not fully owned by education, public health, community, etc.). Also, universal approach but we don’t have the funding to match.” Thus, SNPs are expected to serve everyone, but do

Table 2. Prepandemic SNP Concerns

Theme	Content Saturation	Details
Lack of Resources	58%	Financial, human (volunteers and school staff), physical (food and kitchen space), growing cost of food, growing demand
Operational Details	25%	Recording deliverables, reporting to funders, training and outreach
Managing Relationships	9%	School staff and school boards, volunteers, community partners, suppliers, funders
Equity and Safety	5%	Unequal fundraising capacities of schools, food safety

¹ See Appendix for the survey questions.

not receive enough funding to fulfill this mandate. Our data indicate that programs are affected by this funding structure in terms of lack of volunteers, inadequate food budgets, and growing demand in schools. This tension leads to less-than-optimal food environments, where nutritional compromises are made (Holmes, 2019). Furthermore, SNPs operate between the jurisdiction of many different government agencies and initiatives. Consequently, there is lack of ownership of SNPs and associated detriments to programs, such as a patchwork of funding, diffuse governance, and unrealized potential. The fact that nutrition programs are not owned by any one government department in Canada is unique in the global sphere of school nutrition (De Wit, 2012; McLoughlin et al, 2020). Other G7 countries have federally funded nutrition programs that are hosted by their education departments (De Wit, 2012). The inconsistencies between regions and provinces in terms of funding, governance, and approach to SNPs have given rise to long-standing advocacy campaigns for a national school food program in Canada.² Our research suggests that there is substantial potential for school nutrition programs to reduce child food insecurity in Canada through a consistent governance model and appropriate investments.

Operational Details

The second theme that emerged from the data was the challenges that SNP staff face in accomplishing operational details and administrative tasks, such as recording deliverables and reporting to funders. This finding suggests that nutrition program staff are overleveraged and there are accountability concerns that come with holding responsibility in the patchwork landscape of SNPs described above. Training and outreach were also mentioned as significant concerns for lead agencies, as many of the deliverables (such as tracking program statistics) are completed by volunteers. The additional work SNP staff perform to train volunteers is a result of the community nature of the SNPs (Winson, 2008). In the absence of on-site staff, volunteers deliver the programs and need to capture data accurately for reporting (Pratley, McPhail, & Webb, 2014).

Volunteerism in SNPs has a high rate of turnover, as children age out of schools, families move, and volunteer capacity fluctuates. Furthermore, some schools see higher rates of volunteer engagement than others based on the age of children, socioeconomic factors, connections with church groups and other organizations, and other factors. Consequently, our data suggest that the heavy reliance on volunteer work that is at the heart of SNPs has significant stresses associated with it.

Managing Relationships

Managing relationships was mentioned as a large challenge and priority in the work of the lead agencies before COVID-19. In the absence of adequate resources, in-kind donations are essential to the operation of programs and require substantial negotiation and time investment. This is a trend frequently observed in community-based emergency food supply initiatives in Ontario (Tsang, Holt, & Azevedo, 2011). Interestingly, the stigma associated with participating in school food programs is lowered if there is a lot of community involvement in the program (Edward & Evers, 2001). Consequently, the value of in-kind donations is greater than material, as social gains are also evident through volunteerism.

Research participants reported that the in-kind resources available to SNPs within schools depend largely on the priorities of key staff and positive relationships between SNP coordinators and staff. As articulated by a participant: “It [the nutrition program] is sometimes a very low priority (despite significant funding). [There are] inconsistent levels of importance and attention depending on the priorities of the individual principals.” Schools with principals who are supportive of the SNPs typically have more options for their programs. Consequently, a lot of the work of SNP support staff is contingent on good will; cultivating the social relationships that foster these relationships are part of the support staff’s work. The implications of this finding are that in communities or schools where it is not possible to leverage relationships, the quality of the nutrition programs suffer, with a negative impact on child food security.

² For more information, see Coalition for Healthy School Food and Food Secure Canada

Equity and Safety

Ensuring equitable and safe administration and delivery of the programs was another concern brought forward by research participants. For example, a few participants mentioned that some schools have larger parent volunteer engagement and a greater ability to fundraise. This leads to differences in their operational budgets and quality of programs. Equity in school food programs is a complex and contested issue both in the field and in the academic literature (De Wit, 2012; Kirkpatrick & Tarasuk, 2009; Raine, McIntyre, & Dayle, 2003). We will address this topic briefly in the discussion section of this paper.

In summary, the survey responses paint a clear picture of nutrition programs in Ontario operating within a complex web of relationships with a larger mandate than budget. Our results are aligned with findings in other studies. For instance, De Wit (2012) found a constant funding gap of 67% in her detailed review of SNPs in Toronto, Ontario. Across Ontario, this funding gap may be larger, as not all programs receive the additional municipal funding that Toronto SNPs do (De Wit, 2012). Our data shows that the budget deficit leads the SNP support staff to continually seek additional resources and manage complex relationships. SNP staff support and manage many different types of responsibilities and relationships, bringing together a diverse network of actors from the government, the charitable sector, community partnerships, industry, and volunteers. Major prepandemic concerns of our research participants were acquiring and managing resources, focusing on operational details, managing relationships, and addressing concerns of equitable program access and quality.

Our findings suggest that prior to the pandemic, SNPs already faced major systemic challenges.

Impact of the Pandemic

This section reflects themes that emerged from our research data in response to the impact of the pandemic on Ontario SNPs. Table 3 outlines the impact of school closures on nutrition programs and how different regions responded to this challenge.

Survey responses showed far-reaching impacts of school closures with a variety of initiatives that communities created in order to face the pandemic challenges.

Impact of School Closure

The major impact that the pandemic has had on SNPs is the closure of schools. School closures had far-reaching impacts on the resources available to support possible alternative avenues for providing food to the children who accessed the programs prior to COVID-19. Programs lost access to program space and the children they were serving, as well as other important operational components of the nutrition programs. These include resources within the schools and support staff. One of the research participants described the impact of school closures as follows: “The volunteer base (consisting of parents, teachers, principals etc.) and the meal/snack preparation facilities used by the programs are also valuable resources that have remained unavailable since the closure date.” Another research participant indicated that some programs had “difficulty recouping resources that were in the school’s possession during school closures.” In addition, one lead agency’s community development staff members were temporarily laid

Table 3. Impact of COVID-19 on School Nutrition Programs

Event	Impact	Response	Details
School Closures	Loss of space, access to children, volunteers, school resources (physical and human), staff	Changed mandate	From universal access to targeted food distribution
		New initiatives and changed service delivery	New food-security initiatives started by lead agencies including home delivery, a food collection warehouse, and grocery vouchers
		Renegotiated partnerships	Renegotiation of partnerships with funders, community organizations, food suppliers, and volunteers

off due to COVID-19, drastically reducing the agency's ability to respond to the new circumstances.

Response to School Closures

Interestingly, many lead agencies were able to create alternative avenues for providing food to children, despite the closure of schools. Our data revealed that responses to the challenges posed by COVID-19 fell into three categories: changed mandate, new initiatives, and partnership renegotiation.

Changed Mandate

Ten of the 11 regions noted that their mandate shifted from universal access to targeted emergency food supply to vulnerable children and families. One survey participant indicated that, with this shift from universal to focused intervention, there were unexpected benefits: "We are no longer able to provide universal support to all students via schools, so we had more funding to reach children/youth who need it the most." This was not the reality for all regions, as many saw an increased strain on the emergency food system due to the COVID-19 lockdown. One participant pointed out that "schools that used to run nutrition programs are now feeding not only students but their families too." Consequently, the financial impact of the pandemic on SNPs was not uniform throughout the province, with some regions seeing focused interventions as creating more room in their budgets and others experiencing the financial strain of supporting whole families.

New Initiatives

New initiatives were started by seven of the 11 lead agencies that participated in this research. The

other four regions shifted their resources to community partnerships (such as food banks) or adapted existing initiatives to the changed circumstances. See Table 4 for an overview. The detailed evaluation of the impact of each of these new initiatives is beyond the scope of this initial COVID-19 impact investigation. Future research would be valuable in understanding in detail the food-security implications of the different lead agency responses.

The new initiatives fell into two categories: financial support to families, and food to families. The decisions of whether to provide food or financial support were based on local logistics circumstances and evaluations of the most efficient use of limited resources. An example of financial support was the establishment of an emergency fund through which families (which had been identified based on household income) received grocery vouchers; one staff member said, "We have reached out to the families of more than 80,000 students who normally access food through SNPs inviting them to register for a grocery card valued at CA\$50 for each child attending school." Both regions that provided financial support did so through grocery vouchers, which were sent to families in collaboration with school boards and with the help of partner organizations. Grocery vouchers provided accountability and ensured that funding would be spent on food.

The lead agencies that decided to send food directly to families did so in a variety of ways. One involved the creation of food collection warehouses from which families could collect food on a regular basis; according to one staff member, "We developed 3 breakfast hubs for families to pick up breakfast bags containing whole grains, dairy, produce and vouchers that could be redeemed in gro-

Table 4. SNP Response to COVID-19: New Initiatives and Changed Service Delivery

Response	Type	Details
New initiatives (7)	Financial support	Grocery vouchers
	Food donation	<ul style="list-style-type: none"> • Food collection warehouse • Weekly hampers
Redirect resources (2)	Increase capacity of other emergency food supply to reach children	Food banks
Expand existing programs (2)	Adjust existing programs to new circumstances	Farm to school

cery stores. The three hubs are located in different areas of the city to ensure that they are accessible to everyone.” Two other regions provided weekly hampers that families could either pick up or that were delivered to homes, depending on the circumstances. Other regions worked with partner organizations to make additional food available specifically to the families of children that would usually access the nutrition programs in school. Regions that were not able to create new initiatives as such, or were not able to target families specifically, redirected their resources to other emergency food initiatives in the hopes of reaching the children they served; as one staff member said, “When school initially closed, donations of food and funding were provided to food banks in an effort to support the influx of families with school-aged children.”

Partnerships Renegotiated

Existing partnerships were shifted to meet the increased demands of the pandemic. One research participant noted that “There is a great sense of wanting to work together to help the community. So, old partnerships have been strengthened and new partnerships have been created fairly easily.” Ten of the 11 regions emphasized the importance of these partnerships and how they were strengthened through this pandemic. Furthermore, new partnerships were created that did not previously exist: “Agencies are working together that haven’t traditionally done so and everyone is working together to do their part more than ever before,” noted a research participant. Here again, research participants articulated an unexpected mobilization of resources in light of the pandemic; one said, “We have grown our Farm to School meal program and are working with local farmers (chicken and microgreens) and chefs to prepare meals. We would not have had the capacity and/or funds to do this so quickly in a non-COVID environment.”

Given the complex web of relationships that SNPs operated within before the pandemic, it is interesting to see the research data showing how lead agencies leveraged these relationships and were able to respond quickly to the fundamental challenges posed by the COVID-19 pandemic. Though schools were closed on short notice, SNP

staff were able to use existing infrastructure and resources to address child hunger in their communities through different avenues. In addition, some regions found that due to the COVID-19 pandemic, they were able to access additional resources and opportunities that had not been available previously. However, the majority of regions continued to be concerned about a lack of resources in meeting the needs of their students. Finally, the shift in focus from universal access programs to targeted food-security intervention for food-insecure households constitutes a fundamental shift in the work SNP staff were accustomed to performing.

In summary, lead agencies responded to the pandemic and associated school closures with targeted emergency hunger relief by leveraging existing relationships to redirect resources to reach children at home. The full impact and efficacy of these new initiatives will need to be scrutinized and evaluated as the pandemic progresses. Traditionally, student nutrition programs are not conceived as solely an emergency food intervention, but an in-school community initiative with a variety of benefits and challenges (De Wit, 2012). The fact that school closures prevent nutrition programs from operating as usual raises fundamental questions about the purpose of the programs in the present and in the future. It also raises questions about the role of nutrition programs in the larger context of food security, child hunger, and sustainable food systems. The fact that there is a lack of ownership over the Ontario nutrition programs and that they are rarely studied systematically (Russel, 2008), exacerbates these questions. Consequently, there is a substantial missed opportunity in addressing child hunger in Ontario through the dedicated investment of resources and leadership and based on robust scholarship.

Future Considerations

Finally, we asked research participants to address the priorities and concerns that have arisen in their work of supporting SNPs through the pandemic with a view to the future of operating nutrition programs. This question elicited a broad range of responses, with the data clustering around three themes: resources and relationships (39%), impact

on vulnerable populations (34%), and reopening of schools (27%).

Resources and Relationships

The theme of lack of resources, which is central to all aspects of SNPs, was also a major concern for program staff in considering the future of SNPs in the context of COVID-19. Program staff are worried about whether there will be enough funding to support the changed realities that programs face due to COVID-19. SNP support staff anticipate a twofold strain on resources: Firstly, they anticipate increased program participation due to economic hardship and job losses. As expressed by one survey respondent, “We are conscious that the need for SNP will increase dramatically when schools reopen due to the unprecedented job loss resulting from COVID.” Secondly, support staff anticipate that with new safety requirements in schools, programs will be more expensive to operate. As stated by one research participant, “We are concerned about having enough funding to continue SNP when student[s] do return to school, since programs will have to operate differently (and will be more costly) than pre-COVID.” This concern was echoed throughout other responses from study participants: “I am also concerned about how/when student nutrition programs will start up again and if there may be an even greater lack of funding available. Volunteers will also be hesitant to return so that means programs will likely find it more difficult to run quality programs.” From the data, it is evident that the work to gather adequate resources to operate student nutrition programs that was present before the pandemic is now heightened with additional stresses and financial burdens.

Vulnerable Populations

The second cluster of responses was focused on the impact of COVID-19 on vulnerable children and families. Research participants expressed concerns that new programs created to reach children at home may be inadequate and might not be reaching everyone that needs support. “I’m concerned that families will not ask for help or not know where to access support. ... We are worried that some may be ‘falling between the cracks,’”

wrote one SNP support staff member. Survey respondents also addressed the issue of stigma that arose with the changed mandate from universal programs to focused hunger relief: “We hope to have families access these food banks without feeling stigmatized.” The data shows that, although program staff are working to find new ways to bring food to vulnerable children, they are unsure about the impact this work is having. This highlights the need for a systematic evaluation of the intentions and impact of the work that SNPs have conducted during COVID-19.

Reopening of Schools

The third cluster of responses revolved around the theme of schools reopening and associated concerns. SNP support staff are concerned about the uncertainty of the logistics of school-reopening, considering new health restrictions and children staying at home. As one study participant said, “We are very busy preparing for a new reality when students eventually return to school—physical distancing will change the delivery model and likely require new types of food, food preparation, and other additional costs.” Furthermore, with some children staying home for distance education, there is the concern that SNPs will need to provide food both in schools and to families at home: “Many students will stay at home, therefore we will have to operate 2 program models in order to continue to reach students.”

In considering the future of student nutrition programs, the uncertainty that the pandemic has created is causing program staff to worry about what they have always worried about: lack of resources and capacity. However, this worry is heightened by the severity of the social and economic disruption of COVID-19.

Discussion

In reviewing the literature on school food in Canada in general, and student nutrition programs in Ontario in particular, it is evident that school food is understood from a variety of perspectives. Nutrition programs are theorized as a place for public health policy, food security intervention, and as an educational site. This disjointed approach to making sense of nutrition programs could be argued to

be a reflection of the lack of ownership of nutrition programs by any one government department (Russell et al., 2008). Although the Ontario Ministry of Children, Community, and Social Services does seed fund the program (as outlined in the introduction), it does not fully fund the program, and SNPs exist at an intersection of many interest groups (De Wit, 2012). Without coherent program ownership, there are missed opportunities for a cohesive vision and coordinated resources and crisis response. The pandemic raises the question of the purpose of nutrition programs and whether they are relevant beyond an in-person school environment.

In the academic literature, school food and nutrition programs are studied in terms of the development and implementation of nutrition policy (MacLellan, Holland, Taylor, McKenna, & Hernandez, 2010; MacLellan, Taylor, & Freeze, 2009; Taylor et al., 2011; Vine, Harrington, Butler, Patte, Godin, & Leatherdale, 2017), as a site for public health interventions (McIsaac, Read, Veugelers, & Kirk, 2017; Pokhrel, Sussman, Black, & Sun, 2010; Raine, 2005; Vine & Elliott, 2014b; Winson, 2008), as educational interventions in terms of student performance (Dani, Burrill, & Demmig-Adams, 2005; Edward & Evers, 2001; Taras, 2005), as an opportunity for student education in terms of learning about food (Edward & Evers, 2001), and as a food-security initiative (Kirkpatrick & Tarasuk, 2009; Ralston et al, 2017; Tarasuk, 2001; Tsang & Azevedo, 2011). It should also be noted that there is a lack of ongoing, systematic academic research on Ontario SNPs (Russell et al., 2008).

Our research considers nutrition programs primarily from the perspective of food security, thereby contributing to the existing literature on food security and school food (see, for example, Ashe & Sonnino, 2013; Bartfeld & Ahn, 2011; Ralston et al., 2017). This interpretive framework was adopted since research participant responses were primarily focused on the food-security implications of COVID-19 on students. Changes made to nutrition programs in response to the pandemic were focused on targeted food-security interventions, as outlined above. There are conflicting opinions in the literature about the value and effi-

cacy of school nutrition programs as food-security interventions. On the one hand, Kirkpatrick and Tarasuk (2009) investigate the impact of student nutrition program participation on household food insecurity in Toronto, Ontario. They argue that SNPs do not play a role in decreasing household food insecurity. The evidence presented was (1) low participation rates in SNPs in low-income neighborhoods (one-third of households) and (2) that there was no measurable impact on household food insecurity whether the children attended SNPs or not. It can be argued that the study misses the mark, as SNPs do not aim to improve household food security, but the food insecurity of individual children while at school. Similar results were found by Raine, McIntyre, and Dayle (2003), who argued that SNPs fail to feed the hungriest children due to stigma and the charitable ethos (rather than social justice approach) of SNPs. On the other hand, there are studies that show the positive impact of nutrition programs on the children that participate in them. Ralston et al. (2017) found that participation in nutrition programs increased food security, quality of diet, and contributed to better school performance. Similar results have been shown by Tsang et al. (2011) and Edward and Evers (2001). However, both sides of this debate agree that the fundamental matter at hand is addressing the root cause of food insecurity, namely poverty (; Raine et al., 2003; Tarasuk, 2001; Tsang et al., 2011).

Our research contributes to this debate by highlighting the importance of nutrition programs in providing emergency food to low-income children during a moment of unprecedented challenge. Consequently, we argue that the SNP infrastructure (staff and relationships) strengthens community food security through staff's work, relationships, and resources. At the same time, our research highlights the inadequate and fractured nature of the emergency food supply in Canada. As COVID-19 and its economic impact move more people into economic precarity, this infrastructure will become more relevant and more strained. It is important to remember that Canada's emergency food system was not designed to be permanent (Tsang et al., 2011) and consequently was not designed with the current circumstances in mind. The COVID-19

pandemic may be our opportunity to construct a permanent food-security, social safety network. For SNPs, this redesign could be an opportunity to build a national student nutrition program in Canada. Evidence from the United States and other G7 countries makes a strong argument for the benefits of a national program. For example, McLoughlin et al. (2020) illustrate how a national school program infrastructure has been able to support communities in the response to COVID-19.

The purpose of this case study is to not to evaluate SNPs as a whole, but merely to understand the impact of the early stages of the COVID-19 pandemic on SNPs in Ontario. The data from the surveys we conducted illustrate several interesting findings.

First, the research data of this study illustrate the value of the SNP infrastructure as a community food-security response and shows that there are extensive opportunities to support and strengthen it. Second, our data show that student nutrition programs, while underresourced, are rich in partnerships. These relationships were what enabled SNP support staff to pivot and respond to the pandemic lockdown restrictions quickly and effectively. As a result, SNP support staff were able to bring together different actors in the food system in their communities to move support from the public realm (schools) into the private (homes). The shift from the public to the private is significant, as it changes the fundamental essence of school food initiatives. This presents an unprecedented opportunity to engage with a more holistic approach to eliminating child food insecurity in Ontario, in which the various efforts that exist could be brought into a cohesive initiative. Such an initiative would also present the opportunity for the Canadian government to address its commitment to the UN Sustainable Development Goals, by targeting goal number two, “zero hunger” (Hung, 2016). Addressing the root cause of food insecurity, namely poverty, is an important part of any hunger alleviation work.

Finally, the research data highlight the value of public spaces (such as schools) as venues for stigma-free social support. The COVID-19 pandemic and the initial lockdown forced people in Ontario to retreat into the private and relinquish

public spaces. This fact raises many questions and concerns, especially in regard to vulnerable people. Will there be a long-term shift toward distance learning, with children staying at home? If so, what is the place of traditional school feeding programs, such as SNPs, in these circumstances? Will nutrition programs expand their mandate to serve children outside the public realm over the long term? Will children who choose distance education be left out of nutrition support initiatives? How do these altered landscapes interact with stigma-free support, to enable all children who require extra food to receive it? Are SNP interventions effective in reducing child hunger in Ontario? These are some of the questions that the networks of actors that exist to respond to child food insecurity in Ontario will have to grapple with in the months to come. The research data in this study show that SNP support staff are able to adapt to changing circumstances in a crisis situation. The question of long-term sustainability, however, looms large, especially as the course of the pandemic and its impact on schools is very uncertain.

Research Limitations and Opportunities

Limitations of this research study are that it presents very preliminary findings of an evolving situation. Preliminary findings in rapidly shifting circumstances mean that this research could be quickly outdated. Nevertheless, it presents valuable initial insights and inspiration for future research. Research opportunities that have been amplified through this study include the need for ongoing and systematic study of nutrition programs in Canada (Russell et al., 2008). In particular, the impact of new nutrition program initiatives and the implications of the role and purpose of nutrition programs during school closures require further scrutiny.

Conclusion

In the early stages of the COVID-19 pandemic, the essence of school food was fractured as schools were closed and children were no longer able to access nutrition programs. This research study shows how the presence of community-embedded student nutrition support staff enabled resources to be redirected to children for targeted emergency

food response. Through this bounded qualitative case study, we examined the impact of the early stages of the COVID-19 pandemic (March–August 2020) on Student Nutrition Programs in Ontario. Results indicate that program support staff responses to the pandemic fit into three categories: changed mandate, new initiatives, and partnership renegotiation. Changed mandate was the shift from universal access to in-school nutrition programs to targeted food-security initiatives for families. This shift was possible due to the complex web of relationships in which SNPs have always operated. Funding relationships and community partnerships were present, and staff were able to leverage these

to adapt to new circumstances. Considering the far-reaching social and economic impacts of the COVID-19 pandemic, important questions about the structure and purpose of student nutrition programs in Ontario arise. The unprecedented disruption of established food systems by the pandemic presents the opportunity to reconsider, invest in, and restructure school food programs. 

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Appendix. Survey Questions

1. Before the beginning of the COVID-19 pandemic, what were the major challenges that the student nutrition program in your region faced?
2. Before the beginning of the COVID-19 pandemic, what was the major focus of your work in supporting nutrition programs?
3. How are programs in your region affected by COVID-19?
4. What is the main focus of your work in supporting nutrition programs in dealing with COVID-19? What are you most concerned about?
5. How have nutrition programs in your region changed since the start of the pandemic? What new initiatives have started to meet the nutrition needs of children with COVID-19 restrictions in place?
6. Have your community partnership relationships been affected by COVID-19? If so, how?

A systems approach to navigating food security during COVID-19: Gaps, opportunities, and policy supports

SPECIAL ISSUE COSPONSORED BY INFAS:
 THE IMPACT OF COVID-19 ON FOOD SYSTEMS



Inter-institutional
 Network for
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 Sustainability

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Abstract

The COVID-19 pandemic has highlighted a series of concatenating problems in the global production and distribution of food. Trade barriers, seasonal labor shortages, food loss and waste, and food

safety concerns combine to engender vulnerabilities in food systems. A variety of actors—from academics to policy-makers, community organizers, farmers, and homesteaders—are considering the undertaking of creating more resilient food systems. Conventional approaches include fine-tuning existing value chains, consolidating national food

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Disclosures

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distribution systems and bolstering inventory and storage. This paper highlights three alternative strategies for securing a more resilient food system, namely: (i.) leveraging underutilized, often urban, spaces for food production; (ii.) rethinking food waste as a resource; and (iii.) constructing production-distribution-waste networks, as opposed to chains. Various food systems actors have pursued these strategies for decades. Yet, we argue that the COVID-19 pandemic forces us to urgently consider such novel assemblages of actors, institutions, and technologies as key levers in achieving longer term food system resilience. These strategies are often centered around principles of redistribution and reciprocity, and focus on smaller scales, from individual households to communities. We highlight examples that have emerged in the spring-summer of 2020 of household and community efforts to reconstruct a more resilient food system. We also undertake a policy analysis to sketch how government supports can facilitate the emergence of these efforts and mobilization beyond the immediate confines of the pandemic.

Keywords

Food System, Local Food, Food Waste, Resilience, COVID-19, Pandemic, Community Development

COVID-19 and Food System Resilience

The coronavirus pandemic has highlighted major weaknesses in our food supply chains: a lack of local, skilled, agricultural labor, and lack of infrastructure for robust networks of regional production, distribution, and consumption. Simultaneously, for the first time since the Second World War (in countries like Canada and the United States), there was real fear of widespread empty supermarket shelves. Significant losses in household income have reignited concerns over hunger, globally (Dickinson, 2020). Alongside more acute public health concerns (Cullen, 2020), food security has emerged as a key medium- to long-term policy priority in the face of COVID-19 in most parts of the world. In a more general sense, the pandemic raises questions about the trajectory of globalization and integration which has dominated innovation and policy in food systems since the 1980s (see Harvey, Quilley, & Benyon, 2002).

Considering these challenges, academics and policy-makers are advocating for greater levels of food self-sufficiency and resilience (Gordon, 2020; Richardson, 2020). Some researchers argue that this can be achieved through disrupting just-in-time food systems, maintaining larger staple crop inventories, and bolstering regional supply chains (Fraser, 2020). Other academics suggest that we must *further* fine-tune our just-in-time supply chains using information and communication technologies (ICTs), big data, artificial intelligence, and automated equipment. In doing so, Galanakis (2020) suggests that we minimize the chance for supply chain disruption and reduce human contact during the agricultural process. Each of these strategies: maintaining larger inventories, bolstering regional food systems, and fine-tuning existing supply chains have already vied for policy support in the past several decades (Fraser et al., 2016).

For decades, academics, activists, and practitioners have been calling for systems-level changes that move beyond those business-as-usual strategies described above (Roberts & Brandum, 1995). Importantly, conversations around food system resilience need to critically consider political dimensions: resilience for whom, of what, to what, where, when, and why (Meerow & Newell, 2019). The pandemic has brought some of these political issues to the fore: the right to food; arguments for wealth redistribution, basic income, and holding corporations accountable for their negative externalities, among others (James et al., 2021). Simultaneously, the pandemic has ignited debates over the prospect of ‘peak globalization’ (Enderwick & Buckley, 2020) and what a necessarily more regional or localized politics may look like (Quilley, 2012). Yet, the question remains: what modes or types of production, distribution, consumption, and waste management could have purview in a more ‘self-sufficient’, post COVID-19 food system? What assemblages of actors, market institutions, and technologies could and/or will have important roles in this future?

In this paper we use a systems lens (Blay-Palmer, Carey, Valette, & Sanderson, 2020; Devereux et al., 2020) to sketch different opportunities through which to develop a more resilient food system. These opportunities include environ-

ments in which the following three conditions are met. First, it is critical that there is a diversity of participating actors with significant decision-making autonomy (Rotz & Fraser, 2015). Decision-making autonomy allows for actors to respond and adapt in a timely manner to address place-specific needs, but it is often hampered by concentration and consolidation within the food system. Second, we emphasize that policymaking and governance processes capture interactions across multiple scales, from individuals and households to national economies (Tendall et al., 2016). Failing to recognize interactions between scales increases the risk of overlooking opportunities to foster food security, or policies and institutions that prevent individuals from exercising agency. Third, we stress that it is critical for relocalization to be recognized as a necessary but insufficient goal for food system transformation. Trends toward vertical integration and increasing global flows of goods and information propagate risk over greater scales (Homer-Dixon et al., 2015), highlighting the need for more distributed food system networks. Whereas definitions of *sustainable* food systems commonly emphasize the three pillars of food security (supply, access, utilization) and the well-being of the environment, our definition of food system *resilience* considers the interactions between actors and how they are enabled (or inhibited) by policy to pursue food security goals.

We have two objectives:

(1) To sketch three different opportunities that may have significant roles in developing a more resilient food system. These opportunities are by no means ‘new’ and are widely discussed in alternative food systems literature. However, the pandemic context within which they are currently debated has made them more prescient and accelerated the pace of their innovation. The opportunities we explore disrupt the existing system in relation to: (a) increasing the means and places to grow food; (b) rethinking food waste; and (c) disrupting supply chains by building supply networks.

(2) To conduct a brief analysis of policies that support and hinder these opportunities and advance several policy recommendations through which to leverage these three opportunities.

We argue that the COVID-19 pandemic represents itself as a moment of crisis through which novel assemblages of actors, institutions, and technologies are addressing food insecurity, particularly at individual household and community-scales. To address the gaps in food policy that our analysis has highlighted, we recommend that policy-makers support community and household-based efforts that have emerged as key levers for regional food self-sufficiency. While often but not always organized around principles of reciprocity and redistribution, these community and household initiatives are what some scholars might characterize as “reformist” or “progressive”, rather than “radical” (Gimenez & Shattuck, 2011). In other words, these interventions may not directly tackle systemic issues around rights, redistribution, and responsibility described above (James et al., 2021). Yet, we contend that these responses are key to building more resilient food systems in the long-term.

Scale, Interactions, Moments of Crisis and Opportunity

Given the focus of this paper on resilience, we draw from socio-ecological systems resilience literature to inform our understanding of the food system. Food systems literature often conceptualizes the system at a global level (e.g., Rotz & Fraser, 2015; Homer-Dixon et al., 2015). Yet, it is important to consider interactions across scales; a nested panarchy framework (Gunderson & Holling, 2002) emphasizes the cross-scalar interactions that define food system outcomes, from an individual to global level, and vice versa. Using this framework, Tendall et al (2015) argue that food system resilience can be built through management at a national or regional level, the level of the individual commodity chain, or the level of the individual actor (e.g. smallholder, consumer).

COVID-19 has generated new and renewed scholarly interest in defining, measuring, reporting, and fostering food system resilience. Emphasis in scholarly articles has been placed on three different dimensions of food system resilience. The first is ensuring an adequate food supply. This involves a suite of strategies, including reducing cross-border trading friction, ensuring national stockpiles of food, and addressing labor shortages caused by the

pandemic in order to ensure adequate production levels (Chen & Mao, 2020; Savary et al., 2020). Second, emphasis has been placed on ensuring adequate demand. Concerns in this realm center around the loss of consumer purchasing power or access to food, incurred through individual and household loss of income and ‘ripple effects’ to other food system actors relying on those consumers (Béné, 2020; Devereux et al., 2020). This is in addition to physical barriers to access, such as store closures or reduced mobility, and associated microeconomic effects due to decreased food retailing competition (Ihle, Rubin, Bar-Nahum, & Jongeneel, 2020; Savary et al., 2020). The third type of scholarly analysis of food system resilience emphasizes place-based and scale-appropriate responses to this and future crises. This perspective stresses that over-reliance on global supply chains has resulted in a state of local food system precarity, particularly for the most poor and vulnerable populations, and promotes agroecological and regenerative models of food production (Altieri & Nicholls, 2020; Blay-Palmer et al., 2020). This perspective argues for food systems, “that are sensitive to ecological and social places. Food system resilience is more likely to be fostered through a combination of first local, including informal, and regional and then global supply chains” (Blay-Palmer et al., 2020, p. 517).

In this paper we acknowledge these diverse perspectives while being cognizant of the systemic nature of food system resilience. As discussed above, we center our approach to food system resilience around the relationships between actors and government policies that facilitate or inhibit their adaptive potential. The pandemic presents an opportunity for a deeper level of analysis reflecting on mutual aid capacity promoted through individual and community-level projects. This brief review and analysis of local food programs and policies provides insights that would be missed with a transactional lens alone, given the significance of informal support systems for food security that have captured the attention of scholars and policy-makers since March 2020 (Haynes-Maslow, Hardison-Moody, & Byker-Shanks, 2020), and the suite of local policy responses that have arisen in context of existing relationships and

networks (analyzed in the following sections). By situating our focus at a more localized level we focus on concrete opportunities for policy and programs that have emerged during the pandemic, citing individual, community, and municipal responses to food security needs. These opportunities are often overlooked entry-points for immediate emergency relief in moments of crisis. While the three opportunities we describe are by no means ‘new’ and have been promoted for years, they have played sizable roles in responding to acute pandemic needs. We suggest that their promotion during and beyond the confines of lockdown procedures is vital to securing more resilient food system futures.

Three Opportunities

Producing More, Everywhere, in Any Way

COVID-19 has engendered a new crop of enthusiasts turning to gardening amid food security and mental health concerns (Hansen, 2020; Lal, 2020). A recent report models that up to 250,000 people could be fed in Montreal during the growing season using community gardens and individual household gardening systems (Duchemin, 2020). Growing food in urban and peri-urban areas can take on multiple forms with varying degrees of intensity. It is widely recognized that allotment gardens and various forms of urban agriculture (UA) are key strategies used by households in moments of crisis (Barthel & Isendahl, 2013). Scholars commonly cite Cuba as an exemplar for how UA can be institutionalized and coordinated to maintain stable supplies of domestic food amid a crisis (Altieri et al., 1999). Another celebrated case is the prominence of highly productive, small-scale production in *dachas* in Russia. Since 1991, *dachas* have played massive roles in responding to food crises and bolstering national agriculture production. An estimated 40% of total Russian production took place at the household-level in 1995 (Hamilton et al., 2014). Decentralized, often small or medium-in-scale, food production strategies make incredibly efficient use of public and private land, as well as local waste and compost resources (Colding & Barthel, 2013). Rooftop gardens and vertically integrated green spaces have

grown in number in major cities and are even now incentivized¹ by some municipalities for future development.

Outside of these more commonly discussed examples of UA, a suite of novel technologies and approaches are emerging that could substantially contribute to local food systems post-pandemic. The vertical farming industry, for example, has blossomed in recent years. The sterile, purple-light-bathed plant factories that initially began to emerge five to ten years ago have been complemented by community-based microgreen farms, DIY garage aquaponics systems, shipping-container driveway gardens, and building-integrated systems across the world (Specht et al., 2015; Specht et al., 2019). Furthermore, *in-vitro* protein production: a new technology that produces meat protein in bioreactors without the slaughter of animal, can theoretically move livestock production into urban areas. This technology was developed at a whopping cost-per-burger patty seven years ago but has nearly reached middle-class markets,² notwithstanding significant regulatory and consumer acceptance hurdles (Bryant & Barnett, 2018; Stephens et al., 2018). There is even discussion of household and regional-scale *in-vitro* protein production systems as research and development continues (Miller, 2020). Less science fiction in tenor, small-scale urban and peri-urban insect farms are common in many parts of the world. Primary barriers to the development of entomophagy as a viable food security strategy in North America are psychological and sociological, rather than technical, in nature (Sexton, Garnett, & Lorimer, 2019). Any post COVID-19 strategy to bolster local food production must consider implementing incentives and addressing regulatory barriers for these emerging foods and technologies.

Pre-pandemic, UA was often pursued by scholars and policy-makers in Canada and the

United States for its educational, mental, physical, and environmental health benefits, rather than necessarily for food security reasons (Badami & Ramankutti, 2015). In moments of crisis, however, UA has in fact been promoted by governments to ensure adequate supplies of food, similar to war garden efforts during the Great Wars (Barthel, Parker, & Ernston, 2013). With various governments' promotion of food production on public land, and even in some cases distribution of food growing kits³ to the public, there has been a marked shift in discourse (Food Secure Canada, 2020). Yet, in some cases these developments were met with resistance from public officials. As one example, Ontario banned the use of community gardens at the outset of the pandemic due to social distancing public health recommendations; it took concerted lobbying and petitioning from key local and regional actors to reverse this ban (Felice, 2020a).

While significant attention is rightly being directed to the challenges that farmers face, there is potential for additional support for household and community-based systems of food production. How can policy facilitate the capabilities of households and communities to produce food, even outside the immediacy of crisis? We suggest that policies may take the form of financial support for community or household projects, educational resources, and network building to both bolster production and distribute surplus. Such forms of UA are likely to be a combination of small to medium-scale householding projects and community-based endeavors of varying capital intensity. Moreover, these supports need to be cognizant of emerging technologies (e.g., vertical farming, food forestry, rooftop gardens) and foods (e.g., alternative proteins). Already, governments have responded to the call for such community-based endeavors with programs such as the Local Food

¹ The Municipality of Toronto has an incentive program to support the installation of green and cool roofs on houses and buildings (<https://www.toronto.ca/services-payments/water-environment/environmental-grants-incentives/green-your-roof/>).

² Future Meat company estimates that they can reduce the price of cultured meat to US\$10/kg by the year 2022 (<https://www.cnn.com/2019/10/10/future-meat-technologies-a-lab-grown-meat-start-up-raises-14-million-dollars.html>).

³ The city of Brampton ran its second annual Backyard Garden program in 2020, supporting “the Mayor’s COVID-19 Social Support Task Force’s focus on food security” (<https://www.brampton.ca/EN/City-Hall/News/Pages/Media-Release.aspx/858>). In partnership with an NGO, the city of Ottawa distributed growing kits directly to the public in response to the pandemic (<https://justfood.ca/garden2020/>).

Infrastructure Fund⁴ to encourage NGOs to engage in activities to expand capacity to produce, process, and preserve Ontario's harvest. Further examples can be drawn from policy developments to accommodate backyard hen-keeping in major cities, where changes in zoning rules, the development of animal husbandry education programs, and bylaws have been implemented.⁵ Further investigations regarding successful projects and the context in which they arise could help inform the ways municipalities support ongoing engagement. Moreover, this research would assist with the communication of program or project value over time to policy-makers and city councils who may in turn fund these sustaining food systems efforts.

Rethinking Waste

COVID-19's disruption to the food system has exposed how sensitive the current food system's distribution chains are to global changes, with a significant consequence being exorbitant levels of food loss and waste. Images of milk dumping, mountains of surplus potatoes, and produce rotting in fields unharvested demonstrate the scale at which food is being lost and wasted as actors in the food system attempt to adapt (Brigham, 2020; Clapp, 2020; Gangitano, 2020; Yaffe-Bellany & Corkery, 2020). Juxtaposed with empty shelves (as a result of panic buying) and raised food insecurity rates,⁶ it is clear that this adaptation process is slow and imprecise. Preliminary results indicate that household waste decreased during the pandemic, driven in part by concerns over domestic waste management capacity (Pappalardo et al., 2020), food availability, and loss of income (Jribi, Ben Ismail, Doggui, Debbabi, 2020). By disrupting daily routines and patterns of behavior, the pandemic is clearly presenting individual households and communities

with an opportunity to become aware of, evaluate, and reduce their food waste.

To fill the major gaps in how our food system generates and manages waste during the pandemic, communities and individuals have both created new networks and built up existing networks to redistribute surplus food in order to reduce food waste and support people who are food insecure. This has resulted in increased interest in CSAs (Coppolino, 2020), online farmers' markets, community-led gleaning of local farms, food sharing among individuals (both in person and through apps) (Wray, 2020), and the repurposing of commercial kitchens for charity-related purposes (Littman, 2020). The uptick in gardening and excess food that has resulted from panic buying has motivated some people to manage their personal food waste using composting, and vermicomposting (Anderson, 2020). Of course, these creative responses to addressing food insecurity and food waste were spurred by government lockdown procedures that restricted the operation of many charitable organizations (Peters, 2020).

During the pandemic, government interest and action for addressing food security at the individual and community level has increasingly involved redistributing surplus food that can no longer be sold in other sectors of the food system (such as grocery stores) to charitable organizations that feed food insecure people (Ontario Government, 2020). While this method can provide people with temporary access to food and reduce some food waste, it addresses food insecurity through charity rather than political action and allows food businesses to externalize their waste (Riches, 2011). Some governments, including Wuhan and Shanghai, among other Chinese cities,⁷ have also created stringent food waste guidelines for the public since COVID-

⁴ The Local Infrastructure Fund is a five year, federally funded, US\$50 million initiative to support community-based, not-for-profit organizations involved in food security initiatives in Canada.

⁵ UrbanHensTO Pilot Program was developed and implemented March 2018, running until March 2022, whereby residents in select neighborhoods can raise hens for eggs while abiding by city guidelines (<https://www.toronto.ca/community-people/animals-pets/pets-in-the-city/backyard-hens/>).

⁶ According to a survey conducted in May 2020 by Statistics Canada, nearly one in seven Canadians indicated that they lived in a household experiencing food insecurity over the past 30 days (<https://www150.statcan.gc.ca/n1/pub/45-28-0001/2020001/article/00039-eng.htm>).

⁷ Wuhan, China's 'N-1 policy' urges restaurants to require groups to order one dish less than the number of diners. The N-1 policy has been met with controversy, given cultural stigma around 'clean plates' as a sign of poor hosting, as well as food waste generated by

19. Such policies, though potentially less politically palatable in other nations, could be implemented through less punitive means such as tax or market-based incentives. While some governments recommended stocking up on food to avoid non-essential trips, organizations such as the FAO recommend consistent messaging around adequate food supplies in order to *avoid* stockpiling (FAO, 2020). Such inconsistencies in recommendations likely have an impact on household food waste, given lack of education or guidelines around efficient food use and proper storage and handling techniques during crises (Cosgrove, Vizcaino, & Wharton, 2021).

Policy support at the individual and community level should acknowledge that the causes of food waste are complex and create a multi-faceted approach to tackling it (Thyberg & Tonjes, 2016). This support can take the form of expanding organic and food waste collection services (especially for rural and multi-unit residences) (Hebrok & Boks, 2017); educating people about food waste and providing them with techniques to prevent it (such as how to properly store food, plan meals, purchase food, cook, and use leftovers) (do Carmo Stangherlin & Dutra de Barcellos, 2018); supporting research that measures food waste, examines the causes of it, and/or creates interventions to reduce it (Reynolds et al., 2019); and subsidizing small scale biodigesters, compost bins, and vermicomposting kits. Importantly, policy development that addresses food waste in other sectors of the agri-food system, such as clarifying rules around best before dates (Hebrok & Boks, 2017), can help reduce food waste at the individual and/or community level (Schanes, Dobernig, & Gözet, 2018). Capitalizing on the increased consumer awareness of food waste caused by the pandemic through information campaigns around best before dates is required (Principato, Secondi, Cicatiello, & Mattia, 2020). The pandemic has highlighted the complexity of where, how, and why food gets wasted, beyond solely the household and

community scale. Policies that address food waste across the food system are needed, including interventions to facilitate greater collaboration between farmers, processors, and packaging companies (FAO, 2020).

Networks, Not Chains

With worries over supply *chain* disruption, numerous community groups have risen to build *networks* to address threats to food security. In North America, over the course of the pandemic, there has been an unprecedented growth in care-mongering groups⁸ and resource-sharing pages. New sourdough bread bakers have gotten to work, sharing loaves and even pinning starter mixes in plastic baggies to telephone poles (Gee, 2020). Plant and seed swaps have engaged a growing network of online exchangers (read: not shoppers). Place- and community-based networks—both pre-existing and new—have created robust systems of exchange, where those most in-need can access resources in a timely manner. Such systems of exchange have leveraged social media and digital networks technologies to address food security concerns.

These distributed systems of exchange, though by no means ‘new’, have risen in prominence and hold significant potential to bolster regional food system self-sufficiency in a post-COVID world. Beyond care-mongering groups, several initiatives hold much promise. For example, the construction of outdoor brick ovens for public baking, as well as gleaning and “grow-a-row” efforts, have potential to contribute to knowledge building, food exchange, and food security (Piotrowski, 2019). Similarly, food forests have risen in popularity in many Canadian cities despite lack of meaningful municipal encouragement (Kowalski & Conway, 2019). These efforts seek to integrate berry bushes, fruit trees, and vegetable cultivation into public areas, whereby all community members can access these resources. A slew of mapping applications has emerged (or grown in reach) to catalogue, in real-

large banquets hosted by officials. Shanghai enforces penalties on individuals and companies who fail to sort their organic waste (<https://www.bbc.com/news/world-asia-china-53761295>).

⁸ An online community group, often hosted on Facebook, where those in isolation can reach out to share food and food production resources, find point persons, and organize pickups and drop-offs (<https://www.cbc.ca/player/play/1711703619777>).

time, inventories of such public (and, with permission, private) sources of food, through crowd-sourcing.⁹ Online marketplaces such as the Open Food Network have ballooned in reach almost overnight (Tucker, 2020). In China, voluntary buying groups built through social media applications were the major source for food access during the lockdown, addressing gaps in state and private-led food access platforms (Si, Qi, Dai, Zhong, & Crush, 2020). Re-embedding the process of market exchange in place-centered social relations of mutual obligation and reciprocity, these innovations are ‘Polanyian’ (Hodgson, 2017; Polanyi, 1957a; 1957b; 2001; Quilley, 2012) in tenor and intimate a more transparent and viscous pattern of market exchange.

COVID-19 motivates us to reimagine food security from, singularly, a tightly coordinated supply chain policy priority, propped up by food banks (Gimenez & Shattuck, 2011; Riches, 2018), to a network that is comprised of state, grassroots, public or citizen groups, and private entities. Furthermore, network-type technologies (e.g., crowd-source mapping) can engage a variety of actors (including those cut out of conventional supply chains) to address food insecurity challenges, as detailed above. For example, an array of farmers markets, partnering with public health authorities, have mobilized on digital platforms to help farmers maintain diverse revenue streams.¹⁰ This successful mobilization occurred *despite* confusion over designating farmers markets as essential services at the outset of the pandemic in Ontario (Felice, 2020b). The designation of initiatives such as farmers markets and other ‘alternative’ food procurement streams as essential services is critical, both during and beyond the duration of the pandemic. Funding, technical, and zoning support for physical and digital infrastructure for such community-based initiatives is integral.

Conclusion

This is a unique historical moment, justifying stronger state support for farmers and bolstering regional food system infrastructure. However, it’s also an important moment to reflect on ‘roads less travelled’ to achieving food security and resilient food systems. With emerging technologies, business models, and the rise of community-scale activism that this crisis has engendered, we can reimagine new scales and systems of food production, distribution, consumption, and waste management. Central to this is leveraging the capabilities of individuals and households to participate in the food system as producers as well as consumers. This type of multi-actor, cross-scale collaboration is already occurring in cities such as Toronto, Ontario. During the COVID-19 pandemic, the Toronto Food Policy Council has extensively mobilized. It has enhanced civil society-municipal government collaboration, facilitated the deployment of resources to support at-risk communities, and promoted network and infrastructure development to connect local producers with urban markets (Friedmann 2020). Black Food Toronto was a response designed to get public food in the form of a weekly produce basket to low-income Black people in Toronto hit extra hard by the pandemic, demonstrating that such public food is possible.

We recognize that food self-sufficiency is a relative (not an “either-or”) policy goal, alongside a multitude of forms of production, distribution, consumption, and waste management across scales and between nations (Clapp, 2017). Nevertheless, we suggest that the global pandemic has justified the potential for smaller-scale, more circular and autarkic approaches to food security that have been vying for state support for decades. The exact forms in which these new systems occur will depend on the people and places that organize to make them. Building networks and brokering relationships between diverse actors in production,

⁹ Falling Fruit is a crowd-sourced, open-source inventory of edible plants, aiming to be the most comprehensive of its kind in the world (<http://fallingfruit.org/>).

¹⁰ The Ottawa farmers market offered an online market place and organized pickups at the beginning of the 2020 season, as shop fronts were not allowed to open (<https://ottawa.ctvnews.ca/ottawa-markets-launches-online-farmers-market-during-covid-19-pandemic-1.4924377>).

distribution, and food waste systems, especially across scales, will be critical. As one example, in Canada, one such emerging system is a network of grassroots food policy councils, front line food sovereignty and food security workers, and community food leadership. The Food Communities Network was already in the process of launching after years of relationship-building and case-making for a formal national network when the pandemic hit. This network was an instrumental piece of social infrastructure for speeding up the opening of community gardens, farmers markets, and new distribution options for communities on lock down across Canada. Indigenous-led programs, such as those pursued through the Indigenous Food Circle in Thunder Bay, Ontario, often center around principles of reciprocity and right to self-determination of food: “[...] rooted in the theory and practice of food sovereignty, emphasizing self-determination and a re-connection to land-based food systems” (Levkoe, Ray, & McLaughlin 2019, p. 111). Such programs provide instructive guidance for settler populations where food is viewed as a commodity.

Individual and community-level responses to food insecurity during the pandemic have been rapid, effective, and numerous, despite some policies that have actively dissuaded their emergence. Rather than actively inhibit or neglect these individual and community-led efforts in the months that follow, policy needs to both recognize and incentivize food production in urban areas; leverage momentum in decreased household food waste, while addressing perverse incentives that result in food loss; and facilitate the brokering of networks between local food system actors, especially those most food insecure. These three strategies are not new but have reemerged as key levers to promote food security during the pandemic. These three strategies are also largely prefigurative, in that though they rose in significance during the

pandemic, they point to possible futures only without concerted policy efforts to incentivize, maintain, and promote their emergence. Yet, we argue, the pandemic has forced policy-makers to recognize these opportunities as key to any food systems transformation for long-term resilience.

This paper focuses on the immediate questions of increasing food production and access locally as a priority response under pandemic conditions. A future area of research would be the intersection of these approaches with sustainability frameworks such as Doughnut Economics. Moreover, our definition of food system resilience considers the adaptive measures and policies that shape and constrain individual and community-level responses to food insecurity. Future studies could consider the ecological dimensions of these emerging initiatives beyond pandemic conditions. Besides addressing immediate food security needs, how might the bolstering of smaller-scale production, distribution, and waste systems affect the long-term ecological wellbeing (or resilience) of agroecosystems, or minimize the ecological consequences of food system processes? Further research examining the climate and water “footprints” of various responses being pursued by civil society and entrepreneurs would add value to the policy discussions we highlight regarding food systems resilience. Finally, four areas for further investigation arise from this initial review of food system resilience in light of the crises raised by the COVID-19 pandemic: (a) implications for seed security; (b) the potential for pandemic recovery to promote climate resilience in agriculture; (c) the implications of worldwide disruptions in migrant labor on global harvests; and (d) implications for food justice initiatives designed to provide pathways to citizenship for the skilled farm labor upon whom food producers rely.

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Missouri's specialty crop beginning farmers cultivate resilience during COVID-19

SPECIAL ISSUE COSPONSORED BY INFAS:
THE IMPACT OF COVID-19 ON FOOD SYSTEMS



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Food and
Agricultural
Sustainability

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Abstract

The pandemic placed extraordinary demands on agricultural producers and created unexpected challenges for southern Missouri farmers, and pushed the University of Missouri Extension (MUE) to implement new and innovative approaches to help farmers persevere through the crisis. In surveys and reports, farmers have indicated several changes caused by the pandemic that impact their businesses, such as increase in local food demand, reduction in on-farm labor, and limitations on hosting on-farm visits with customers. The MUE StrikeForce project team, a U.S. Department of Agriculture strategic initiative, continued to serve farmers by developing alternative educational opportunities that incorporated social distancing and other preventative actions, and were of immediate use to farmers in a crisis. Several of the educational approaches, including video conferencing, online teaching, digital recordings, video repositories, social media communications, pick up and drop off locations, and the use of multiple online viewing platforms such as Zoom recordings have proven to be effective in helping farmers sustain their businesses and have substantially increased access to programming across the state. The convenience of accessing education and learning opportunities online also appealed to more participants. Overall, online educational delivery was positively received by producers, demonstrating the efficacy of digital learning when paired with offline resources and support from the StrikeForce project team. After the pandemic ends, MUE will continue to implement these approaches. Nevertheless, the traditional Extension approach of one-on-one consulting and farm visits cannot be completely replaced by online educational programming. The pandemic has highlighted inequities faced by many rural Missouri farmers that lack dependable internet or cell phone network access, and had no access to StrikeForce programming when face-to-face visits were paused.

Keywords

COVID-19, Coronavirus, Disruption, Extension, Food System, Online Training, Pandemic, Small Farmer, Beginning Farmer, Specialty Crop, StrikeForce

Introduction

When COVID-19 first reached Missouri in March 2020, University of Missouri Extension (MUE) faculty were active in the field through the StrikeForce project, providing workshops to small farmers in southern Missouri. In response, Cooperative Extension specialists were forced to adapt their training and educational resources that were targeted to beginning farmers. This study describes the StrikeForce initiative and its relationship with MUE, presents the changes made to educational programming due to the COVID-19 pandemic, and reflects on MUE's response to the pandemic and its path forward.

Extension Programming to Address Audience Diversity

“We were in the right place, at the right time,” reports the StrikeForce project team. (J. Gundel, personal communication, September 24, 2020)

The U.S. Department of Agriculture StrikeForce Initiative for Rural Growth and Opportunity is a strategic initiative that provides funding to 46 rural counties in Missouri to address their persistent poverty (U.S. Department of Agriculture, 2016b). According to the USDA, 85% of U.S. counties with severe chronic poverty are rural; more than one-third of rural adults and one-quarter of rural children live in poverty (U.S. Department of Agriculture, 2016a). The StrikeForce initiative addresses specific challenges associated with rural poverty by investing in rural communities to increase opportunities for families. The initiative delivers targeted assistance to grow the economy, create jobs, build healthy homes, feed children, assist farmers, and focus on natural resource conservation, with the overall goal of reducing rural poverty.

The StrikeForce initiative demonstrates the USDA's commitment to the economic future of America and directly aligns with the MUE mission, to “improve lives, communities and economies by producing relevant, reliable and responsive educational strategies that enhance access to the resources and research of the University of Missouri”

(University of Missouri Extension, 2021). The Missouri StrikeForce Farmer Development project was established by MUE, based on the USDA directive, to provide education and training in commercial specialty crop production with a focus on increasing partnerships in rural communities and leveraging community resources in targeted areas (U.S. Department of Agriculture, 2016a, 2016b).

Through this project, MUE has engaged with more than 1,500 farmers throughout StrikeForce designated counties since 2017, to provide them with educational opportunities and enhance their businesses. The USDA StrikeForce initiative identifies 46 rural counties in southern Missouri that demonstrate indicators of chronic poverty and have the potential for economic development (Figure 1).

For the last three years, the StrikeForce project has targeted areas of Missouri that need an economic boost and can benefit from the expansion of small farms and on-farm businesses. The programming provided is tailored towards beginning farmers who are interested in specialty crop pro-

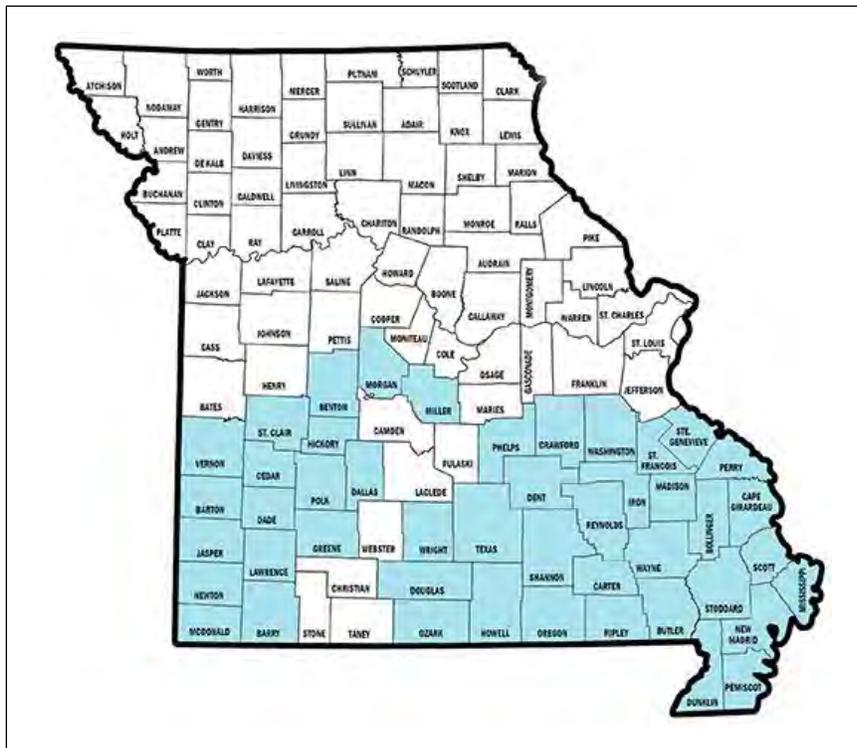
duction, want to increase their knowledge of farming and business, and would benefit from ongoing support provided through peer-to-peer and mentor-to-mentee relationships. Many project participants are interested in home gardening, would like to grow specialty crops, and do not identify as farmers. The project has expanded educational opportunities to farmers in StrikeForce counties to assist them in improving the efficiency and profitability of their operations while emphasizing the conservation of natural resources. The financial assistance received from the Natural Resource Conservation Service has allowed the project to increase educational offerings, including in-the-field consultations and workshops on conservation practices associated with specialty crops.

The horticulture programming provided through the StrikeForce project coordinates educational resources and opportunities among many disciplines, including agronomy, agriculture education, agriculture business, community development, 4-H youth programs, and labor and work-

force development. Prior to the StrikeForce project, educational opportunities were only provided to producers by MUE through workshops in a lecture setting. MUE had not yet incorporated peer and mentor farmers to host farm tours or educational programs into their educational offerings. As a result, MUE had difficulty connecting specialty crop growers to long-term educational programs, especially in south central and southeastern Missouri.

Through the StrikeForce project, Extension specialists with MUE developed, implemented, and assessed agricultural and specialty crop programs with a focus on long-term impacts. The specialists created new relationships with farmers by touring their farms and providing them

Figure 1. Forty-Six StrikeForce Counties in Southern Missouri



Source: U.S. Department of Agriculture, Natural Resources Conservation Service Missouri (n.d.).

with on-farm educational programs and resources to market and promote StrikeForce workshops. The development of new relationships between the specialists and specialty crop producers paved the way for on-farm programming with established farms producing specialty crops. These new relationships between producers and Extension specialists, as well as the longer-term relationships developed before the project, were crucial in allowing MUE to easily pivot and quickly respond with different approaches to StrikeForce programming as the agricultural implications of the COVID-19 pandemic became clear.

In response to the ongoing needs of producers and the safety concerns of the pandemic, programming transitioned to online. Workshops, consultations, farm tours, and other planned events were delivered online instead, with marketing and promotion extended to a statewide audience (Lake et al., 2020). However, audience diversity, heightened by the nature of Missouri's agricultural products, created challenges for online teaching and delivery methods. The producers in the targeted counties are diverse in their scale of operations, types of crops, growing techniques, and marketing approaches; they also come from diverse cultural and ethnic backgrounds.

The USDA defines a small farm as an operation with a gross cash farm income under \$250,000 (USDA, 2017). Missouri has more small farms than any other state and is unique in its number of agricultural focuses of production. Where most states have one or two primary agricultural focuses, Missouri has many, including cattle and calves, hogs, broilers, turkeys, dairy products, hay, rice, chicken eggs, commodity crops such as soybeans, cotton, corn, and grain sorghum for livestock feed, and horticulture specialty crops (USDA, 2017). Specialty crops offer producers an opportunity to receive reasonable incomes from small-scale farming operations. Specialty crop production works especially well for farmers challenged by Missouri's landscapes and land requirements, as it gives them a competitive advantage with less investment in land.

The COVID-19 pandemic affected all industry and agriculture sectors, accelerating changes in market demand and impeding sales while creating a

global health crisis with devastating economic impacts. Although agricultural producers' ability to get product to consumers was affected by community-wide measures implemented to contain the spread of COVID-19, many farmers maintained viable on-farm production and continued sales. The StrikeForce team's ability to respond to producers' challenges was critical during the pandemic, especially with the diversity among farm activities. StrikeForce supported producers' efforts to diversify with specialty crops and to adjust their scale of operations based on pandemic conditions. The project team's rapid response, readiness, and troubleshooting abilities through a pandemic were not planned. When asked about their efforts, the team reported that they never considered anything else: "It is just the way we do it." (P. Byers, personal communication, September 24, 2020).

Limitations to Programming Access

The StrikeForce counties in southern Missouri also represent the counties with the state's lowest levels of broadband access (Missouri Broadband Resource Rail, 2019). In addition to those with limited broadband access, StrikeForce audiences include individuals without broadband internet and people that do not use digital formats at all, such as the Amish population.

Access to StrikeForce programming for diverse farmer audiences is important. In an analogous situation, Washington State University researchers piloted various alternative educational formats (e.g., participatory courses, farmer-to-farmer learning strategies, experiential workshops, audiovisual strategies, and simultaneous translation) for reaching diverse producers to address the challenges they face when accessing public agricultural research, education, and assistance (Ostrom, Cha, & Flores, 2010). Strikeforce addressed similar barriers for audiences both during and after the pandemic, which hamper the ability of MUE to provide educational programming when also following guidelines preventing face-to-face interaction. In the absence of face-to-face trainings, StrikeForce team members made accommodations necessary to serve local farmers. For example, in lieu of providing in-person pesticide applicator training, the team delivered training manuals to lo-

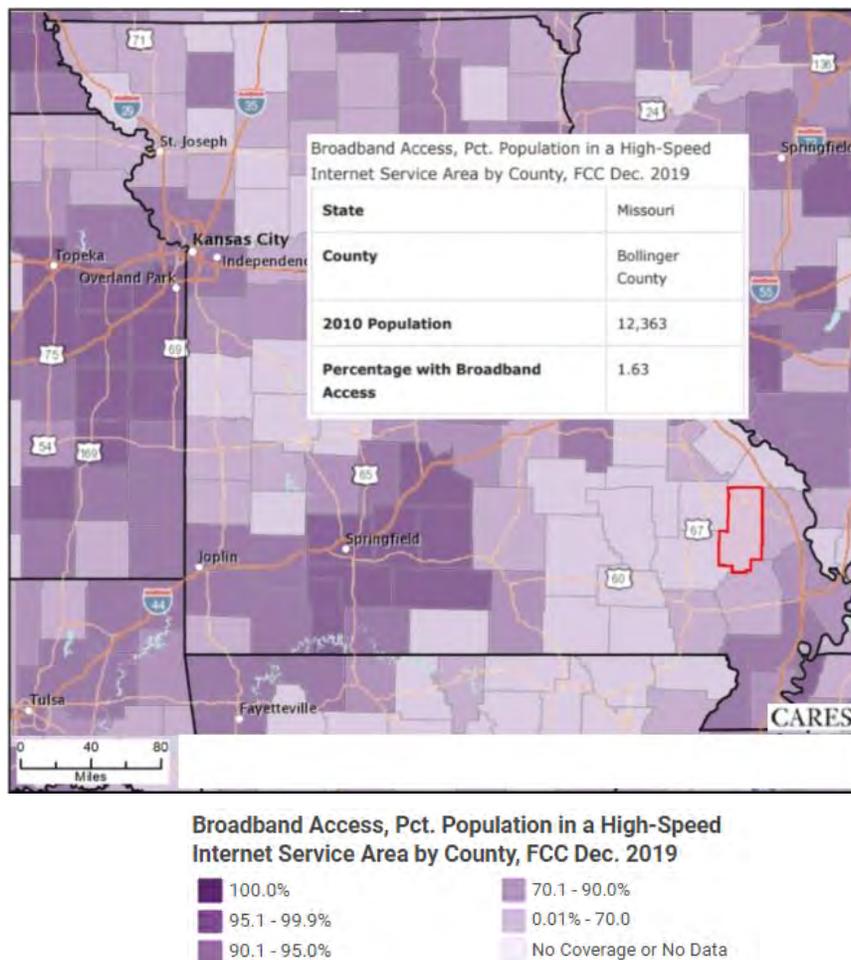
cal produce auctions. While maintaining distance and following precautions, team members handed out manuals and training questionnaires and picked them up the following week. Other accommodations included mailing information, addressing on-farm issues through emailed and texted photos, and video conferencing and phoning to work with farmers. The Amish clientele in Webster County, Missouri, who do not own cell phones, asked Non-Amish acquaintances and neighbors who do own cell phones to take pictures and forward them to Extension specialists to address plant diseases, changes in plant appearance, and general questions about plant culture. In these cases, it was essential that specialists responded quickly because the individual with the phone would only be available for

about 10 minutes before leaving the Amish farm. While this may not have been the most effective method, it overcame a challenge posed by the pandemic and addressed the ongoing programming needs of Amish farmers.

The pandemic has highlighted the imperative need to expand broadband access in preparation for future responses and movement into online education. However, the pandemic also reinforced the importance of expanding and maintaining farmer networks that can help introduce new research and technology concepts to audiences that are very difficult to reach due to limited digital and broadband access (Figure 2).

As Missouri improves broadband, as a picture of uneven development has emerged, it is important to note that the reality seems to be far worse than the data suggests. For example, according to the American Community Survey, while 61% of the population in Bollinger County, Missouri, cannot connect to any internet service whatsoever, only 1.63% can get broadband (25 megabits per second [Mbps] and upload speeds of at least 3 MBps) (Missouri Broadband Resource Rail, 2019). These broadband speeds are identified by the Federal Communications Commission (FCC) as sufficient to allow people to work remotely, stream movies, and use telehealth but are below the recommended requirements for Netflix, gaming systems, and other streaming devices that require from 5Mbps to 75Mbps (Federal Communications Commission, 2016). Microsoft data is fairly consistent with the FCC data, reporting that only 2.1% of people in Bollinger County use internet at broadband speeds (Missouri Broadband

Figure 2. Missouri Broadband Access Map



Source: Missouri Broadband Resource Rail (2019).

Resource Rail, 2019). As the broadband issue is addressed in Missouri, more data must be gathered to determine a true representation of Missouri residents' access to adequate broadband speeds (University of Missouri Center for Applied Research and Engagement Systems, 2019).

COVID-19 Survey of Southern Missouri Farmers

To explore the immediate impacts of the pandemic on small farmers in specialty crop production, the StrikeForce team implemented a short, focused survey among the participants in StrikeForce-sponsored workshops. The survey targeted small specialty farmers in the 46 designated StrikeForce Counties in Missouri to understand quality improvement measures and the impact of the pandemic on farmers. The team had established relationships with specialty crop producers before the pandemic. In March 2020, in response to the pandemic, the StrikeForce project began adapting their program delivery models and creating new opportunities to support farmers as their needs evolved. In June, farmer feedback indicated that many direct-to-consumer sales and farmers market venues had transitioned to alternative approaches. At this time, StrikeForce determined it was important to survey producers in order to assess their programming and outreach efforts as modifications and adaptations continued.

Survey Methods

The MUE StrikeForce project team, in partnership with the University of Missouri Assessment Resource Center, conducted a web-based survey through Qualtrics in June and July 2020. (The Missouri StrikeForce Farmer Development Quality Improvement Project does not require IRB review, as determined by the University of Missouri IRB Determination Notice for Project #2043562 Review #294172.) The purpose of the survey was threefold. The first purpose was to determine the ongoing needs of farmers following their participation in StrikeForce programming. Second, the survey gathered basic information about the immediate effects of the pandemic on participant agricultural operations since programming had moved to online delivery in March 2020. The third purpose

was to assess project outcomes and measure the progress of quality improvement and program development initiatives offered through the StrikeForce project. The survey acquired farmer feedback on the specific educational programs provided by the StrikeForce project. It provided the project team with recommendations to improve the services provided by Extension specialists, assessed the need for program delivery methods, and provided information on how farmers had implemented the resources and training tools furnished in the project. StrikeForce programming attracted a wide audience, including those who are not residents of StrikeForce counties and those who have indicated an interest in farming but were not yet established farmers.

The survey consisted of 24 questions, including eight demographic questions and 16 multiple choice, yes/no, and open-ended questions regarding farmer status, crops and products, responses to the pandemic impacts, and participation in online programming. Text entry boxes were included on all multiple-choice questions to allow for comments, resulting in many direct quotes from farmers. This strategy was important, as the StrikeForce specialists did not want to make assumptions about how the pandemic was affecting farmers. Survey questions pertained to farming practices, the direct agricultural impacts of COVID-19 including pandemic control plans, changes in product demand, modifications to farm operations, farm worker assistance, perceptions of the food system, farmer needs, and basic demographics. Survey questions were not translated into Spanish or other language due to time and resource constraints. Although preliminary due to the small number of responses, the survey data may be helpful for designing future studies, surveys, and programming.

Of the 1,500 StrikeForce workshop attendees (2017-2020), 301 met the criteria for the targeted sample and were invited to respond to the survey. The targeted sample for the survey were those who self-identified as farmers or growers, resided in a StrikeForce Missouri county, had attended at least one StrikeForce workshop, and had a current email address. Surveys were sent via email with a personalized message from a StrikeForce team member in two waves, in June and July 2020. Twenty-two of

the 46 Missouri StrikeForce counties were represented in the survey. Twenty-two percent of survey respondents resided in Greene County, where Springfield, the major metropolitan hub for south central Missouri, is located. Incentives were not provided for participation in the survey. The response rate was 15% (44 responses out of 301 surveys sent). Numbers of respondents (*n*) varies by question because some respondents did not answer every question in the survey. The survey sample was limited by the procedure of delivering questionnaires to assess the impact of COVID-19; employing additional survey tactics to increase response rates, such as incentives, a pre-selected survey research panel of participants, or text message prompts and reminders could have resulted in increased responses. Specific to the Amish participants, in-person interviews or focus groups are good options for collecting survey information.

Survey Results

Demographics and Key Characteristics

The survey demographics reflect the specific audiences targeted by the project, including beginning specialty crop growers and home gardeners, which are an appropriate pool of candidates for the StrikeForce area. Individuals were only targeted for the survey if they self-identified in general as beginning farmers. However, the survey asked the grower to specify which type of beginning farmer they were: home gardener, commercial grower, or both. A producer often is more than a home gardener and does not realize it, perhaps due to the limited land required for growing specialty crops. These farmers may not classify production as commercial sales or define the level at which they are producing as commercial. The majority of survey respondents self-identified as home gardeners or both home and commercial growers (93%). Only seven percent identified solely as commercial growers.

One-third (36%) of respondents were employed full-time, and 40% were retired. One-third (35%) were 65 or older, one-third (33%) were between 54 and 65, and one-third (30%) were between 35 and 54. Respondents were 56% female and 44% male. Most respondents self-identified as

white (86%) and 14% identified as one of several non-white races (Black or African American; Asian; Native Hawaiian or Other Pacific Islander; Native American or Alaska Native). Ten percent identified as veterans, and less than 3% identified as having a disability. The agricultural enterprises represented by survey respondents included U-Pick, diversified fruits and vegetables, poultry (chicken and turkey) meat birds and layers, farm raised pork and beef, sales production for farmers market and drop-off deliveries, sales for customer pick up, small direct marketing operations, and online sales.

Effects of COVID-19

To the question “Has COVID-19 affected your plans to launch your commercial agricultural venture?”, 56% of respondents (*n*=16) said “yes.” Respondents were asked to describe the effects in an open-ended question. Specific details of effects varied greatly, but showed general agreement among respondents for delaying business expansion. Examples of the effects reported include delay in raising broilers (meat chickens) because purchase price was four times the usual cost, low prices for weaned calves, holding off from joining farmers markets due to contact restrictions, a halt in raising steers because of a two-year backlog at local meat processors.

Three-quarters (73%, *n*=22 respondents) of respondents said that they are implementing a pandemic control plan on their farms. Farmers reported that they are increasing the safety precautions on their farms by limiting the number of customers/visitors, changing the ways in which they transfer products to customers, reducing or eliminating on-farm workers, implementing physical distancing measures for farmers market workers, and wearing face coverings. In some cases, farmers reported that their family members were working longer hours due to the restrictions that eliminate workers, visitors, and on-farm sales, and relying on customers to pick up purchases at drop points or farmers markets. Respondents implementing pandemic control plans said the following, regarding changes they have made:

- “Minimal contact. U-Pick in buckets (customers) keep and leave versus (selling) by

the pound which (requires) handling. Set private smaller group picking dates for those sensitive to crowds, social distancing, masks and cleaning when required.”

- “We bring out the order to the customers’ cars, so they do not have to get out. We wear masks if someone happens to exit their car.”

From March 2020 to June/July 2020, 52% ($n=21$) of respondents reported that the demand for their products had increased since the outbreak. For example, one respondent said: “I have taken the unprecedented step of purchasing livestock for processing in order to try and meet demand. My red meat processor is completely booked through 2021.” One-fifth (19%) reported no change in demand, and 14% reported a decrease in demand. (The remaining 15% selected “other” and did not provide a comment.)

Three survey respondents (14%) reported that they or their farm workers had applied for COVID-19 Emergency Relief Funds ($n=22$). Relief Funds were not conducive to small farmers due to the required parameters for documenting contracts and sales through formal marketing channels. Farmers market records may not provide the necessary documentation for farmers to apply for Relief Funds.

Eighty-two percent ($n=33$) said that the COVID-19 pandemic had affected the way they view the food system (where and how they buy food, where it comes from, etc.). There were 24 unique answers to this open-ended question. Most respondents said that they had an increased appreciation of the importance of local food, a clearer understanding of the vulnerability of a centralized food system, increased concerns about the cost and availability of food, and increased concerns about sanitation practices for food suppliers. Some illustrative quotes:

- “Very concerned as to where food originated and how it was handled from start to finish of cycle.”
- “We’ve tried to buy as much as possible from our local small-town grocery store ... Put in irrigation system to try to get more

yield from our home garden.”

- “Yes, buying local is more important. We should have less dependence on goods that need to travel long distances.”
- “Yes! Did much more canning this year than usual.”
- “COVID-19 has made my household want to start raising and growing more of our food in order to have a consistent, safe food supply.”

Less than half of the respondents (44%) said that they had participated in web-based trainings, workshops, and discussions related to farming or gardening since the pandemic began ($n=43$ respondents). Since the survey itself was web-based, there is selection bias in this question. When asked about internet connectivity ($n=19$ respondents), 74% said that their internet connectivity had been sufficient for full participation in web-based events “most of the time,” which was defined as at least 90% of the time. One-fifth (21%) said it was sufficient “sometimes” (over 50% of the time) and only 5% said it was sufficient “occasionally” (less than 50% of the time). Of those who said that they did not participate in web-based trainings ($n=24$), 38% said that they did not need or want the training, 21% said that they were not familiar with video conferencing technology (e.g., Zoom), and 29% had “other” reasons.

Discussion of results

The survey sample is representative of the whole StrikeForce participant population of 1,500 in terms of age, gender, employment status, race, and diversity of agricultural activities. The survey sample does not seem to include the significant Latinx, Amish, Mennonite, and Southeast Asian (primarily Hmong) populations served by StrikeForce, nor does it include the prison population served (Byers et al., 2020). The survey does have selection bias because it was completed only by StrikeForce participants who had active email addresses, had access to the internet, and were English-language speakers/readers.

Nonetheless, some important observations can be made. The pandemic has resulted in increased demand for local food and the services of local

grocers and food processors such as meat processors, according to this survey. At the same time, local growers, as represented in this survey, have been pinched in their capacities to produce more food products for several reasons, including higher prices of inputs and supplies, overdemand at local meat processors, restricted access to customers on-farm, and increased labor by farmers and farmer families due to restrictions among farm laborers.

COVID-19 Impact on Educating Small Specialty Crop Producers

Extension specialists were quick to observe the changes made in participant agricultural operations, based on their initial reactions to the pandemic beginning in March 2020. There was consensus among the team that a better understanding of these changes should be sought, prompting a survey of the effects of the pandemic which was conducted in June and July 2020.

Once social distancing was implemented to restrict the spread of COVID-19, specialists had to become creative with their educational programming: developing videos in place of live demonstrations, providing classes online either through Facebook Live or Zoom, providing materials ahead of time through email or in-car pick up, answering questions during livestreams, sending and receiving pictures on cell phones or observing with video via cell phones. The StrikeForce team had to remain mindful of how to serve those without broadband or any internet access.

COVID-19 Programming Pivot

The StrikeForce team pivoted programming in response to the COVID-19 pandemic disruptions to continue providing programs and ongoing support for producers. In addition to delivering virtual workshops, the StrikeForce farmer mentor model became a critical tool for farmers to check in with one another, have a resource for answering questions, and obtain support when experiencing distress or crisis. Programming pivots created opportunities to try new educational delivery systems, create sustainable tools with online access, and utilize mentor and peer networks that are essential to StrikeForce programs.

Prison Training

Before the pandemic, the StrikeForce project, in collaboration with One-Cert Organics, offered four training sessions for inmates at the Southeast Correctional Center in Charleston, Missouri. These training sessions focused on produce food safety and blackberry production. The sessions helped 51 inmates scheduled for release gain marketable skills, with 21 of these inmates receiving certification for attending produce safety training for the Food Safety Modernization Act (FSMA) offered through the Produce Safety Alliance (PSA). Due to restrictions put in place by the prison in response to the pandemic, in-person courses were halted. The produce safety training curriculum was quickly modified to a shorter overview which was delivered remotely to the prison. The FSMA PSA produce food safety training consists of a mandated 8-hour curriculum that is delivered in person, remotely (with real-time video connection to each trainee) or virtually (each attendee must have an internet connection that allows for asynchronous training). None of these three delivery options were viable given COVID-19 restrictions (and prison-related restrictions in general), so the team quickly pivoted to create a modified training that was of shorter duration and delivered remotely without individual video connections with the trainees as approved by the prison. The modified training delivered an overview of produce food safety in a 2-hour presentation, based on the modules of the FSMA PSA training. The team hopes to revisit the trainees (both those in the prison and those who have left prison) at a later date with an opportunity to take the full FSMA PSA training. Inmates were also invited to reach out to the training team upon release to participate in the full produce safety training.

Apple Grafting Workshops

With apple grafting workshops scheduled to begin only a few days after COVID-19 restrictions were put in place, the workshops had to be adapted for a virtual platform with very short notice. Traditional grafting workshops included classroom instruction, in-class demonstration of grafting techniques, and hands-on experiential learning by attendees. Given the COVID-19 restrictions, the StrikeForce team

developed a series of internet-posted videos describing all aspects of apple grafting, prepared and distributed packets of grafting supplies to all attendees using a drive-through pickup system, and conducted a virtual workshop that utilized these resources. The team offered monthly follow-up support for workshop attendees. Reported knowledge among participants ($n=18$ respondents) of workshop topics before and after the training, on a 1–4 scale, increased by at least 1.42 points (sample mean); average knowledge level improved from 2.1 to 3.5.

The unanticipated change in venue resulted in valuable and unintended consequences. First, the workshop recordings and grafting videos are now ongoing training tools for workshop attendees and others. Second, the video training for this topic reduced participant concerns for exposure and illness. Third, the adapted process allowed specialists to build trusting relationships and maintain connectivity with growers, which has been especially important during the pandemic. In the virtual format, however, it was impossible to observe and critique grafting technique or to support self-collection of scion wood. But specialists still followed up with participants, who were very appreciative of the additional assistance. Fourth, the videos were well received, and are better suited to demonstrate some techniques that are difficult to demonstrate in a classroom setting (i.e., cleft grafting, T-budding). The StrikeForce team will continue to use these videos once in-person workshops are safe to resume. Despite the success of the impromptu virtual training sessions and videos, workshop attendees reported an interest in returning to in-person trainings.

Twilight Tours

Prior to the pandemic, the StrikeForce project partnered with Millsap Farm owner Curtis Millsap for a monthly twilight tour on his farm that included a walk-around tour and an in-depth discussion of specialty crop production. The tour consisted of 11 in-person sessions and included up to 40 attendees per session. In response to the COVID-19 restrictions, Millsap and his farm team prepared video and still photos as well as offering virtual tours online. The virtual tours were recorded and

posted as an ongoing StrikeForce resource. As COVID-19 restrictions were eased later in the summer, in-person tours resumed in accordance with the COVID-19 recommendations to limit the number of attendees, wear masks, and socially distance, as well as other precautions to ensure the safety of on-farm participants.

Twilight tours were a highlight of the StrikeForce project before the pandemic, and the team was unsure how participants would react to the format change. Surprisingly, the team found that it is possible to alter an inherently face-to-face experience when there are existing relationships in place with participants. Many twilight tour participants already knew Millsap and had been involved in other StrikeForce project events. Based on the established trust, strong relationships, and concern about the pandemic, participants were willing to adjust to the new format. Serving as a mentor to growers, Millsap stated: “COVID-19 accelerated change for people to jump in and have a market for people that are hungry for their product. No one should be daunted; in fact, people should be encouraged to take that lead. They can make this part of their transition plan as they explore how to leave that paycheck behind and jump into farming full-time. It is a unique opportunity for people to have the little boost they need to get started.” Reflecting further on calls received from farmers during COVID-19, Millsap said: “I received more calls from farmers wanting to check-in, to make sure that they are okay, I am okay, and that we were all experiencing the same (issues) in the face of events brought on by the pandemic. During COVID-19, growers demonstrated they are nimble, responsive, and able to deal with adversity, because there are not the support systems in place in absence of broadband. You form a network of peers and someone has the information you can benefit from.” (personal communication, September 25, 2020).

Ozark Ag 101

The Ozark Ag 101 program had been proposed by the StrikeForce team before the pandemic but had not yet been implemented. Ozark Ag 101 was intended to provide introductory information to beginning farmers in the Ozarks, including farmers

new to farming, new to farming in the Ozarks, or interested in a new enterprise on an existing farm. The team identified the target audience for Ozark Ag 101—beginning farmers, many of whom would be younger and familiar with online technologies—as another suitable demographic to reach with an online format when the pandemic reached Missouri. The program was held via Zoom, consisting of eight online sessions over a four-week period. As with the apple grafting workshops, the online technology allowed delivering the content remotely as well as recording the sessions for later viewing. Of the 29 participants, 16 were from 11 Strikeforce counties. The remainder were from other counties in the state or out of state. Eighty-six percent of those that responded to a course evaluation survey enjoyed the online format, 14% enjoyed the format but would have preferred face-to-face, and none claimed to dislike the format. Fifty-seven percent of survey respondents only participated in the live Zoom events, and 43% participated in the live events and watched recorded sessions. Some quotes provided in the immediate impact surveys from participants:

- “I really enjoyed this program. It was a refresher on some topics, but I gained some much-needed knowledge of sites I can use to fine tune my marketing plans for berry production and possibly a market garden venture with my adult children. I have more time available than they do to take these courses and become a help to them.”
- “I think Zoom allowed participants from all over the state to join, instead of waiting for the local team to schedule a class.”

Individual Consultations during COVID-19

Individual consultations with growers have been an important educational tool used by specialists since the beginning of the StrikeForce project, providing farmers with technical advice based on their specific needs and situations. Extension specialists typically conduct these consultations in person so that they can better grasp the issues and determine which concerns on the farm need to be addressed. The COVID-19 restrictions prevented in-person meetings and forced the team to develop alterna-

tive approaches to offer this service. Information on how to access resources and contact Extension specialists was made available to the public through online and local newspaper announcements while the local Extension Centers were closed. Drop boxes for soil samples were established in some Extension Centers to avoid face-to-face interaction and follow-up was completed by telephone or email. In many cases, producers were able to send pictures and videos to specialists for evaluation and recommendations. Of course, these virtual farm consultation techniques were unavailable for producers without internet or email, such as Amish producers. Extension specialists used other strategies to work around this challenge. For example, specialists used newspapers, guide sheets, handbooks, and research articles to provide information to producers without internet access. With the permission farmers, they also visited the farms alone and then discussed findings by phone. When specialists could not visit a farm, they invited farmers to send photos of problem areas via traditional mail and used the photos for telephone consultations.

Partnerships with Other Organizations

Extension specialists served as advisory members to many partner organizations as they collaborated to navigate the challenges introduced by the pandemic. Contacts established prior to the pandemic reached out to StrikeForce team members on multiple occasions to request support for their efforts. For example, the Oregon County Farmers Market reached out to Jamie Gundel, an Agronomy Field Specialist and StrikeForce project team member, to represent them and serve as a panelist for Innovative Ideas Emerging Among Farmers Markets in Missouri, a roundtable discussion held April 20th. This Zoom session was open to the public and included speakers from four small Missouri farmers markets. The goal of the discussion was to share ideas and protocols farmers markets were using to stay open amid the COVID-19 pandemic. On behalf of the Oregon County Farmers Market, Gundel explained how their market and vendors were adapting to continue selling locally grown produce. The Market had chosen not to open on their scheduled date of April 25, 2020 due to the risks to

vendors and customers. They encouraged vendors to explore alternative methods to sell their products and encouraged customers to continue buying from local vendors. Vendors quickly pivoted to off-the-farm sales and home delivery of their goods. In contrast, the Nixa Farmers Market opened but was enforcing strict sanitation and social distancing guidelines as directed by the city. Other markets had not yet reached their opening dates but were planning to open while prioritizing sanitation and social distancing. After each farmers market manager or representative spoke, there was time assigned for questions and discussion, which led to sharing many good ideas. Much of the discussion shifted from COVID-19 adaptations to general management of the markets and their service to communities.

The Oregon County Farmers Market chose to open on their next scheduled date, May 30, 2020, and follow the guidelines from MUE regarding farmers markets (University of Missouri Extension, 2020a, 2020b). The market provided hand sanitizer at the entrance and exit points and asked all vendors to provide their own at their booths for use between transactions. All booth spaces were set a minimum of 10 feet apart to allow for greater social distancing of both vendors and customers. In addition, customers were asked to “shop with their eyes” and leave the market as soon as they were finished shopping, rather than standing and visiting with vendors or other customers.

Conclusions

When the pandemic reached Missouri in mid-March, the StrikeForce project team was in the right place at the right time. Extension specialists had developed trusting relationships with producers over the previous three years and were poised to assist producers through the pandemic as it altered their agricultural operations. Producers were willing to access online resources and educational materials that the StrikeForce project team created because the foundation of trust was already built.

Programs transitioned from in-person to online offerings starting in March. These programs included Apple Grafting, the Millsap Farms Twilight Tours, FSMA PSA produce safety training, and the Ag 101 series, offering five online sessions

to help agriculture producers grow their business. StrikeForce online education and workshops reached nearly 600 participants, using a mix of Zoom video conferencing, pre-recorded videos, pictures, and teleconferencing. In addition, the team members provided mentoring to 66 farmers from March to the conclusion of the funding program in September 2020.

To a survey sent out by the StrikeForce project, farmers provided candid responses about how the pandemic affected their production and businesses. They experienced increased local demand, increased input costs, long waits for agricultural services such as processing, decreased on-farm customers, and a reduction or elimination of on-farm labor. Few took advantage of federally available financial support, partly due to the reporting of farmers market and direct-to-consumer sales not satisfying funding eligibility guidelines. The StrikeForce team responded to the COVID-19 pandemic by developing alternative strategies such as moving in-person workshops online and using pre-recorded videos, virtual instruction techniques, and livestreaming when face-to-face farm tours and individual farm consultations were made impossible by pandemic restrictions imposed by the state of Missouri. These alternative venues were still effective because the StrikeForce team had already developed relationships with community partners, farmer-to-farmer peers, mentor farmers, and small-scale, beginning specialty crop farmers. Mentor farmer Millsap stated:

There has never been a better time to get started in local food production, there is so much opportunity out there. With a little marketing we could have sold 100 more Community Supported Agriculture shares, we could be selling a lot more stuff at farmers markets if we had the produce, and there could be a lot more vegetable and fruit growers in the farmers markets. COVID-19 accelerated change in people’s ability to jump in and have a market that is hungry, literally, and figuratively, for their (farmers) products. No one should be daunted now, in fact, they should be encouraged to take that leap. This presents a unique opportunity for people to

get started as local food producers and may be the bridge needed for people to transition from earning a paycheck in the office to being a producer. (personal communication, September 24, 2020)

Moving Forward

When the StrikeForce project began three years ago, team members discussed a best-case scenario in which an online program would be developed to reach new audiences. At that time, MUE was not using videoconferencing and the project team did not have the necessary technological tools and training available, which was a barrier to completing the objectives of the project and to bringing the curricula online. While it was the intention of the project team to eventually develop the curricula and create on-demand access for growers, the pivot caused by the pandemic accelerated online program delivery and provided the technological tools and support for new modes of teaching on a reduced timeline. The information gathered from the innovative teaching methods piloted with specialty farmers during the pandemic will shape StrikeForce's programming going forward. However, persistent constraints, especially limited broadband access in rural Missouri, must be overcome to reach more producers. Looking forward, the StrikeForce project team plans to address the following goals:

- Ensure educational materials for workshops, including Ozark Ag 101, Apple Tree Grafting, and Food Safety, are available online and developed fully into online courses. The Ozark Ag 101 educators (Extension Regional Agricultural Specialists) are currently developing an online version of the course through Canvas, an online class platform, through the University of Missouri system. StrikeForce programming during the pandemic renewed interest in online coursework for specialty producers unable to attend in person.
- Expand use of videos and online live-streaming connections such as Zoom, YouTube, and Facebook to enhance individual farmer consultations. StrikeForce

COVID-19 efforts show that individual consultations can be both effective and efficient when videos and online connections are used to identify on-farm issues (Lake et al., 2020). It is especially helpful to farmers when specialists use video conferencing to collaborate across disciplines such as agronomy, horticulture, and agriculture business in order to meet diverse needs of producers. Video technology also enables the StrikeForce project to expand educational tools and resources more broadly across the state, reaching and building connections with farmers beyond the local driving radius.

- Continue to make educational materials available in the form of newsletters, guide sheets, and newspaper articles. The pandemic has highlighted that there is a sector of the population with little access to StrikeForce programming when face-to-face classes are unavailable. This population includes the Mennonite and Amish communities as well as those who simply prefer not to engage with digital technologies despite having broadband available, such as some seniors. In addition, where broadband connectivity can be unreliable may limit the use of technology. In these situations, Extension specialists can accommodate requests by providing information in print through pick up, delivery, or mail. Further development is needed to ensure continued support of these communities.
- CDC guidelines and University restrictions for in-person meetings during COVID-19 limited options for classroom-style teaching. However, there are strategies for face-to-face instruction during the pandemic. Small classes of less than 10 people and strict adherence to social distancing, masking, personal hygiene habits, and enforcing local policy form a viable strategy for working with non-digital audiences.
- Build on existing programming and expand strategies to promote Missouri's varied agricultural landscape, addressing both short-term challenges and long-term needs (White

et al., 2020). Promoting the diversity of agricultural landscapes in Missouri is critical to the long-term economic impact of the StrikeForce Farmer Development project. Lessons learned in the project are transferable to all Cooperative Extension. For example, many programs would not have been possible without the financial resources made available through a grant to cover mileage expenses for County Extension offices, equipment needed for instruction (e.g., apple grafting supplies), and resources needed for online teaching (e.g., salary offset for instructor time, support costs for online programming fees and curricula fees).

- The development of a team of specialists with different areas of expertise, who work together towards a common goal, is an invaluable outcome of the StrikeForce project. More than the technology, it was the collaborative environment within the team that led to the innovation and outreach of the project. The StrikeForce team was prepared to deal with the effects of the pandemic on farmers because they had already built the foundation of working together to

solve a challenge. Teamwork was central to the success of the project and should be prioritized when addressing future needs or challenges. By maintaining a focus on teamwork after the pandemic, specialists will remain prepared for any future challenge the project may face.

The innovations implemented by the StrikeForce team to advance activities during the pandemic resulted in novel programming approaches which will continue beyond the pandemic. As we capitalize on this momentum, specialists will continue to innovate and develop new strategies that increase the reach of the project. For others who face similar challenges and want to take this path, we recommend: (1) Establish a team of trusted individuals, (2) Know your target audience, and (3) “Don’t be afraid to try it.”

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POLICY AND PRACTICE BRIEF

Perspectives from the front line: The post-pandemic emergency food system in North Carolina

JAFSCD
Responds to
the COVID-19
Pandemic



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Abstract

The novel coronavirus pandemic has had an immediate effect on food and nutrition security, leading to the most widespread increase in need for food assistance in modern history. At its onset, the pandemic led to emergency food providers experiencing the “perfect storm”: surges in demand, declines and changes in types of food donations, limits in the food supply chain, and fewer available volunteers. This policy and practice brief provides perspectives from emergency food providers in North Carolina on their pandemic response along with recommendations for policy and practice applications to promote food security. As the pandemic continues, it is urgent for policymakers, organizations, community

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members, and other food system stakeholders to encourage collaboration across food system sectors, provide adequate funding for all aspects of distributing healthy foods, promote a continuation of program and policy flexibilities for nutrition programs, and support community-based models that engage a diverse group of organizations and leaders.

Keywords

Emergency Food, Food Systems, Food Insecurity, Hunger, Food Providers, COVID-19, Pandemic

Overview

The emergency food system in the United States serves 46.5 million people a year. Feeding America, the largest hunger-relief organization in the U.S., includes a network of 200 food banks and 60,000 food pantries and meal programs. These partner agencies are the mechanism for distributing food directly to individuals and families. Before the COVID-19 crisis began, food insecurity in America was at its lowest point since before the Great Recession, affecting 37 million people nationwide. Since the onset of the pandemic, it is now predicted that more than 54 million people need food assistance (Feeding America, 2020).

As the stay-at-home order was put in place due to the novel coronavirus, emergency food providers experienced the “perfect storm”: surges in demand, declines and changes in types of food donations, limits in the food supply chain, and fewer available volunteers. Additionally, the Centers for Disease Control and Prevention (CDC, 2020) issued a statement indicating that individuals and families who access food from food aid, referenced as food-aid seekers, have underlying health conditions that put them at greater risk of contracting COVID-19. The purpose of this policy and practice brief is to provide perspectives from emergency food providers on their pandemic response and recommendations for policy or practice applications to promote food security while keeping communities safe. This brief will address questions related to the capacity of emergency food providers during COVID-19 and how the pandemic has transformed the North Carolina emergency food system.

Scope of the Problem: Impact of COVID-19 on Food and Nutrition Security

The novel coronavirus has had an immediate effect on the U.S. economy. The unemployment rate rose higher in the first three months of the pandemic than it did in two years of the Great Recession, increasing from 3.8% in February 2020 to 13.0% in May 2020 (Kochhar, 2020). As a result, Feeding America Food Banks (“food bank”) reported up to a 60% increase in need for food assistance at distribution sites (Feeding America, 2020). Specifically, Second Harvest Food Bank of Northwest North Carolina, a Feeding America Food Bank that serves 18 counties, conducted a survey with its 460 local food assistance programs that showed approximately 23% of food-aid seekers from March to May were seeking food assistance for the first time. Additionally, 53% shared that they were at higher risk for serious illness from the coronavirus, and 63% responded that it will be “a lot more challenging than usual” to make ends meet (Second Harvest Food Bank of Northwest NC, 2020).

The Response: Adaptations within the Emergency Food System

In order to continue the mission of nourishing communities while also keeping communities safe, emergency food providers quickly adapted operations, with a focus within three core areas:

1. Adaptations to the type of food received and distributed:

With added pressure on grocery stores as schools and restaurants closed, food that may have been donated to a food bank was no longer available. The strain on the larger food supply chain led to

increased costs, limited availability, and delayed delivery. Emergency food providers experienced a decline in donations of nonperishable goods and triple the amount of produce from farms. The increase in perishable products led to an increase in need for cold storage. There was also an increase in frozen food available through The Emergency Food Assistance Program (TEFAP), a federally supported program, due to suspension of and modifications to international trade.

2. Adjustments to staff and volunteer capacity:

Food banks and their network rely on volunteers to supplement staff time. At Second Harvest Food Bank of Northwest NC, on average 900 individuals volunteer monthly, the majority of whom are retired. Second Harvest experienced a 78% decline in volunteers at the onset of the pandemic. Additionally, to keep everyone safe, it shifted the hours and size of volunteer shifts in order to follow all guidelines set forth by the CDC.

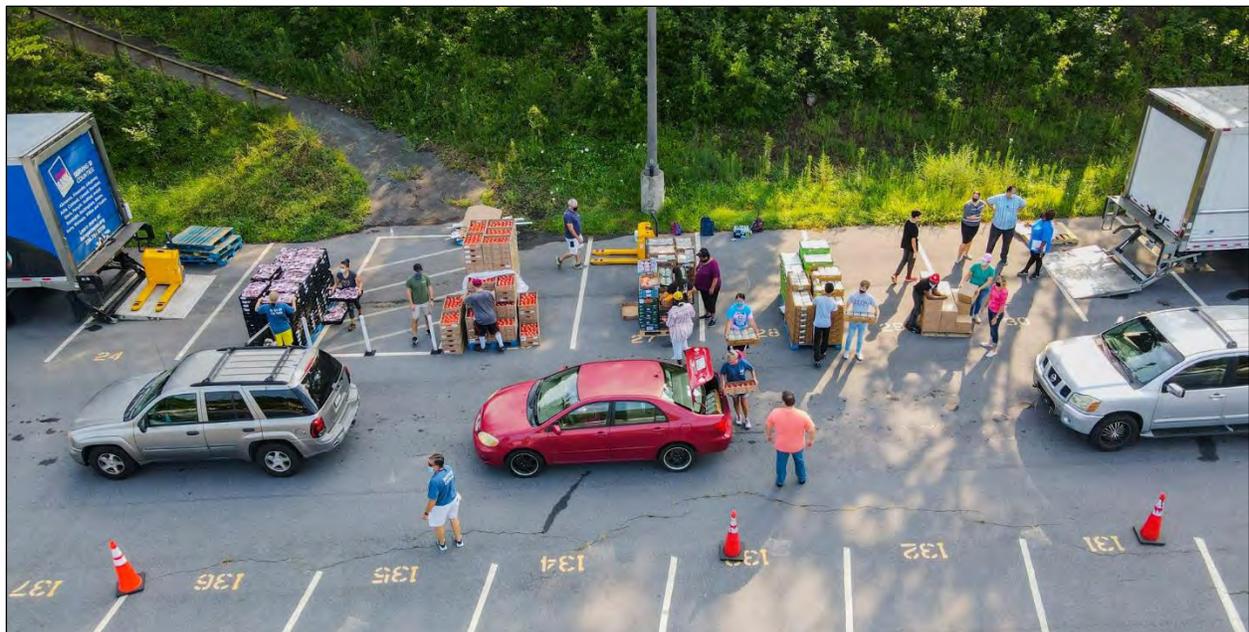
3. Modifications to operating procedures for food distributions:

Emergency food providers shifted to supply prepared food boxes through a no-contact drive-through operation (see Figure 1). Standards of operating procedures (SOP) for food pantry sites provided guidance for preparing food boxes, implementing sanitation protocol, and screening staff and volunteers. Pantries reported that the SOP became their roadmap and helped them feel confident in keeping their doors open.

Changing the Landscape: Innovative Approaches for Food Security

In response to these changes, the landscape began to change. Food insecurity is one problem at the nexus of a myriad of other inequalities, including income; racial and gender; agriculture and food systems; and access to reliable healthcare and transportation. While navigating COVID-19 and recognizing the nexus of these challenges, the emergency food system in North Carolina developed and enhanced innovations.

Figure 1. An Example of Emergency Food Box Distribution to Food-Aid Seekers



Providers thought creatively about how to bring food directly to the people and how they could fill in for existing food acquisition networks that food-aid seekers had developed but that were no longer viable (e.g., riding to the grocery store with a neighbor). Tractor-trailer loads of emergency food boxes were delivered to families and older adults fearfully sheltering in place. Special mobile pop-up distributions provided fresh produce, dairy, and perishable items. It was common for notes of gratitude to be shared at these pop-up distributions from individuals and families scrambling to stay afloat (see Figure 2).

New partnerships were formed across multiple sectors within the food system. There was an immediate need for a coordination of efforts. Refrigerated tractor trailers that were previously used to deliver food to restaurants were donated for use at food banks to store and distribute perishable products. Direct relationships between local farms and food pantries formed, which offered a market for growers and improved access to healthy food. The National Guard was an essential partner to fill the gap in volunteers.

Expanded opportunities emerged in supporting economic development. Previously established community meal programs that were supplying meals for the Child and Adult Care Food Program (CACFP) or the Summer Food Service Program (SFSP) broadened their reach. For example, one program in northwest North Carolina grew from serving 2,400 meals a week to more than 23,000 meals a week. A collaborative café began providing meals for displaced hospitality workers and artists as well as their families, serving 275 individuals daily.

Local, state, and federal government agencies adapted policies and provided funding appropriations to support COVID-19 responses. For example, the U.S. Department of Agriculture (USDA) worked with state and local partners across nutrition programs to allow states to serve free meals to children, launching the Pandemic-EBT (P-EBT) program, increasing benefits provided by the Supplemental Nutrition Assistance Program (SNAP, formerly known as food stamps), expanding access to online purchasing for SNAP, allowing food substitutions for the Women, Infants, and Children (WIC)

Figure 2. One of Many Notes of Gratitude Shared by a Food-Aid Seeker during a Food Distribution



program, and providing billions of dollars in food through the emergency food system.¹

Emergency food providers are adapting operations, developing new partnerships, and joining conversations in order to coordinate efforts across a region or state. They are working smarter and harder than ever before; but at this point in the journey, we are left with more questions than answers: How much is enough? And what is the emergency food system's role in meeting the needs of the future?

Policy and Practice Applications: Supporting a Food Secure Future

Solving hunger and food insecurity requires a multisector approach that engages a diverse group of organizations and leaders. Further action is necessary to ensure access to *healthy* food for all. The emergency food providers in North Carolina call on policymakers, organizations, community members, and other food system stakeholders to:

- Encourage collaboration across sectors in the food system in order to effectively and efficiently coordinate efforts and resources;
- Provide adequate funding for all aspects of distributing healthy foods, including the procurement of fresh produce, and support of infrastructure, cold storage, and staffing needs;
- Promote a continuation of new program flexibilities to best serve participants across the 15 nutrition programs within the USDA; and
- Increase initiatives supporting community-based models that engage food-aid seekers and community members in the process of developing and implementing effective strategies.

To meet the rising demand for food assistance, everyone must have a seat at the table. There is still a lot to learn about how to achieve food and nutrition security, but by listening to each other and joining forces, a food secure future is possible. 

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¹ The full list of COVID-19 flexibilities and adjustments provided by the USDA is available at <https://www.fns.usda.gov/coronavirus#flex>

POLICY AND PRACTICE BRIEF

Farming in the time of pandemic: Small farms demonstrate flexibility, innovation, and hope

**JAFSCD
Responds to
the COVID-19
Pandemic**



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Abstract

The COVID-19 pandemic affected small farmers in the 2020 growing season as they navigated how to maintain their businesses while meeting health and safety concerns. Through interviews with Ellis Creek Farm and Riverbend Ranch, two small farms in Thurston County, Washington, I explore the impacts of the pandemic, the need for flexibility, and the unique challenges and adaptations these farms employed early in the pandemic to stay afloat. These stories are valuable community assets because hearing directly from farmers about their experiences, challenges, and plans is a way to gain insight and learn. In the face of crises such as a pandemic or climate change, a changed food system that includes small farms is necessary for community resiliency.

Keywords

Small Farms, COVID-19, Pandemic, Adaptation, Local Food, Resiliency, Agriculture, Community Supported Agriculture, Direct to Consumer, Food System

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Author Note

This is an abbreviated version of a student oral history project conducted in spring 2020 regarding workers in the time of pandemic. The full version, interview transcripts, and images of interviewees are published online with the Tacoma Community History Project. The link can be found at the end of this essay.

In spring 2020, through my work as an agricultural service provider and farmer, I started hearing from local farmers who were gearing up for a season unlike any other due to COVID-19. When I spoke with farmers Joel Baranick and Ann Petricola of Ellis Creek Farm and Kevin Jensen of Riverbend Ranch in May 2020, they shared their experiences of watching two things happen simultaneously: their usual markets were slipping away as wholesale accounts were cancelled, and their inboxes were filling up with requests to buy direct.

The United States saw a trend toward direct-market sales in 2020. Articles with titles like *Organic farmers fill national food system holes revealed by COVID-19* (Polito, 2020), *Community Supported Agriculture Is Surging Amid the Pandemic* (Ricker & Kardas-Nelson, 2020), and *COVID-19 Sparks a Rebirth of the Local Farm Movement* (Hiller, 2020) started appearing regularly and illustrated a common theme: consumers with financial means were looking locally for food that felt safe and reliable. The usual avenues of procurement no longer felt secure.

COVID-19 has exposed the United States' food system as incredibly vulnerable and inequitable: meat packing plants have had to close (Kludt, 2020), migrant farm workers have been denied assistance and health coverage even while acknowledged as essential and vulnerable (Jordan, 2020), and the use of food banks and assistance programs has surged along with unemployment (Abou-Sabe, Romo, McFadden, & Longoria, 2020). The closed loop of commerce offered by small farms has at least partially supplemented this system at a local level as small farms have the potential to be more adaptable, flexible, and open to market changes. Ellis Creek Farm and Riverbend Ranch exemplify this.

Ann and Joel of Ellis Creek Farm grow and sell microgreens and specialty salad mix wholesale in Pierce and Thurston counties (south of Seattle). This crop focus has been successful, and they were anticipating another season of business growth. But in March 2020, as non-essential businesses shuttered and usual buyers cancelled their orders, Ellis Creek Farm had to make a choice about what this season would look like. They started a weekly CSA delivery of microgreens and salad. Throughout this season, Ann and Joel have stayed flexible as phases of re-opening take effect. Joel explained their flexibility plan:

When we were seeing this all develop, we were doing our field plant half the size of normal. ... [But] we went back to a full field plantings. ... And I think we're just going to try to sell it or donate it. ... We don't want to be caught flat-footed if restaurants open and then we're not able to sell to them.

Since my conversation with Ann and Joel, they have had some wholesale accounts come back online, but flexibility remains key. In Ann's words:

I guess we're just trying to figure it out ... how to adopt and make changes quickly enough to be able to keep up with the changes that we don't know are coming. ... We're persistent, so we're just gonna keep doing what we're doing.

At Riverbend Ranch, Kevin is a fourth-generation rancher working with his family to raise beef, pork, and Christmas trees. Since adding a wedding venue, there are many moving parts and constant work. Riverbend Ranch's experience of COVID-19 has been twofold: beef and pork shares are sold out through the year, while their wedding venue is nearly a total loss. Unlike Ellis Creek Farm, which saw an immediate change in its sales model, the interest in buying meat has been more ordinary, if unprecedented in scale.

By the end of March/first part of April the gates opened up ... right about the time that first slaughterhouse back East closed down because of COVID. ... And it's just been kind of a

whirlwind from there. ... I don't know how many emails I've got today. I'm scared to look ... it's been challenging ... we're sold out right now [of beef and pork], until January/February '21.

While meat sales have been steady, new customers mean extra work in providing education for those unfamiliar with what cuts look like from a pasture-raised animal. Additionally, the future of the wedding venue and Christmas tree stand—high-value parts of their business—are uncertain for 2021. Kevin shared that there are “way too many unknowns to make decisions” and that they must take a long-range view of the future for this year:

You gotta plan to lose it, and then gain it where you can and just keep going forward. ... Anybody that's farmed for any number of years ... it's just another day. ... You see that in ag. There's always something trying to destroy you. ... But you gotta have thick skin and just keep looking ahead.

Highlighting, upholding, and remembering the flexibility that these farms demonstrate is necessary in the face of uncertainty. In the months since I did these interviews, the pandemic continues to shine a harsh light on systems of economic inequality in the United States—food access and agricultural support among them. Small farms such as these show a resiliency and adaptability that is essential for the continued health of our communities. As Kevin, Ann, and Joel exemplify, farmers are willing to put it all on the line because they believe in the work of growing and raising our food. They believe in feeding our communities. We have an obligation to learn from COVID-19 and to anticipate a changed food system in the future. 

A full version of this essay along with interview transcripts and photos of the farmers can be found on the Tacoma Community History Project website: <https://cdm16786.contentdm.oclc.org/digital/collection/tacomacomm/id/680/rec/20>

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COMMENTARY ON COVID-19 AND THE FOOD SYSTEM

A collaborative response to equitable food access during COVID-19: Building from Mass in Motion practices

**JAFSCD
Responds to
the COVID-19
Pandemic**



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Abstract

The Mass in Motion Municipal Wellness and Leadership initiative at the Massachusetts Department of Public Health provides local capacity to implement proven policies and practices creating environments supportive of healthy living, including food access efforts. During the COVID-19 pandemic, Mass in Motion has offered a crucial approach and infrastructure to address local food access needs exacerbated by the pandemic. The core components of Mass in Motion and its resulting impacts demonstrate a best practice approach to responding to immediate food access needs while leveraging long-term sustainable solutions.

Keywords

Mass in Motion, Food Access, Local Policy, Systems Change, Equity, Chronic Disease, Multisector Partnership, COVID-19, Pandemic

The Mass in Motion Municipal Wellness and Leadership initiative at the Massachusetts Department of Public Health (MDPH) has provided local capacity to rapidly respond to food access needs related to the COVID-19 pandemic. Given the multiple years MDPH and local grantees have invested in building partnerships, along with the initiative's focuses on healthy food access, health and racial equity, and policy and systems change, Mass in Motion communities have been able to respond quickly and

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effectively to local food security needs and create momentum for sustained, long-term change related to improving food access.

Mass in Motion is a movement to lower the risk of chronic disease by supporting equitable food access and active living opportunities in cities and towns throughout Massachusetts. Working with a diverse network of partners, local Mass in Motion communities implement proven policies and practices to create environments that support healthy living. MDPH provides the grant framework for local communities, while local coordinators manage the grants in their communities. As of 2020, Mass in Motion covers almost 70 rural, urban, and suburban cities, towns, and neighborhoods in Massachusetts.

Before the beginning of the COVID-19 pandemic, each grantee community worked in a multisector partnership to identify and implement local policy and systems strategies related to food access. Examples include community food assessments, the creation of food policy councils, and urban agriculture ordinances. Strategy selection and implementation involved engaging priority populations and building an understanding of root causes of inequitable chronic disease outcomes, particularly structural racism. As the pandemic expanded in Massachusetts in March 2020, many local Mass in Motion coordinators shifted their work to emergency food response. Because of Mass in Motion's scope, coordinators were well positioned in their municipalities and regions to step into this role. As one coordinator said, "It feels like the networks we have set up over the years are tremendously helpful. We are used to collaborating and things are going well, all things considered."

MDPH identified at least 60 food access strategies in which local Mass in Motion initiatives were involved. Existing multisector partnerships allowed Mass in Motion to connect with community-based organizations, local businesses, and municipal departments to support, coordinate, and sometimes lead food response efforts such as meal boxes, food delivery, and food recovery. Mass in Motion coordinators have also promoted efforts around equity, such as ensuring that outreach and programs are reaching populations that speak languages other than English, and examining first-come, first-served opportunities that may leave out people of color or other priority populations.

Additionally, local coordinators have drawn on Mass in Motion's focus on policy and systems change and understanding of the root causes of inequitable opportunities for health. COVID-19 has revealed underlying inequities and systemic barriers to food access for people of color, people with low incomes, people with disabilities, and others. Coordinators are leveraging the current momentum in addressing emergency needs also to create new understanding of what is driving need and to design lasting solutions that address the root causes of inequitable food access.

As just one local example, Cambridge Mass in Motion has had a robust food access response to COVID-19. Local staff members have relied on their knowledge of local food access challenges and policy solutions, along with existing relationships with municipal departments, a local health care provider, schools, and community-based organizations. Using this base, Cambridge Mass in Motion worked with the Cambridge Public Health Department to develop food guidelines for the city's bid process for restaurants to provide meals to homeless shelter populations; they also created operational guidelines for food pantries, safe food shopping, and take-out food. Cambridge Mass in Motion also worked with farmers markets to create guidelines for safe operations, connecting the markets to municipal resources such as water access for new hand-washing stations.

Additionally, Cambridge Mass in Motion has served as a communications and outreach channel to residents. Mass in Motion crafted social media posts and other educational outreach about food access and healthy meals at home and worked in partnership with the city's community engagement team and literacy ambassadors to create key educational messaging for immigrant families. Mass in Motion supported partners' outreach efforts as well, maintaining and distributing an updated list of emergency food resources including a food delivery hotline, school food distribution, food pantries, and meal sites.

While continuing to work on short-term emergency food responses, Cambridge Mass in Motion is using the current momentum for food access work to pursue policy solutions creating sustained access to healthy foods for residents who are facing the most challenges during COVID-19. Cambridge Mass in Motion has been pursuing an urban agriculture ordinance for several years and is now seeing even more interest in farming and gardening in response to the pandemic, particularly in lower-income neighborhoods of color. They are able to connect resident-led interest and movement around urban farming with the city's Community Development and Public Health departments. Working together, the goal is to pass an urban agriculture ordinance allowing the growing and selling of produce across the city.

Cambridge Mass in Motion is only one example of local Mass in Motion response to COVID-19. In other communities, local coordinators have crafted guidelines for safe community garden use to avoid their closure (Medford), served as cofacilitator on the Mayor's COVID-19 Response Team (Lynn), negotiated with the school food vendor to maintain a meal program for students (Springfield), and supported key partners' emergency food response efforts at pantries, schools, and farmers markets (Berkshires, Chelsea, Everett, Hampden, Holyoke, New Bedford, Salem, and Taunton).

Mass in Motion has offered a crucial approach and infrastructure to address local food access needs exacerbated by COVID-19. This is one effective initiative in a broader state strategy to address food insecurity during the pandemic. The Baker-Polito Administration convened a food security task force that identified four key actionable categories to respond to the increased demand for food assistance: (1) develop and implement an emergency food program, (2) fortify the food bank system, (3) maximize federal resources for food and nutrition, and (4) reinforce and redeploy food system infrastructure. The administration committed US\$56 million to combat urgent food insecurity. This included increasing support for the Healthy Incentives Program and shoring up the emergency food system and the local food supply chain through efforts like the Food Security Infrastructure Grant Program. MDPH and local Mass in Motion coordinators have recognized that returning to the status quo once the pandemic is over is unacceptable. The ability to respond to immediate needs while leveraging long-term, sustainable solutions offers a way forward for local communities in Massachusetts. 

COMMENTARY ON COVID-19 AND THE FOOD SYSTEM

Activating the local food system in emergency food response

**JAFSCD
Responds to
the COVID-19
Pandemic**



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Abstract

Resilient local food systems are a necessary component to keep our communities healthy, especially during times of emergency. With a history of supporting local farmers and food access in less-resourced communities, Fresh Approach was in a prime position at the time of shelter-in-place orders to pivot our efforts to emergency food relief in this time of uncertainty. By collaborating and mobilizing resources, Fresh Approach was able to strengthen existing connections with small farmers, build new relationships with other food access nonprofits, and support families in need by providing them with farm-fresh, local, and healthy produce. We outline how these partnerships and collective efforts have fortified a resilient and transformative food system in our area.

Keywords

Resilience, Collaboration, Resource Mobilization, COVID-19, Pandemic, Emergency Food Response

Between COVID-19, raging wildfires in California, the growing insurgency against the treatment of Black lives, and many other pressing issues, our food and agricultural systems have been shaken to the core in every aspect. Farmworkers, who have historically been denied acknowledgment for their immeasurable and essential contributions to our society, have been hit hard by the challenges that COVID-19 have posed; vulnerable and historically oppressed communities—migrants, senior citizens,

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lower-income communities of color, food delivery workers, and others—are struggling even more to feed themselves and their families; members of the middle class and other communities are experiencing food insecurity for the first time. Prior to the pandemic, our food system was already unjust, racist, and inequitable. COVID-19 has only exacerbated these issues and highlighted the growing need for community food systems. Supporting resilient food systems is essential to all aspects of our communities' health and well-being, especially in moments of emergency and disaster.

At Fresh Approach, we believe that a resilient food system is one that is rooted in collaboration and network-building. In normal times, our organization works to build healthy communities through food access and nutrition education programming in the Bay Area of California. With the onset of shelter-in-place orders in March, we quickly repositioned our assets and efforts to become an emergency food relief organization. Since March, the partners in our network have delivered more than 120,000 emergency fruit and vegetable boxes in seven counties to families facing increased levels of food insecurity due to the pandemic. Each of those boxes was filled with produce grown within 100 miles (161 km) from the household at which it ultimately arrived. In many cases, the food was delivered to families living no more than five miles (8 km) from the farm where it was grown. As a contractor in the USDA Farmers to Families Food Box Program, we built a grassroots and collaborative model that reached tens of thousands of households, served more than 50 nonprofit organizations, and invested US\$2.8 million into many dozens of small farms in the greater Bay Area. Our project prioritized farmers of color, women- and immigrant-owned farms, urban farms, and organic farms using climate-smart growing practices.

In most cases, the companies awarded USDA contracts were large for-profit distributors who sourced conventional products and delivered them in bulk to food banks. In our model, Fresh Approach served as a network coordinator for eight small local food system organizations that were farms, nonprofit farms, or nonprofit organizations. Utilizing a hub-and-spoke model like ours allowed for high levels of efficiency and divergent impact. Large distributors ran into delivery bottlenecks by packing massive quantities of boxes at once that not even food banks could receive; we were able to arrange smaller deliveries that directly reached existing nonprofit organizations without adding a burden to the already overwhelmed food banks. In this fashion, we were able to serve a diverse body of partners serving a wide range of families, including farmworkers in rural parts of the coast, undocumented families living in East Palo Alto, and the Eritrean refugee population in Oakland.

One mother had this to say of the box program: “I would like to thank you for the food boxes you have been delivering to my son at his apartment in Mountain View. He lives in an apartment complex for low-income adults with developmental disabilities. The quality and wonderful different types of produce have been greatly appreciated. His favorites were fruits and carrots. Such a stressful time for everyone, but I am so impressed by your thoughtful gift.”

Another benefit to our model is that it allows for a richness in mission. By collecting a group of organizations that have overlapping goals, but unique strategies to achieving them, we were able to realize a broad strengthening of the local food system. Each group brought its own local supply chains to the table as well as its own network of community organizations that could receive the boxes. Our model allowed each of the eight mini food hubs to set their own priorities: there was Sanzuma farm in San Rafael, which delivered boxes directly to the homes of COVID-19 positive families; Pie Ranch and Spade and Plow Farms used this project as a catalyst to become Good Agricultural Practices (GAP) certified; Frog Hollow Farm built a stronger relationship with its area school districts, which pledged to begin purchasing their fruit directly; Veggielution delivered its boxes door-to-door and used its boxes to build stronger community relationships; Agricultural Institute of Marin, a farmers market organization, purchased produce from the farmers at its markets to help them recover from the lost business due to

shrinking market attendance; Edible Schoolyard worked in Stockton to use their boxes to educate families about the values of eating organic; and finally, Gill Tract Farms in the East Bay directed its boxes to a network of social and racial justice organizations.

In times of emergency, we are quick to look to food banks for relief. And it is true; food banks are the most efficient system to distribute food to families struggling to put any on the table. However, when COVID-19 hit, food banks were hit extremely hard; at the same time they saw a skyrocketing need, they had to suspend distribution through many of their normal channels due to shelter-in-place restrictions. Our project demonstrates that with a little bit of centralized support, local farms can be activated as emergency food responders in as little time as food banks. To achieve this, we do not need to build anything new; we only need to direct more resources to local farmers. Local farms are resilient by nature. A resilient food system is one that builds linkages between those farms and allows them to set their own course.



COMMENTARY ON COVID-19 AND THE FOOD SYSTEM

Immediate impacts of COVID-19 measures on bean production, distribution, and food security in eastern Africa

JAFSCD
Responds to
the COVID-19
Pandemic



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Abstract

The outbreak of coronavirus was expected to adversely affect African countries more than any other region in the world. This assertion was based on the existing conditions in sub-Saharan Africa that exposed the region to the dire consequences of the pandemic. Previously existing underlying conditions that affected the food system include a high dependence on trade for inputs supply, the adverse effects of climate change, crop pests and diseases, poverty, low input use, weak institutions and ineffective policies, and insecurity and conflicts. We collected data from farmers, aggregators, bean research coordinators, and urban and peri-urban consumers in five Eastern African countries in order to describe the immediate impacts of the pandemic on the bean value chain. Access to seed and labor appear to be the

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most critical impacts of the pandemic on bean production. There are observable differences in patterns and frequency of bean consumption in these regions, suggesting that the effect of the pandemic depends on the level of implementation of containment measures and pre-COVID-19 underlying conditions that affect the food systems. In the mid to long-term, the pandemic may disrupt food systems, resulting in hunger, malnutrition, and food insecurity. Thus, governments should support farmers and businesses in becoming resilient to exogenous shocks through increased efficiency in supply chains, capacity building, and the adoption of modern digital technology.

Keywords

Food System, COVID-19, Pandemic, Common Bean, Labor, Inputs, Value Chain, Eastern Africa

Introduction

Common bean is the most grown and consumed legume in Africa, especially in Eastern African countries (Figure 1). Beans, as a source of cheap protein and micronutrients (iron and zinc), have been earmarked as vital to improving and safeguarding rural incomes, food security, and nutrition (Nassary, Bajukya & Ndakidemi, 2020). However, beans are mostly grown by smallholder farmers, who are disproportionately affected by the adverse effects of climate change (Pais, Jayaram, & van Wamelen, 2020; Pratt, 2015). Most smallholder farmers in the region are low consumers of agricultural technology such as certified seed and fertilizer, relying mostly on saved seeds. Furthermore, the region relies on trade for the supply of farm inputs. Thus, the implementation of coronavirus containment measures and cross-border restrictions threatens to slow down beans' contribution to the achievement of the United Nations Sustainable Development Goals number 1 and 2 (Nchanji et al., 2020).

This commentary is based on survey data collected from six countries in the eastern African bean corridor per the Pan African Bean Research Alliance (PABRA) classification: Kenya, Uganda, Tanzania, Burundi, and the Democratic Republic of Congo (DRC). Governments have been implementing multiple public health policies with varying degrees of strictness since March, when the region first started reporting cases of the coronavirus. Kenya and Uganda, guided by their respective constitutions and public health policies, responded expeditiously. For instance, Kenya imposed absolute restrictions on movement from four high-risk counties, a partial lockdown by declaring a dusk-to-dawn curfew, and closed its borders to only allow essential movements. The Ugandan government declared a lockdown in March, banned transport within the country, closed its borders, and imposed stay-at-home orders. In

Figure 1. Diverse Common Bean Grown by Smallholder Women Farmers in Uganda, Africa



Photo by 2016CIAT/Georgina Smith.

contrast, Tanzania and Burundi were more relaxed in their actions to combat the spread of the virus. The Tanzanian government prioritized its economy and relied on “divine protection.” At one point, the Burundian government deported World Health Organization officials for criticizing its laxity in implementing reasonable measures to contain the spread of the virus.

COVID-19’s Impacts on Bean Production

Nearly one-third of farmers we surveyed in the region reported that the pandemic had disrupted their access to seed and caused a rise in the prices of inputs and labor. Farmers’ responses are further supported by bean aggregators, who mentioned that they faced challenges in distributing seed to contracted farmers. Bean program research coordinators in different countries projected that the pandemic would reduce the production of certified seed due to difficulties in mobilizing labor for seed production. The preliminary findings confirm concerns that the pandemic would disrupt the input supply system (Rubyogo, Nchanji, Mabeya, Onyango, & Ngombalu, 2020).

The levels of strictness in the application of coronavirus containment measures differed by country, suggesting possible differences in the impact of COVID-19 on bean production. Whereas more farmers in Uganda and the DRC reported that bean production was impacted by COVID-19, those in Tanzania and Burundi were least affected by the pandemic (Table 1). The results appear to confirm Burundian and Tanzanian governments’ skepticism about COVID-19, with Tanzania declaring that it was coronavirus-free in under two months after it recorded its first case. The seed unavailability problem was dire in the DRC compared to other countries in the bean corridor. On the other hand, the high price of labor was identified by Tanzanian farmers as the main challenge. While drastic and strict measures in Kenya resulted in high costs of labor and inputs, they caused fertilizer unavailability and low bean grain prices and demand in Uganda.

Impact on Bean Distribution and Trade

The impact of containment measures is transmitted directly to businesses involved in downstream bean value chain activities. First, aggregators in Kenya, Tanzania, and Uganda indicated that the pandemic affected the volumes of grain they transacted because of the closure of informal markets and schools. The pandemic has compelled aggregators to scale down business operations due to high logistic, transport, and storage costs. Before COVID-19, bean trade volume had increased to 18,000 metric tons (19,842 short tons), which was 18% higher than the first quarters’ average in five years (Market Analysis

Table 1. COVID-19 Effects Disaggregated by Country, Eastern Africa

COVID-19 effects	Kenya	DRC	Tanzania	Uganda
High prices for hired labor	22.22	1.22	63.64	
Higher prices for inputs	22.22	19.51		
Low demand in the market	22.22		9.09	21.43
Fertilizer unavailability	11.11	1.22		14.29
Low price in the market	11.11	6.1	9.09	28.57
Difficulties in transporting the harvest to the point of sale	11.11		9.09	14.29
Seed unavailability		47.56		
Delay in planting		15.85		
Delayed harvest		8.54		7.14
Difficulty in accessing agronomic information			9.09	14.29

Subgroup, 2020). Thus, according to aggregators, processors, and coordinators, the pandemic has harmed bean trade volumes in the region.

Impact on Food Security

In Eastern Africa, common bean is grown mostly for household consumption, with the surplus sold to the market. Here we provide a brief overview of the descriptive results of the possible effects of COVID-19 on food consumption in rural and urban areas during the COVID-19 pandemic. Nearly half (49%) of the farmers did not change bean consumption patterns during COVID-19, while the rest changed. While less than a fifth of them ate less bean, one-third ate more bean during COVID-19 (Figure 2). Turning to peri-urban and urban consumers, more than half (56%) indicated that their bean consumption patterns had not changed, a fifth (21%) and nearly one-quarter (23%) reported they consumed less bean and more bean during the pandemic, respectively.

The results show that the frequency of bean consumption was reduced in urban and peri-urban areas during COVID-19, with Uganda, Burundi, and the DRC being most affected (Table 2). This could be attributed to transportation challenges experienced during the pandemic. In contrast, bean consumption frequency in Tanzania increased during the pandemic, possibly due to less strict containment measures. Most urban consumers rely on the informal market for bean grain supply. Therefore, the market closure

Figure 2. Changes in Food Consumption Patterns in Rural, Urban, and Peri-urban Areas of Eastern Africa During the COVID-19 Pandemic, 2020

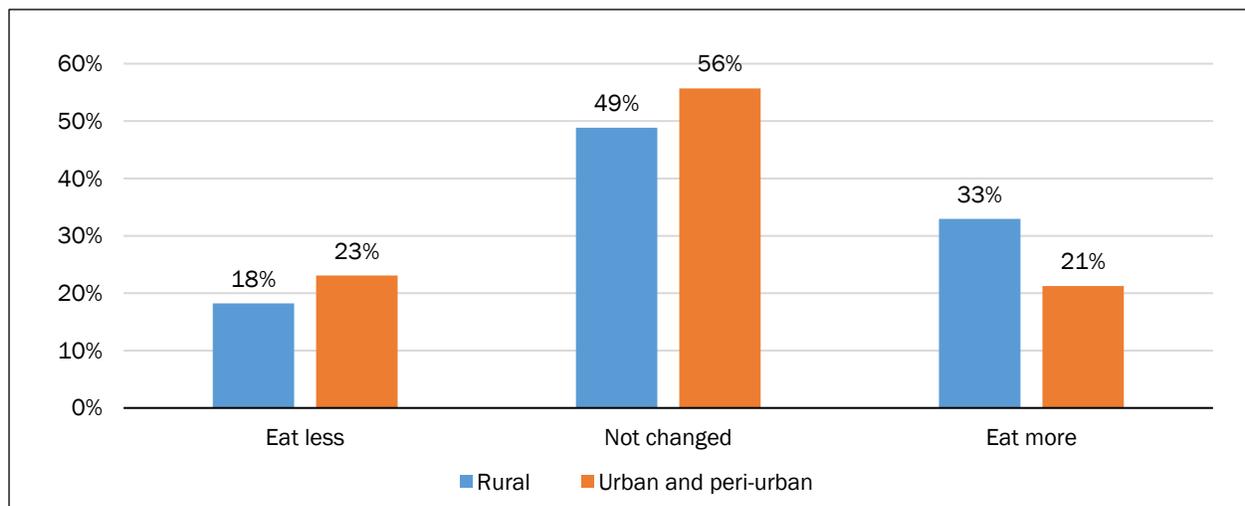


Table 2. Proportions of Consumers' Frequency of Bean Consumption a Week Before COVID-19 (in February 2020) and During COVID-19 (in July 2020) by Country, Eastern Africa

	Before COVID-19					During COVID-19				
	Everyday	>Thrice	Thrice	Twice	Once	Everyday	>Thrice	Thrice	Twice	Once
Burundi	67.57	8.11	10.81	13.51		40.54	10.81	24.32	24.32	
Kenya	2.86	14.29	25.71	34.29	22.86	2.86	5.71	20.00	40.00	31.43
DRC	31.11	17.78	31.11	15.56	4.44	20	15.56	20	24.44	20.00
Tanzania	5.36	46.43	16.07	25.00	7.14	6.25	53.57	13.39	19.64	7.14
Uganda	2.27	6.82	11.36	20.45	59.09	27.27	15.91	15.91	22.73	18.18

and restricted movement from production hubs limited consumers' access to and availability of beans in urban areas.

Conclusion and Policy Implications

Preliminary results show that COVID-19 measures have had an unprecedented impact on bean value chains across Eastern African countries. The pandemic has affected bean production by limiting farmers' access to seed and fertilizer and creating low grain prices and low demand. The pandemic has also affected the distribution of seed and grain by aggregators, affecting their business models and forcing them to scale down business operations. The containment measures have impeded cross-border trade. For these reasons, the pandemic is a threat to achieving the global goals of reducing hunger, malnutrition, and poverty. In the meantime, Eastern African countries need to address the immediate and short-term impacts of the pandemic by:

- Strengthening existing farmer support programs to improve access to and availability of seed and other inputs;
- Supporting businesses in developing new and resilient business models with an emphasis given to digitizing business operations and capacity building; and
- Classifying agriculture as an essential sector and agricultural workers as essential service providers.



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COMMENTARY ON COVID-19 AND THE FOOD SYSTEM

Nimble in a pandemic: Lessons learned from Concrete Jungle’s Grocery Delivery Program

**JAFSCD
 Responds to
 the COVID-19
 Pandemic**



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As a leader in Atlanta’s fresh produce supply chain for people with limited access to fruits and vegetables, Concrete Jungle (CJ) has established a robust network of partnerships with food and social service community organizations to support Atlanta’s food-insecure population. Founded in 2009, CJ is an Atlanta-based nonprofit organization that coordinates approximately 1,700 volunteers annually to pick produce within the city and across Georgia and delivers it to community food distribution partners. CJ staff and volunteers also lead healthy food recipe demonstrations. To date, CJ has picked 158,292 pounds (633,169 servings) of produce within Atlanta and across Georgia.

The relationship between food insecurity, low produce consumption, and increased prevalence of chronic diseases is well documented. Evidence shows that food-insecure individuals are more likely to have high blood pressure and type 2 diabetes (Gucciardi, Vahabi, Norris, Del Monte, & Farnum, 2014; Weinfeld et al., 2014). And, while increased fruit and vegetable consumption can lower the risk of developing these and other chronic conditions, food-insecure people are less likely to have access to fresh produce (Boeing et al., 2012; Hung et al., 2004; Volpe, 2019).

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Acknowledgments

The authors wish to acknowledge the staff and volunteers at Concrete Jungle who have worked tirelessly to ensure that food supplies are not disrupted for Atlantans impacted by food insecurity and COVID-19.

In this commentary, we describe how Concrete Jungle leveraged its food collection and distribution model, along with its partners and volunteer base, to ensure that food-insecure people did not go hungry during the initial months of the COVID-19 pandemic. We also consider some of the challenges in sustaining this model.

Response to COVID-19: Timeline and Need

In March, CJ staff realized that the community spread of COVID-19 would drastically limit the organization's ability to operate normal programming. The staff recognized the urgent need to maintain the fresh produce supply chain while mitigating the risks of COVID-19 for client and staff health. In addition, the city of Atlanta's emergency policies precluded community food pantries from maintaining normal operations. City officials specifically informed one of CJ's food partners, the Southwest Ecumenical Emergency Assistance Center (SWEEAC), that the organization could no longer operate because of potential client COVID-19 infection.

On March 23, 2020, CJ staff met food pantry clients outside SWEEAC to assess their interest and the feasibility of pantry grocery home delivery. The response was overwhelmingly positive, and 20 clients signed up immediately. News spread that CJ was offering this service, and soon seniors and families were calling CJ to be added to the list for grocery delivery. United Way soon began using its 2-1-1 line to advertise the nascent food delivery program.

By the end of March, CJ launched the COVID-19 Grocery Delivery Program (GDP) to serve food-insecure Atlantans who self-identify as being at high risk of COVID-19. CJ provided no-contact deliveries for 90 families in the program's first week, 180 families in the second week, and over 400 households in June. As of July 31, 2020, 300 families were receiving weekly deliveries.

The Grocery Delivery Program

The GDP uses three no-contact methods to deliver groceries: food pantry suppliers, grocery depots, and family sponsorships. Having these different methods allows CJ to maximize the program's impact by using different resources and partnerships.

Food Pantry Suppliers

Food pantry partners create one week's worth of groceries, including produce and shelf-stable food for clients. CJ supplements the grocery boxes with recovered produce. Volunteer drivers pick up the boxes from pantries and make a no-contact delivery to clients on a specified list.

Grocery Depots

CJ purchases and aggregates donated groceries at two "depots" located near clusters of clients. Depots are sites that are shared with other social service organizations that have refrigerator space to share with CJ. Volunteer drivers pick up from the depots and make no-contact deliveries. Perishable items, such as meat and dairy, are available biweekly.

Family Sponsorships

In family sponsorships, CJ matches volunteers to food-insecure households. Volunteers purchase weekly groceries for a specific household and make no-contact delivery. Seasonal produce comes from partner organizations and Georgia farmers. CJ provides volunteers with suggested shopping lists.

Volunteers

CJ has always relied on an army of committed volunteers, who are the organization's greatest asset. To launch the GDP, CJ tapped its volunteer database to recruit packers, delivery drivers, and client callers.

The GDP engages approximately 150 volunteers weekly for shopping, packing, and delivery, as well as managing communications and logistics.

Partnerships

Throughout COVID-19, partnerships have played an important role in supplementing produce delivery and providing social support for clients who need more support than just food, such as mental health or housing assistance. Without these partnerships, CJ would not be able to advance its mission.

Challenges and Next Steps

Despite GDP's initial successes—a rapid scale up of a multifaceted model to engage all levels of volunteers, as well as critical partnerships—four key challenges exist.

1. As people adapt to their “new normal,” volunteer fatigue is setting in. While sponsors have shown great generosity through client sponsorships for months, many have discontinued their support. CJ is spending more time recruiting volunteers.
2. Clients' needs go beyond food donations, including housing support and mental health services. CJ has resource lists for clients, but clients frequently need additional support.
3. Emergency funding opportunities and the partnership landscape have changed since the initial period, threatening overall sustainability as CJ takes on more direct expenses.
4. Finally, CJ is a small organization, with two full-time employees and several part-time staff. GDP operation requires a majority of staff time, plus commitment from many volunteers. While GDP is needed in the community, CJ's staff need to ensure that its other programs do not suffer.

One way that CJ is addressing these challenges is by conducting a community assessment to better understand client perspectives about the program, and by potentially shifting to a nutrition education program.

CJ is operating in an environment devoid of coordination on a larger scale. If a larger and better-resourced entity, such as the Atlanta Community Food Bank or the city of Atlanta, coordinated a plan with local food donation organizations, CJ could better meet the needs of the community. By outlining each organization's approach and the communities they serve, we can identify overlapping services, find program inefficiencies, and discover gaps in service that, when addressed, could have a positive effect for food-insecure Atlantans.

Conclusion

Early in the pandemic, CJ rapidly pivoted its food distribution model and developed a program to safely serve food-insecure households. As COVID-19 continues into 2021, CJ must critically assess how best to serve our community while meeting our organizational mission and remain a viable organization. CJ's experience during the COVID-19 pandemic demonstrates that small, grassroots volunteer networks can serve hundreds of food-insecure households safely during an emergency; however, these households deserve fresh produce and healthy staples at all times. Lessons learned from CJ's GDP can inform future programming for food-insecure populations in a post-COVID world. 

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COMMENTARY ON COVID-19 AND THE FOOD SYSTEM

The impact of COVID-19 on food security and income of women farmers in South and Southeast Asia

JAFSCD
Responds to
the COVID-19
Pandemic



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Abstract

The COVID-19 pandemic has disrupted and adversely affected all sectors of the economy and society. This essay provides an overview of the impact of the pandemic (and associated lockdowns) on the food security and income of women farmers in South and Southeast Asia. It also lists the coping strategies applied by them to reduce the impact.

Keywords

COVID-19, Pandemic, Women Farmers, Food Security, Income, Asia

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Author Note

Both authors contributed equally to the essay.

“Everything is challenging with this pandemic and the quarantine. It was already challenging for us and is even more difficult now. Our household income dropped drastically, no one wants to buy raw rubber anymore now, so my husband had stopped tapping. I have a small kiosk selling daily staple, but even that also has less customer now. We are relying for our daily needs on these vegetable crops we grow around the house”- Siti Aisah, Indonesia.

The impact of the coronavirus pandemic throughout 2020 was very disruptive. By the end of September 2020, more than 30 million COVID-19 cases had been reported and more than one million people had died globally.¹ The pandemic has strained supply chains, prevented agricultural activity, affected the sustainability of food systems, and caused economic slowdowns.

Women, in particular, have faced the worst of the impact of COVID-19. **Tandra Biswas** from Bangladesh, who depends on dairy farming, saw her income decrease by half. She said, “I was near to stopping my elder daughter’s education as [the] price of milk drastically declined due to [the] pandemic and it hit [the] family income.” Tandra Biswas reflects the emotions of the many women who depend on single source of income that has been affected by the pandemic. Farming depends significantly on the timely availability and cost of inputs, availability of labor, and the presence of a market for the products. A rapid assessment conducted by Solidaridad in July 2020 highlighted the plight of women who were left vulnerable due to a lack of access to technology, financial credits, input supplies, and markets.² Women who had planted crops prior to the COVID-19 pandemic found themselves stranded without labor to harvest the crops: “I have started vegetable cultivation on my own along with household chores as this pandemic has disrupted [the] mobility of migrant workers,” said **Nomita Rani Biswas**, one of the better-off women farmers in Bangladesh.

More than one-third of the women interviewed by Solidaridad reported reduced income, which they attributed to the decrease in agricultural and off-farm work. **Ms. Karuppaiya** from Sri Lanka had to resort to selling vegetables to keep her children fed: “My husband lost his job on April 1 due to COVID-19. Our income [is] reduced and it is a hard time paying for food for adults and children. I managed to sell some vegetables to cover the household expenses. Meanwhile, [I’m] looking forward to start up a household business to increase the income within a month.”

Income has been a key driver in ensuring food security. The study found that due to their reduced incomes, half the women interviewed in Bangladesh and more than two-thirds of the women interviewed in India, Sri Lanka, and Indonesia have not been able to afford three meals a day. The major reasons cited are loss of income in the family and/or household, loss of cash to buy food, and lack of accessibility to food items due to market closure and movement restrictions. “COVID-19 has made it hard to afford food for the adults and children in my household. My husband lost [his] job abroad, so we had to move to my mother’s house to feed the children,” said **Sundaram Balakumari** from Sri Lanka.

Food security cannot be looked at separately from access to drinking water. Respondents in India (12%) and Sri Lanka (18%) found it difficult to ensure sufficient drinking water for themselves and their household during lockdown. None of the respondents in Bangladesh or Indonesia reported water insecurity (see Figure 1), likely because the respondents are located in the water-rich delta areas of these two countries. The adverse effects of reduced access to safe drinking water reported by them include dehydration, weakness, a loss of overall health, an increase in expenditures on health care, and an increase in household vulnerability.

¹ <https://www.worldometers.info/coronavirus/>

² The rapid assessment conducted in Bangladesh, India, and Sri Lanka in South Asia, and Indonesia in Southeast Asia

While the pandemic has caused a lot of suffering and distress for women farmers, we can also see them fighting through the difficulties and finding out solutions to mitigate their problems. To make up for the income loss, **Moyna Begum** from Bangladesh made 750 cloth masks and sold them in the community. Similarly, **Tandra Biswas** started to do aquaculture (along with dairy production) to

compensate for the loss of income due to the reduced price of milk. Similarly, **Listiani** from Indonesia started growing vegetables with help from her husband (who had lost his job due to COVID-19) to sell in the nearby market. Further steps for alleviating the adverse impacts of COVID-19 on food systems through a gendered lens may include a strong role for public agencies in increasing access to safe and nutritious food and water through public distribution, cash transfers to women's bank accounts, the promotion of collective-based livelihood activities for women, priority health centers for women, and intensive digital outreach targeted at women in their local language.

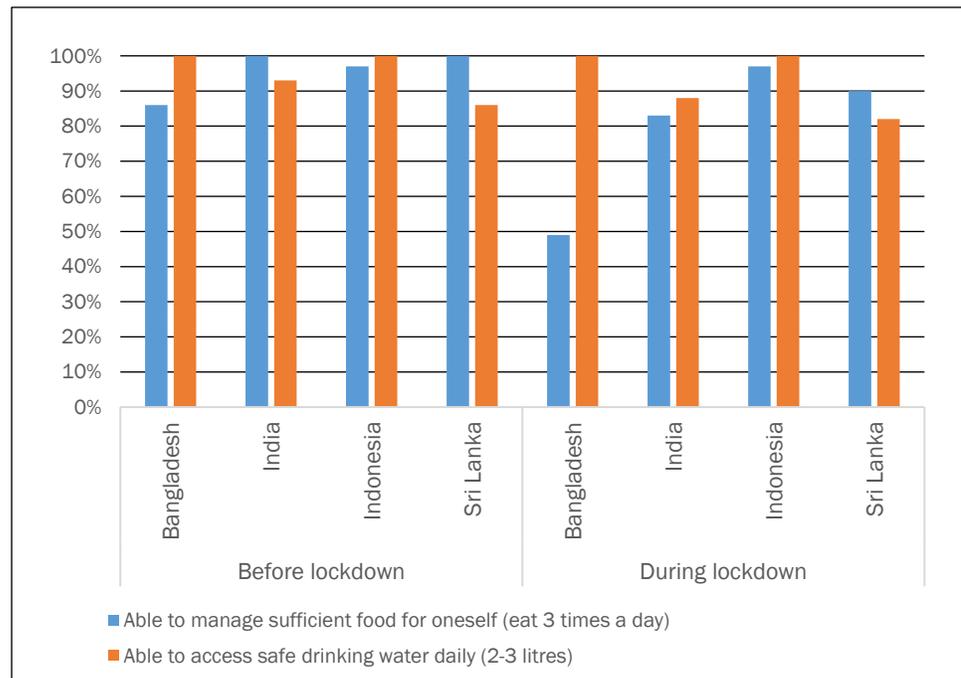
Solidaridad Asia has been at the forefront of making economies that work for the poor and are inclusive and in balance with nature. Over the last decade, the Asia office of the Solidaridad Network has worked on different commodity supply chains to make them inclusive and sustainable. By reaching out to 500,000 farmers with information and training, we have brought nearly 700,000 hectares (1.7 million acres) of land under sustainable management. During the pandemic, in addition to providing relief support, Solidaridad Asia has also reached out to its program beneficiaries in different countries to understand the effect of the pandemic at various levels in the supply chain in order to come up with long-term strategies for mitigating the impact of the pandemic.

Apart from being a health crisis, this pandemic is a food security and economic crisis. The lockdown aimed at containing the pandemic, however, has had interlinked and far-reaching adverse ramifications for women farmers, through multiple pathways including the triad of agri-market-income shock and reduced access to food and water. A sustained effort in ameliorating these issues is greatly needed at this time.

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We are grateful to Dr. Shatadru Chattopadhyay, Managing Director, Solidaridad Asia, and Nitin Rao, Regional Lead (Planning, Monitoring, and Evaluation), Solidaridad Asia for their guidance and helpful comments on an earlier version of the manuscript.

Figure 1. Access to Food and Drinking Water Across Four Countries



COMMENTARY ON COVID-19 AND THE FOOD SYSTEM

Case study of a food relief grocery model: The Neighborhood Pop-Up Grocery Project

**JAFSCD
Responds to
the COVID-19
Pandemic**



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Abstract

In Austin, Texas, Sustainable Food Center, in partnership with Foodshed Investors and the city of Austin, responded to the COVID-19 crisis with a mini-grocery pilot project. The Neighborhood Pop-Up Grocery Pilot Project engaged local restaurants to serve as points of access for fresh and affordable food. This model served as both a food-access and supply-chain solution, utilizing partnerships with local farmers and distributors to source food for Austin communities and restaurant partners in order to

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This project was paid for by the City of Austin.

provide the food at an affordable price point. This case study outlines the novel model and describes three key takeaways from this 2020 pilot project.

Keywords

Food Relief, Local Food Movement, COVID-19, Pandemic, Food Distribution

Introduction

In Austin, Texas, Sustainable Food Center, in partnership with Foodshed Investors and the city of Austin, responded to the COVID-19 crisis with a minigrocery pilot project. The Neighborhood Pop-Up Grocery Pilot Project (“Grocery Project”) engaged local restaurants to serve as points of access for fresh and affordable food, allowing families to travel less distance than to full-service grocery stores and also to reduce COVID-19 exposure to others in high-traffic, full-service grocery outlets, while bringing additional sales outlets to local restaurants and farms. This pilot project operated from March 2020 to September 2020; impact metrics are shown in Table 1.

Overall Impact Metrics of the Grocery Project

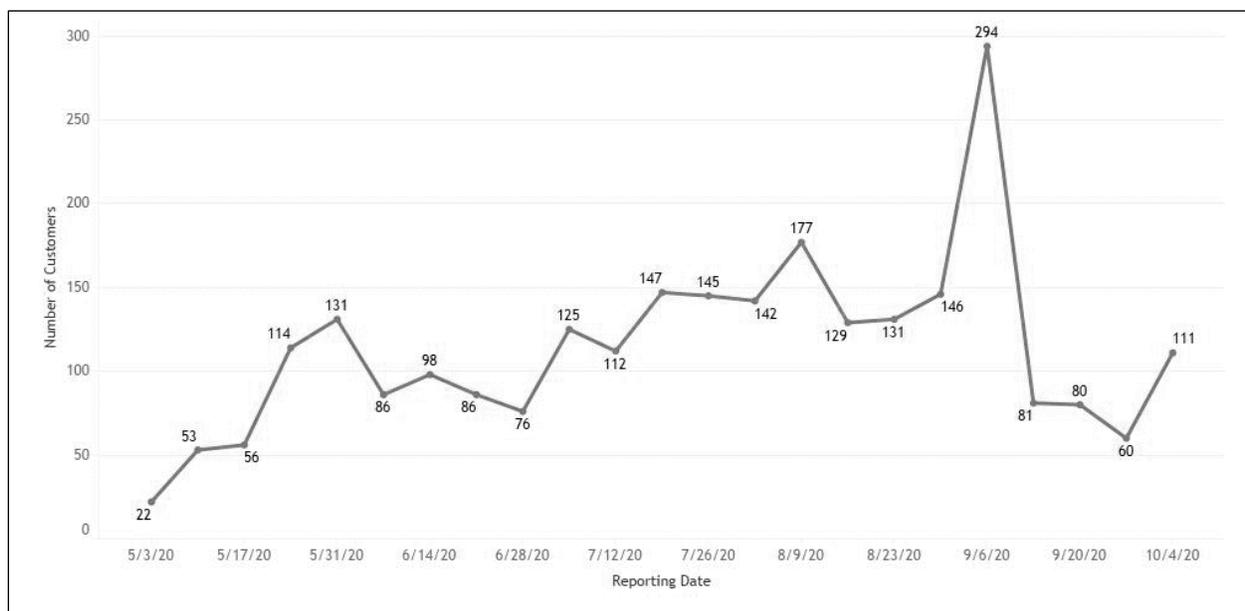
Metric	Unit
Amount spent on procuring local food (US\$)	\$84,970.77
Amount of revenue generated for local restaurants (US\$)	\$34,744
Total number of customers served	2,597

The Model

The Grocery Project sourced local food and donated it to locally owned restaurants, which then offered it for sale below the market price to their customer base. This project was focused exclusively on raw grocery items; prepared meals and food items were not part of the program.

The Grocery Project served as both a *food-access* and *supply-chain* solution, utilizing partnerships with local farmers and distributors to source local food for Austin communities and restaurant partners in order to provide the food to their communities at an affordable price point. Local restaurants were selected as partners in the project based on the under-utilization of restaurant space and labor in the first

Customers Served by Week by the Neighborhood Pop-Up Grocery Project





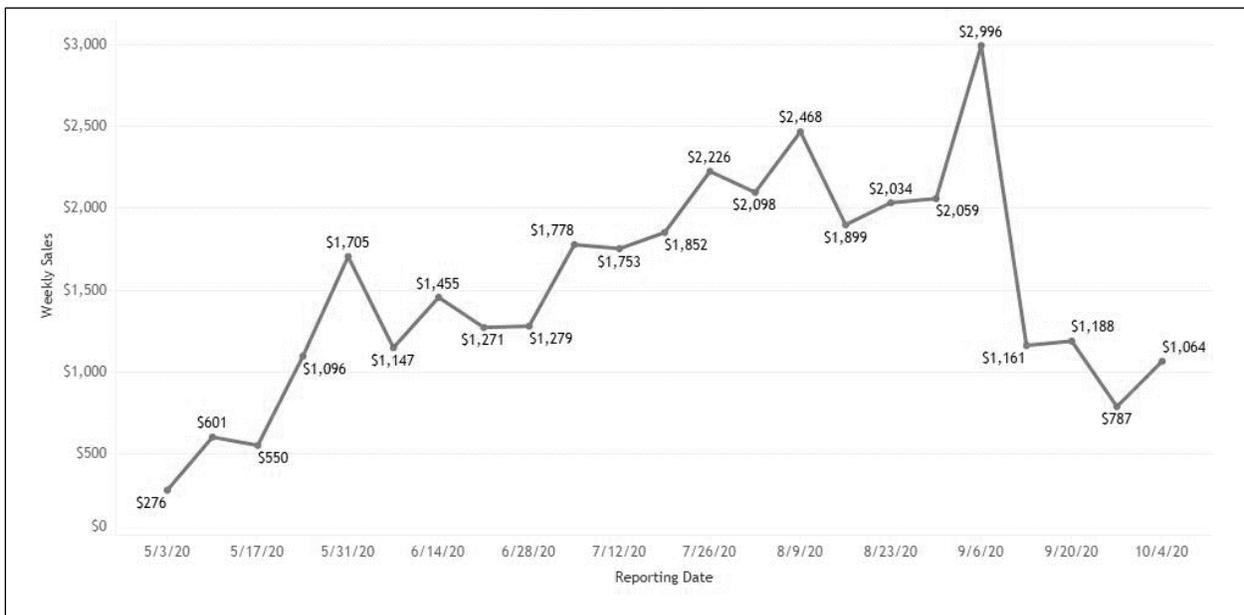
Boxes sit in a van beside The Common Market's delivery truck, waiting to be distributed to Austin restaurants, courtesy of Sustainable Food Center.

few months of the pandemic, and on their ability to target specific neighborhoods where they held community trust and an established customer base. This pilot project needed to meet the fast pace of the pandemic on a limited budget, so leveraging existing connections between customers and restaurants allowed for implementation across the city with minimal marketing. Furthermore, as food access was the primary focus of this project, engaging restaurants enabled the Grocery Project to serve areas with limited or no access to full-service grocery options.

Restaurants were supplied weekly with locally sourced mixed produce boxes, which were supplied by the Houston-based food hub The Common Market. Most restaurants also opted into additional grocery products, such as local eggs, yogurt, and pantry staples, which were supplied either directly by local farms or the Austin-based food hubs Farmhouse Delivery and Farm to Table Texas.

The project was funded by a US\$112,000 allocation from the Austin City Council emergency COVID-19 aid fund. For the purchase of produce and other staple food items, 75.5% of the funding went directly to farmers or food hubs; 24.4% went to advertising the pop-up grocery locations, PPE, delivery costs, and needed supplies; and less than 1% went to an intern supporting the project.

Neighborhood Pop-Up Grocery Project's Restaurant Partner Sales by Week



Key Takeaways

The Neighborhood Pop-Up Grocery Project (Grocery Project) was initiated in response to the COVID-19 crisis to backfill necessary food access services and support two crucial economic sectors: agriculture and local restaurant businesses. As the COVID-19 crisis continues and further social and economic damage mounts, projects such as the Grocery Project and other crisis relief efforts are critical components of the food access emergency response across the United States. The project team has identified three key takeaways from the project's six-month pilot operation.

1. Building relationships and trust takes time. Our work with local restaurant business owners has been a huge asset with immense potential and deep value to future food access work.

The project team has laid the groundwork with local restaurant business owners by building trust and cooperation among Austin's social good sector and its food business owners, an effort critical to its success. As most had never before worked on food access initiatives, local food business owners were scrambling to continue to serve their customers in the ways that mattered most to them. While the concept of the Grocery Project piqued partners' interest, much groundwork was necessary to shape a food access solution that also held beneficial outcomes for the restaurants themselves.

In six months, the project team successfully developed and nurtured relationships with Austin business owners to open pop-up grocery sales inside their restaurants. Critical to this success was the time spent articulating the needs and goals of the restaurants and the value they bring to food relief efforts in their own neighborhoods. In this time of crisis, collaboration between public and private sectors is crucial, and relationships are a major asset in addressing the unprecedented food access challenges to come.



Out of the sun, a towering pallet of farm-fresh veggie boxes awaits distribution, courtesy of Sustainable Food Center.



A delivery person sets up farm-fresh veggie boxes in a local restaurant, to be sold later that day, courtesy of Sustainable Food Center.



A delivery driver hands restaurant staff farm-fresh veggie boxes, courtesy of Sustainable Food Center.

2. This project is providing value to local businesses and consumers but relies exclusively on government subsidy.

The Grocery Project provides restaurant partners with free, farm-fresh food to help boost their businesses and feed consumers, and is subsidized by a government contract. While this model fills a critical gap right now, continued support beyond this stop-gap measure—for this and other programs investing in good, local food—will help ensure long-term vitality of our food system.

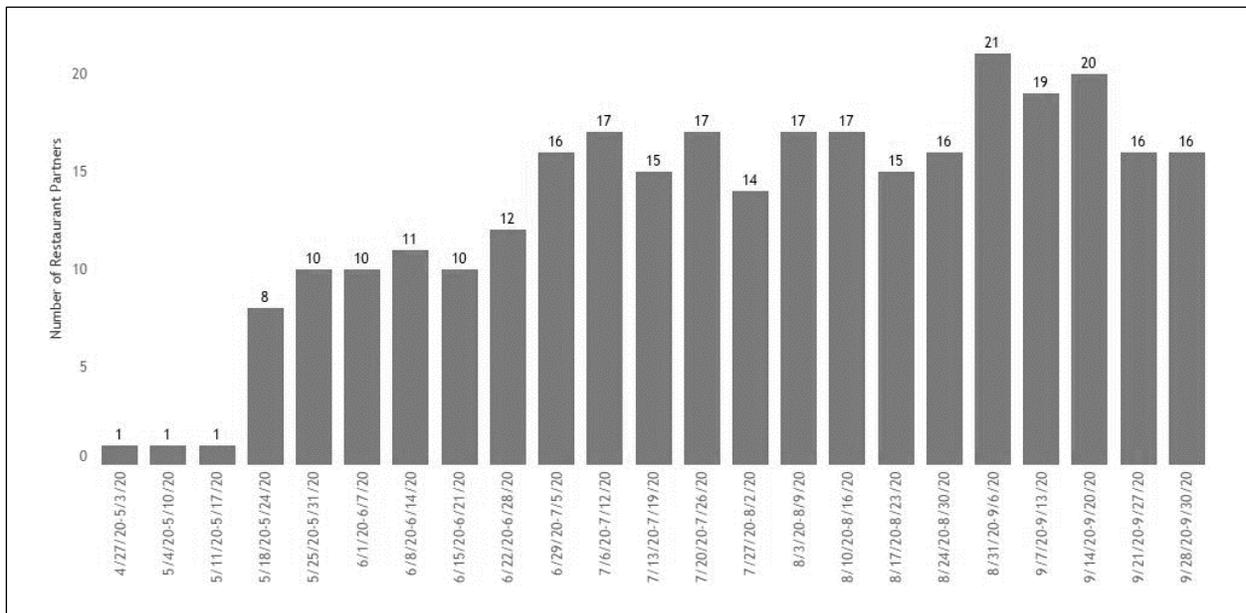
The federal government currently spends billions of dollars on food subsidies, both for commodity farmers and for grocery shoppers at and below the poverty line.

This project touches both ends of the supply chain, and by supporting local food it also cultivates the kind of secondary services that local food and farmers provide: local economic activity, care for local ecosystems, and protection of the safety of those producing and consuming the food products. If we want to build a more just, equitable, and resilient food system, we must invest public dollars in innovative models, like the one described in this case study.

3. Building new, localized supply-chain pathways is vital to building a more resilient food system.

The COVID-19 pandemic has laid bare the deep and fundamental flaws in our food system and supply chains, underscoring the urgent need to remake regional food systems. We must invest resources in

Neighborhood Pop-Up Grocery Project’s Restaurant Partners Over Time



concentrating on economic justice, food access, and long-term resiliency. The Grocery Project converges around local food, local farmers, and the communities they serve. By building connections between farmers and local restaurants, this project forges new supply channels that keep dollars local, allows for community-level solutions, and ensures good and fair labor practices. In addition, this works to shorten supply chains by reducing intermediaries, in the long term protecting them from and allowing them to recover from disruptions more easily. Local food, local businesses, and local control means a more resilient system. It means a system that protects consumers, local economies, and our food future.

Questions on this case study? Email info@sustainablefoodcenter.org.



COMMENTARY ON COVID-19 AND THE FOOD SYSTEM

A food nonprofit's response to COVID-19: The Common Market leans on its mission to serve

JAFSCD
Responds to
the COVID-19
Pandemic



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The Common Market is a nonprofit regional food distributor with a mission to connect communities with good food from sustainable family farms. Outputs of their work include improved food security, farm viability, and community and ecological health. The nonprofit services communities in its three active regions—the Mid-Atlantic, the Southeast, and Houston, Texas—by delivering healthy farm food to the institutions that serve them: schools, hospitals, eldercare facilities, early childhood education centers, etc. As the COVID-19 pandemic struck the nation, it shut down some of the nonprofit's conventional wholesale outlets and exposed and intensified the issue of food insecurity throughout the country. The food hub prepared to lean on its mission intensely and creatively under these unprecedented circumstances. Poised to test the limits of a regional food system, The Common Market unveiled the resilient spirits of its team, its partners, and the family farms that make up its network. This essay highlights partnerships that ignited meaningful impact for their farmer partners and helped meet the needs of vulnerable populations amidst the pandemic.

“In the pandemic economy, nearly one in eight households doesn't have enough to eat. The lockdown, with its epic lines at food banks, has revealed what was hidden in plain sight: that the struggle to make food last long enough, and to get food that's healthful—what experts call 'food insecurity'—is a persistent one for millions of Americans.” (Kenneally, 2020)

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These words kicked off a photo essay produced by *The New York Times* from September 2, 2020, months after the COVID-19 pandemic swept through our nation. It is these harsh, difficult-to-stomach realities that The Common Market hopes to rectify through each partnership, through each delivery, and through each and every case of food.

The Common Market's mission is to connect communities with good food from sustainable family farms. Our food nonprofit's successes reflect improved food security, community and ecological health, and farm viability.

As a pandemic hit our nation and exposed and intensified food insecurity throughout the country, we knew we'd be leaning on this mission intensely. A few weeks into 2020, we were poised to test the limits of a regional food system—and ultimately prove its resilience.

Our teams, based in Philadelphia, Atlanta, and Houston, pivoted quickly in response to COVID-19 and the immediate needs of our partners. The ecosystem of organizations and support that came together to keep our communities fed was remarkable—from farmers to foundations, from public policy to community pantries. This collective effort contributed to more than 915,000 individual boxes of good food distributed, the purchase of more than 10 million pounds (4.5 million kg.) of produce, dairy, and proteins, and the support of nearly 100 family farms over the course of six months.

In mid-March 2020, we spoke directly and candidly with our farmer networks. Challenges around their crop plans and futures were flung at them with full force. How could they keep their families and staff working? How would they adapt? What portion of their markets could we help preserve?

“At our first board meeting following the outbreak, we questioned as a group: ‘What should we do? Plant less?’”, shared Geoff Bucknum, operations and sales coordinator with Sunny Harvest, a longtime farmer partner of ours located in Kirkwood, Pennsylvania.

“The rational parts of our brains thought that we had to reduce potential waste. But then all of our instincts said: ‘We need to press on.’”

We knew that our vulnerable communities facing hunger would be finding themselves in dire situations, too. Even normally food-secure individuals and families would be entering into new, unstable territory. We saw this firsthand.

“I am in my 60s and live in Jackson Heights in New York City in what is now the deadliest area of the Earth due to coronavirus. I remain healthy, but don't wish to walk outside and signed up for a free food delivery service operated by the City of New York.

“Some of the food I had received was poor quality, canned and sugary. But yesterday your box came with fresh bread, dried beans, potatoes, a beet, kale, canned crushed tomatoes, and Cheddar cheese.

“My first thought was that someone wants me to live and it almost brought tears to my eyes.

“Thank you so very much for helping me and I am glad we in New York can be an outlet for your farmers.”

Our team received this email message from a New Yorker named Janice in mid-April, about one month after the COVID-19 pandemic landed and threatened our communities.

Our Mid-Atlantic chapter signed a contract with New York City in April to deliver boxed food as part of its GetFood NYC COVID-19 Emergency Food Distribution Program, an effort to provide nourishment to sheltered-in-place New Yorkers (City of New York, 2020).

Overnight, our drivers became frontline workers; our teams, spanning all departments, and our farmer partners became more essential than ever.

In advance of and in preparation for relationships like this one, our teams put their heads together

and worked alongside our farmers to conceive the “Farm-Fresh Box Program.”

The program is designed to be a safe solution to food access for organizations looking to provide their communities with individualized boxed fruits, vegetables, and other healthy, culturally appropriate foods. Our Farm-Fresh boxes came delivered in a food-safe, self-contained box that required minimal handling and maximum efficiency. In addition to nourishment and community food access, it would provide much-needed revenue for our family farms.

To bring this weekly sustenance to New Yorkers, The Common Market Mid-Atlantic leveraged its farmer and producer network, which includes Lost Bread Co., a Philadelphia-based baker. Each New York City box contained one loaf of its freshly baked bread made with local grain.

“We saw news about food insecurity, even in areas that aren’t typically food insecure,” shared Lost Bread founder Alex DuBois. “This cemented our desire to make food as efficient and nutritious as possible.”

The contract was mutually beneficial as it allowed Lost Bread Co. to bring back its formerly furloughed team.

Our weekly deliveries to New York City would include upward of 13,000 boxes filled with bread, cheese, black beans, potatoes, and a seasonal rotation of fruits and vegetables. Drops to Queens and Brooklyn were received by members of the National Guard who helped break down our pallets and load our boxes into taxis and limos that were prepared to deliver the free food to people’s homes. In Manhattan, they set up drive-through tents for in-person distribution.

By the end of August 2020, our teams had distributed more than 215,341 boxes in New York City, representing 1.94 million meals total.

“This program has been a success on many levels,” shared Nolan Masser of Red Hill Farm—500 acres (202 ha) of Pennsylvania farmland, located in Pitman, PA.

“Most of our potatoes are grown to make fresh-cut fries at restaurants and events. In March, that business disappeared. The food box programs allowed our potatoes to provide nutritious meals for those in need instead of going to waste. As a result, we were able to continue our operations and keep employees working who would have otherwise been laid off.”

A regional food system shined bright. Similar contracts and partnerships would soon manifest for our nonprofit food hub.

Our Southeast chapter signed a contract with the city of Atlanta to distribute boxed produce, meats, and more to homebound seniors through its Senior Food Assistance Program.

The weekly distribution saw 300 boxes, each representing one week worth of meals, delivered to doorsteps. By the end of August 2020, more than 4,237 boxes had been delivered, totaling 105,925 pounds (48,047 kg) of local food. This directly supported 42 local farmer partners.

Our Texas chapter distributed more than 7,300 Farm-Fresh boxes from April through August 2020 through community partnerships, including ones formed with the American Heart Association, the Texas Center for Local Food (Elgin, TX), Furlough Kitchen Houston, and the Sustainable Food Center (Austin).

Support from the Still Water Foundation and the Michael & Susan Dell Foundation helped the Texas chapter provide additional food access through deliveries to the Central Texas Food Bank and Austin Independent School Districts, respectively.

“We expected to lose most of our crops due to breakdowns in the supply chain during the coronavirus crisis, but we were fortunate to partner with The Common Market to get our fresh produce directly to the communities that needed it the most,” shared farmer partner Shakera Raygoza of Terra Preta Farm, located in Edinburg, TX.

The largest partnership to date came in the form of a United States Department of Agriculture

(USDA) contract. In May 2020, The Common Market became an approved vendor of the USDA for its Farmers to Families Food Box Program.¹

In just days, we created processes to maintain the massive shift in operations and assembled teams to help do the work of getting 50,000 Farm-Fresh boxes out every week to communities facing food insecurity in the Mid-Atlantic and Southeast regions.

Over the length of the USDA contract—we were approved for two rounds that ran from May through mid-September 2020—our nonprofit purchased and delivered more than 5.5 million pounds (2.5 million kg) of local food, supported just under 100 local family farms, and delivered food to more than 220 local partners throughout our two regions.

“The integrity of each box was nothing short of: ‘We care with purpose.’ My husband—who was helping with the unloading from pallets—made the comment, ‘This is what’s going to make the difference: access to fresh foods,’” shared Lily Pabian, executive director of WeLoveBuHi, an Atlanta-based nonprofit that advocates for immigrant communities. The organization received more than 250 boxes of fruits and vegetables through our Farmers to Families program on a weekly basis.

Just as these boxes served as a lifeline for so many individuals and families, they too kept our teams working, our farms fully engaged, and our spirits alive during such an uncertain time.

“For the farmers, it’s been a win-win—providing support for those in need while also providing an opportunity to keep their farms afloat,” shared farmer Howard Berk of Ellijay Mushrooms, a mushroom farm located in the foothills of the Appalachian Mountains. “The Common Market has given us a lifeline in these uncertain times with the opportunity to supply our mushrooms in the USDA boxes.”

Support from federal and local governments aided our work and leveraged our impact substantially. Sustained support would have continued to aid those directly whose hunger didn’t stop when the contracts did.

Yet, the loss of contracts didn’t mean our work was done, and it certainly hasn’t left us empty handed either. We forged connections with so many dutiful, diverse stewards representing nonprofits, schools, and community organizations, all committed to keeping their communities fed.

We forge ahead: to serve as connectors, to process and plan for how we can continue to get good food to food insecure communities where funding may be hard to come by. We continue to innovate and to serve our traditional wholesale audiences, many of whom remained connected despite the disturbances caused by the pandemic. Many gracefully resurfaced, little by little.

COVID-19 has positioned our resilient spirits and will to rise to the surface. We witnessed how partnerships within the regional food system ignited meaningful impact and met the needs of those who are most vulnerable.

“The Common Market has saved many lives in the community by supplying food to those in need,” shared Derrick Ford of Brothers of Strawberry Mansion, a USDA Farmers to Families recipient.

And for now, we move forward in our mission to serve. 

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COMMENTARY ON COVID-19 AND THE FOOD SYSTEM

Walking the nutrition talk: The impact of a community-engaged nonprofit in Selma, Alabama

JAFSCD
Responds to
the COVID-19
Pandemic



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Abstract

COVID-19 and its differential impact on those with compromised health have driven home the fundamental importance of nutrition, which is at the root of much chronic disease among the poor. Edmundite Missions, serving Selma and rural Alabama for 80 years, has demonstrated how the actions of a trusted nonprofit providing holistic services in a deeply and historically impoverished population can improve nutrition, inspire youth leadership on nutrition issues, and while simultaneously driving resources into rural economies. In the process, the work has also shown that the poor do indeed understand the importance of good nutrition and both seek and choose positive nutritional options if they are available. The problem among the poor is not knowledge; it is opportunity.

Keywords

Nutrition, Poverty, U.S. Black Belt, Rural, Economic Impact, COVID-19 Impact, Pandemic, Selma, Alabama, Youth Leadership, Nonprofits, Dignity

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Edmundite Missions is a Catholic nonprofit that has served those living in poverty in Selma, Alabama, and surrounding rural areas since 1937, including as a leader in the civil rights movement.

Food has always been in the Missions' DNA. Food assistance began with two priests handing out sandwiches from the back door of the rectory. By 2017, the Missions' Bosco Nutrition Center was serving 1,000 meals a day. During COVID, the number topped 1,500 each day. Another 1,500 weekend breakfasts reach 750 elementary each week, and 250 rural families attended Missions food pantries.

That continued role takes place in the face of five generations of unrelenting poverty.

Poverty and the Black Belt

The Black Belt¹ continues to be one of the poorest sections of the nation, with poverty rates more than double the U.S. average. The counties served by the Missions' food programs have average household incomes that are a third of the national average. The clients served by the Missions, at least those who have any income at all, subsist on an average of US\$11,000 per year. Rent and utilities often consume 70%-80% of this amount.

As poverty has persisted, the state of health of the population living with low income has changed. Adult obesity rates in the areas served are 41% or more, nearly double the national average. Food insecurity is rampant. The U.S. rate is 13%. The Alabama rate is 16%. In the three counties served by the Missions food programs, it ranges from 33% to 36%. Diabetes rates in our community are double those of the nation. Early death from cardiovascular disease is common. Indeed, life expectancy in Dallas County, of which Selma is the seat, is on par with that of Bangladesh. With such widespread pre-existing conditions, COVID-19 mortality threatened to hit Selma like a hot knife through butter.

Nutrition lay at the core of many of these problems.

Edmundite Missions can play a pivotal role in improving nutrition in Selma and surrounding rural areas and can provide a model for other nonprofits. We are the primary source, and in some cases the only consistent source, of food for the poor. We have the kitchen production capacity to provide healthy food alternatives and the relationships with smallholder Black farmers that could bring fresh foods into the food pantry process. We have programs that reach every aspect of our community's life. We have the donors to make the effort sustainable.

The question was how to mobilize those assets in the interests of improved nutrition.

Three steps were critical. First, ask people what they want. We believe in the poor. They deserve the dignity of expressing their own views and articulating their own priorities. Second, and guided by the community, change the Missions' approach such that its fundamental food functions would de facto affect community nutrition. In effect, walk our own talk. Third, infuse nutrition throughout all programming.

Conferring With the Community

Edmundite Missions does not serve a "target audience." We serve in and with the community in which we live. To understand what our communities know about food and what kind of food they want, we used surveys and interviews. Like others working in extremely low income communities, we found no lack of knowledge about what was healthy and no lack of desire for healthy foods. When asked what could be added to our services, fresh fruits and vegetables were at the top of the list.

The problem was not knowledge. The problem was access.

That understanding caused us first to look at ourselves. Were we really nutrition partners to our own

¹ The Black Belt refers to the highly productive soils in an area about 30 miles (48 km) wide and 300 miles (483 km) long stretching across central Alabama and northeastern Mississippi.

community? However many meals we served, however many groceries we gave away, were we ourselves meeting the desires of our community?

Walking Our Own Talk

We decided we were not. Simply put, we were feeding, but we were not necessarily nourishing to the extent that our position in the community could enable.

The response strategy was threefold: (1) change the way we approached feeding 1,000 people a day at the Bosco Nutrition Center, (2) upend our rural food programs, and (3) infuse nutrition into every program that wrapped around our community.

In Selma, 18 core recipes used at the Bosco Nutrition Center were reviewed by a registered dietician and totally revised on her advice to reduce salt, sugar, and fats. The inclusion of fried foods in dinner menus was cut in half. Shelf-stable items in lunch bags that are high in fat and sugar were replaced with whole wheat, low salt, and low sugar alternatives. Fresh fruits and vegetables were added at every step of the way. Water was offered as an alternative to juices.

In rural areas, the Missions bade a permanent goodbye to the preselected bag of food and a big hello to local African American smallholder farmers. The rural food pantries shifted to a shopping model based on a point system and a “shopping list” developed by a nutritionist, representing a balanced shopping cart. The points biased selections toward fresh fruits and vegetables. We contacted local African American farmers who could supply those fresh foods and entered into supply agreements. Rural communities are very tightly knit, and those who come to food pantries are often farm families themselves,

Figure 1. Local African American Farmers Deliver Okra to the Missions Market



especially where rural incomes are extremely low and smallholder farms dominate. Finding interested farmers was not difficult once the ask was made. The agreements were on a 6-month basis, with items determined jointly depending on the season and the crop. The six-month timeframe provided the farmer with enough forward procurement security to hire extra hands and bring new land into production. Figure 1 shows one of our local farmers and his assistant delivering a load of okra for the Missions market. Locally grown foods have longer shelf lives than fresh foods from food banks, which reduced waste. Partnerships allow us to pivot our procurement away from food banks and to farmers, driving our money into the local economy.

This was all extremely new to our communities. To ensure that the process ran smoothly, every community client received a “personal shopper” for the first two months. This staff member or volunteer shopped with the client, helping to explain the points system and the choices that were now possible. This was essential given the low literacy rates in our communities. It was also essential for an

unanticipated reason. We discovered that many of our community members were vision-impaired. They could not see either the shopping list or the labels on the food! We were able to register them with the Lions Club sight clinic, as well as bring in “cheater” spectacles that we could hand out at their next visit.

The community’s reaction has been insightfully positive. One mother with a four-year-old remarked that with a hungry young one, she would open up the bag and find nothing that he liked. So, the bag was not a solution to hunger. Now, she could choose what her child liked (he happened to have a passion for apples) and have something to feed him. A gentleman client who had been coming to the pantry for years walked into the store, looked around, and said, “This is the best idea you have had in 10 years.” He proceeded to shop, chose all fresh fruits and vegetables, and came to the check-out counter. He looked up and asked, “So, can I donate back all the cans?”

One of the great advantages of the Missions in influencing nutrition content and behavior is its scope. The Missions touches the community at all ages in multiple ways. It can wrap nutrition messaging around its clients at all of its touchpoints. The drumbeat of good nutrition can become the percussion section of the Missions service orchestra.

The social service and counseling arm of the Missions added questions about nutrition knowledge and eating behavior to its client intake form. This allowed the initial conversation about needs to introduce a conversation about food.

The after-school New Possibilities Youth Program (NPYP) now includes experiential learning around food and nutrition. The summer camp includes organic gardening, cooking lessons with products from the garden, and preparation of healthy snacks.

During the school year, a reward and recognition system was built into the after-school curriculum. For example, in a two-week unit, time was given over to presentations on nutrition. Each student was then given US\$20, and the class went to Walmart to shop for salad makings. Only fresh foods were allowed. The remaining change had to be returned to the Missions. Students then made salads (which were taken home) accompanied by self-made salad dressings. The final day was a salad dressing “throw-down,” with each student recreating his or her dressing and the Bosco Nutrition Center cooks judging the entries. The winner and runner-up were awarded baskets of fresh produce, and their dressings were featured as “Dressing of the Week” at the Bosco Nutrition Center.

For teens, the social context and the behavior of their peers is important. Athletes are often admired and emulated. In Alabama, that means football players. Therefore, the Missions works with the Selma High School athletic program to bring nutrition education to athletic teams. The Missions provides after-practice and half-time food to the football team and accompanies that with a specific curriculum on nutrition for athletic performance. Every week a different aspect of that intersection is presented with accompanying handouts. The 2019–20 team made it to the regional playoffs for the first time in many years, making believers and school opinion leaders out of the athletes. Indeed, seven seniors formed a “speakers bureau” and reached out to the middle school football teams to start to preach nutrition.

The Missions recognized that emphasizing healthy ingredients and purchasing healthy products would likely increase costs. A careful assessment was made of the budget effect of purchasing changes. While costs did increase, the impact was not as material as had been expected. For example, the switch to whole wheat bread throughout the program increased per sandwich costs by two cents. The total cost effect for the Bosco Nutrition Center is about 3% of annual operating expenditures.

Impact

About 70% of lunch attendees come to Bosco at least four times a week for lunch. One hundred percent of children in three schools are reached weekly during the school year. Hence, even small changes can make a big difference.

On an annual basis, changes to lunch and home and school delivery menus (totaling over 360,000 meals a year) result in:

- Reduction of over 19 million calories
- Reduction of fat intake by 1.5 million grams
- Reduction in sugar intake by 400 grams
- Reduction in salt intake by 44 million milligrams

Nearly 90% of dinner attendees regularly rely on Bosco for their evening meal.

On an annual basis and assuming an average dinner census of 180 individuals (this is a conservative figure as dinner can be upwards of 220 individuals)² and 300 home delivered meals to people with disabilities, the changes result in:

- Reduction of
 - 4.7 million calories
 - 1.8 million grams of fat
 - 3.7 million milligrams of cholesterol
 - 11 million milligrams of salt
 - 38,000 grams of sugar
- Increase of
 - 793,000 grams of protein
 - 96,000 grams of fiber

What does all of this change actually mean in terms of the scale of nutritional impact? It appears to be quite a great deal. Figure 2 illustrates the scale of changes in terms of the equivalent consumption of various items of fast food.

Two years of our efforts teach five lessons about how nonprofits can use the totality of their relationships to improve community nutrition.

First, trust matters. When a nonprofit has been in a community for over 80 years, it is trusted. And trust creates a willingness to listen and participate, and that opens the door to change. Many, many organizations lecture to the poor, most with great sincerity. But the trust that is a product of a deep history of engagement throughout a community opens the door to listening.

Second, scale matters. The Missions is not just the source of food in the Selma community and in rural areas. It is the source of counseling. It is the source of funding to meet family crises. It is the source of after-school programming. How it feeds people, by definition, changes how the community eats. Because a holistic organization touches lives in many different ways at many different times, its ability to bring consistency and constancy to messaging is unparalleled.

Third, dignity matters. Food and nutrition are matters of dignity. Giving people choices about their own food and their own nutrition is important in and of itself as a value because choice reinforces individual freedom and self-reliance. But choice also contributes to effectiveness because choice makes people feel part of the nutrition education and action process.

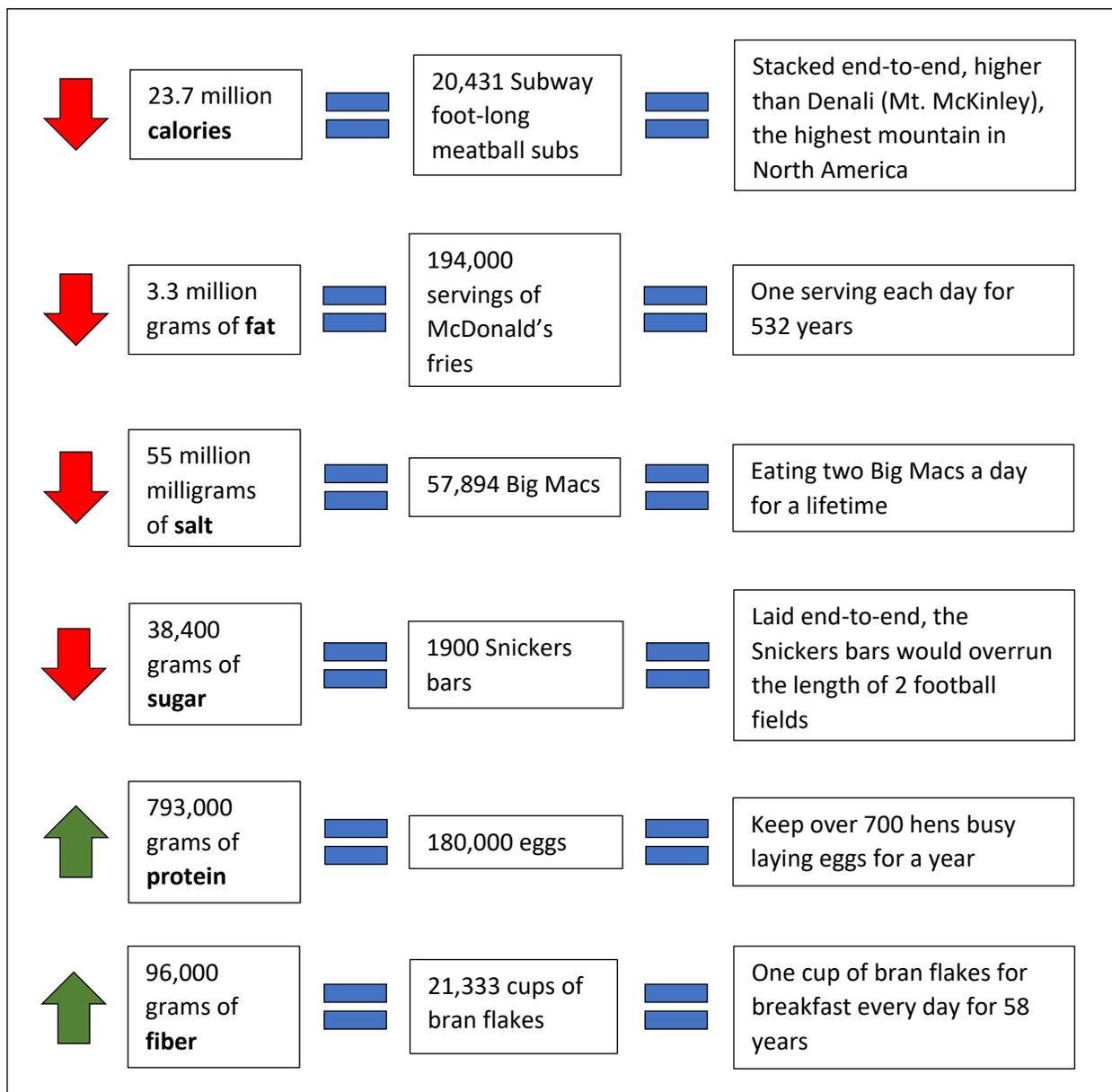
Fourth, attractiveness and fun matter. Hanging posters and giving lectures will not work. Even

² Note that these calculations used a normal Bosco census. The numbers, and impact, are much greater during the COVID-19 situation. As of August 2020, Bosco is serving over 200 for lunch and well in excess of 400 at dinner.

demonstrating correct behaviors does not work. For people who are deeply impoverished, the daily struggle is survival. Teaching change requires making those changes easy and attractive and memorable. Nutrition education has to be fun. Working with youth in entertaining ways (crushing chips and making grease charts; having one's salad dressing be featured in a dining hall) communicates core principles in ways that will be remembered and acted upon.

Fifth, the solution is not expensive. Food provision in favor of healthy and fresh options does, in fact, cost more than a reliance on canned and pre-prepared alternatives. But the cost differential is not significant. Well managed nonprofits can make those positive nutrition shifts without endangering their budgets.

Figure 2. Fast-Food Equivalents of Nutrition Improvements in Meals by Edmundite Missions



A Final Thought

Poverty is not necessarily a barrier to nutrition when nonprofit service providers embrace the importance of nutrition and integrate it into everything they do.

Today, as we experience the symbiosis between morbidity and mortality from infectious diseases and the scourge of chronic disease, the importance of nonprofit leadership in including nutrition as a fundamental core of what and how they serve the poor is essential to community health and well-being.

When implemented in an atmosphere of deep trust with a premium on creating and honoring individual dignity, both food provision and food experience—infused throughout integrated services—can have both nutrition and economic impact. 

COMMENTARY ON COVID-19 AND THE FOOD SYSTEM

Cultivating community resilience: How North Carolina's food council is facilitating an effective response during COVID-19

**JAFSCD
Responds to
the COVID-19
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Abstract

Since the onset of the COVID-19 pandemic, the North Carolina Local Food Council has strengthened its role as a cohesive and effective organization during a public-health crisis to share challenges, devise solutions, and build resilience across local food systems in North Carolina. The Council includes repre-

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sentatives from 21 organizations working across the state, as well as three representatives from regional local food councils. The Council's response to the pandemic addressed three key areas of action: (1) Coordinate responses across multiple sectors; (2) Enhance collaboration across the food supply chain; and (3) Facilitate data collection and public messaging. This paper describes the positive impacts the Council has had across North Carolina on consumers and producers of local food as a result of this collaborative network and long-established relationships across the state. Now, more than ever, the relationships and collaborative efforts of statewide organizations and partners are needed. The Council's crisis response has been strong because of the long-standing relationships of its members and its ability to share resources quickly, allowing it to work toward coordinated responses. The work of the North Carolina Local Food Council can serve as a model for other states that have state-level local food councils or want to develop them. In addition, the Council's work demonstrates how collaborations among statewide partners can foster resilience within local food systems, particularly during a public health crisis.

Keywords

COVID-19, Pandemic, Food Council, Food Policy Council, Food System, Local Food

Introduction and how the state food Council responded to COVID-19

The COVID-19 pandemic and resulting lockdowns disrupted food supply chains and endangered people's access to healthy foods, demonstrating the fragility of the food system generally. In North Carolina, a statewide stay-at-home order went into effect on March 30, 2020, and lasted until May 22, 2020 (NC Executive Order 121, 2020). As part of the stay-at-home order, many facilities were shut down, including offices, restaurants, bars, salons, gyms, day care centers, and even parks. While the limitation of movement and the closure of institutions and restaurants helped to mitigate the spread of COVID-19 in North Carolina, they also meant changing the way people access and consume food, disrupting food systems (Anderson, 2020; Havice, Marschke, & Vandergeest, 2020; Hendrickson, 2020). In addition, the pandemic exposed other fissures in the food system and exacerbated vulnerabilities that already existed (The Rockefeller Foundation, 2020), but were less visible to the general population. Since the beginning of March 2020, the North Carolina Local Food Council¹ (referred to as "Council") emerged as a strong voice in addressing pandemic-related food-system challenges statewide. Together, Council members make up a cohesive and effective network that shares challenges, creates solutions, and builds resilience across local food systems.

The Council currently represents 21 statewide agencies and organizations that address food systems, along with three local-food council regional representatives. The multisector, multi-agency North Carolina Local Food Council was first enacted through legislation in 2009, but was sunsetted in 2013 by a new legislature. Many of the Council members valued the statewide collaboration and decided to continue the Council without the legislative mandate. The members spent a significant amount of time rethinking the Council's purpose, and through many open and honest conversations, the various state agencies and organizations understood the constraints and opportunities that came from working together. While the Council's focus in early 2020 was on supporting local food councils with research, education, and training, the urgent challenges of COVID-19 faced by consumers and producers from disrupted supply chains took precedence.

At the onset of the pandemic, the Council agreed to meet weekly to discuss "pinch points" in the local food system and devise potential next steps for addressing the immediate challenges. Members of

¹ <http://www.nclocalfoodcouncil.org/>

the Council represent diverse food-system stakeholders across North Carolina (NC), offering an established communication stream with county and regional local food councils. Due to strong working relationships and the trust built over time, the Council had already developed productive collaborations that led to timely solutions benefitting both producers and consumers of local food.

Our response to the pandemic emerged within three key areas of action: (1) Coordinate responses across multiple sectors; (2) Enhance collaboration across the food supply chain; and (3) Facilitate data collection and messaging. Examples of how the Council contributed within each impact area are shown in Figure 1 and described in the following sections.

(1) Coordinate the response across multiple sectors

An immediate need surfacing during the stay-at-home order was to better coordinate efforts across multiple sectors. We supported this through dialogue with local food councils and the formation of response teams. One team worked with nonprofit organizations supporting farmworkers. Another supported North Carolina fisheries, and communicated challenges directly to the governor’s emergency task forces.

Example of Success: E-commerce and Student Internships

Surveys of farmers in North and South Carolina (Carolina Farm Stewardship Association [CFSA], 2020; Hoffman et al., 2020) showed that local food producers needed innovative direct-marketing strategies to remain viable. To coordinate efforts between producers and consumers, the Council supported a state agency that provided technology assistance to producers to help them feature their products in an online marketplace.² A student internship³ was established to pair students with local food producers to assist them with the construction of e-commerce websites as well as social-media outlets. These internships, funded by the Council and member organizations, not only will respond to urgent producer needs, but

Figure 1. Key Areas of Action for the North Carolina Local Food Council’s Response During the COVID-19 Pandemic

		
COORDINATE THE RESPONSE ACROSS MULTIPLE SECTORS	ENHANCE COLLABORATION ACROSS THE FOOD SUPPLY CHAIN	FACILITATE DATA COLLECTION AND MESSAGING
<ul style="list-style-type: none"> • Developed teams across local food councils to work directly with farmworkers, fisheries, cold storage, and food recovery efforts • Secured the placement of 2 food council members to contribute to the state Food Supply Chain Emergency Task Force • Conveyed multi-sector challenges to the Governor’s task force 	<ul style="list-style-type: none"> • Connected migrant farmworker organizations with support for culturally appropriate food and PPE for farmworkers • Connected unused refrigerated trucks for food banks and food hubs across the state • Facilitated receipt of a USDA CFAP Food Box contract award • Increased support for emergency food distribution for marginalized communities 	<ul style="list-style-type: none"> • Collected experiences and evidence to support farmers markets and seafood retailers to stay open • Shared messaging around critical needs for emergency food providers • Contributed a guest newspaper column about the resiliency of local food systems • Administered surveys to understand food waste, quantify the demand for NC seafood, and cultural preferences for emergency food

² The VisitNC Farms app (<https://visitncfarmstoday.com/>) uses cell phone technology to help residents and visitors locate nearby food producers and restaurants who provide fresh produce and seafood.

³ <http://www.nclocalfoodcouncil.org/rise-for-local-foods/>

also will provide professional-development opportunities for college students whose internships were cancelled as a result of the pandemic (Aucejo, French, Araya, & Zafar, 2020)

(2) Enhance collaboration across the food supply chain

As restaurants were closing, more perishable products from farms were diverted to the emergency food system and local food hubs, requiring more cold storage. The Council facilitated infrastructure support by securing unused refrigerated trucks for use by food banks, food pantries, and food hubs across the state. A team affiliated with the Council also successfully applied for a USDA Coronavirus Food Assistance Program Food Box contract award, which provided a market for local farmers and increased supply in the emergency food system.

Example of Success: Fisheries

Prior to the pandemic, nearly 75% of the seafood consumed in the United States was sold in restaurants. As these and other foodservice establishments began shutting down in March 2020, the demand for seafood decreased precipitously (Cobe, 2020).

The Council responded by facilitating a commercial relationship between a seafood processor and an inland community supported agriculture distributor in the Raleigh-Durham-Chapel Hill metropolitan region that serves customers across North Carolina. The Council and its partners developed educational brochures to help customers understand the seasonality and quality of North Carolina seafood. The brochures also featured recipes to help customers prepare seafood meals at home from the species most commonly caught in NC waters.

(3) Facilitate data collection and messaging

Shared public messaging was identified as a critical need to support farmers markets and seafood retailers. The Council facilitated data collection and offered shared messaging. For example, a guest newspaper column written by Council members explored the resiliency of local foods and how the smaller, local supply chains demonstrated flexibility with their ability to quickly adapt and meet the changing needs of communities.

Example of Success: Food Recovery after COVID-19

Local food councils across the state identified food waste and related food insecurity issues as an important focus area for the Council. Of particular concern is conflicting information at the county level regarding guidelines for the donation of unserved prepared foods. While this was a concern before the pandemic, it has been exacerbated by COVID-19 given the rapid increase in food insecurity (60% increase in need) and general disruption of the food chain.

With the help of a student intern recruited by one of its members, the Council conducted a survey prior to the pandemic to understand challenges around donating unserved prepared food. Given the impact of COVID-19, the Council repeated this survey after the onset of the pandemic. Armed with these data, a subcommittee of the Council set up a meeting with the North Carolina Department of Health and Human Services (DHHS) to present the survey findings and developed an agreement to collaborate with DHHS on the writing and dissemination of a more standardized, easily accessible, and comprehensive set of guidelines for prepared food recovery.

Conclusion

The pandemic changed the way food is grown, distributed, accessed, prepared, eaten, and disposed of across the state. Now, more than ever, the relationships and collaborative efforts of the Council are

needed. The work of the Council has had positive results across the state and would not have happened had a collaborative network across organizations, agencies, and groups not been in existence before COVID-19. The Council's crisis response is stronger because of the long-standing relationships of its members and its ability to share resources toward coordinated responses.

These efforts can serve as a model for other states in which collaborations among statewide partners can foster resilience within local food systems, particularly during a public health crisis. During this pandemic, the Council fulfilled the immediate needs of those disproportionately affected by closures. Even after the pandemic, the Council will continue to identify problems and test solutions that build a more vibrant local food structure across North Carolina. 

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COMMENTARY ON COVID-19 AND THE FOOD SYSTEM

A collaborative approach to COVID-19 response: The Center for Environmental Farming Systems community-based food system initiatives

**JAFSCD
Responds to
the COVID-19
Pandemic**



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Abstract

The Center for Environmental Farming Systems (CEFS) has spent the past two decades developing local food systems to support communities and increase resilience. The COVID-19 pandemic has shown how existing structural inequities, primarily along racial lines, are exacerbated. It has also shown the value of community-based food systems work that helps communities network, sharing valuable resources and

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funding to respond to the ongoing crisis. In this article, we document how CEFS' community-based food systems initiatives are responding to the pandemic. Some of CEFS programs are community-based, working with food policy councils, offering racial equity trainings, networking schools and early care and education sites, and supporting youth convenings and internships. Others are focused on production and supply chains for meat, seafood, and produce in order to develop stronger local food systems. Throughout the work of all of CEFS' community-based food systems initiatives in response to the pandemic, we have learned that our past efforts have increased local food systems resilience. We also note the importance of flexible funders who allowed grant dollars to be reallocated to community partners to address urgent needs. We have found that online programming has increased participation and access to resources. Finally, we have been inspired by the creativity, flexibility, and adaptability of our community partners, and we are energized to continue to support them while also offering the resources we have developed to a broader audience.

Keywords

Community, Food System, Networking, Funding, Racial Equity, COVID-19, COVID-19 Response, Pandemic, Local Food

Introduction

The Center for Environmental Farming Systems (CEFS) was established in 1994 as a partnership among North Carolina State University, North Carolina Agricultural and Technical State University, and the North Carolina Department of Agriculture and Consumer Services. CEFS develops and promotes just and equitable food and farming systems that conserve natural resources, strengthen communities, improve health outcomes, and provide economic opportunities in North Carolina (NC) and beyond.

The pandemic has disrupted the food system at key points where CEFS' initiatives work, exacerbating pre-existing inequalities and highlighting supply chain disjunctures (Alkon, Bowen, & Kato, 2020; Anderson, 2020; Havice, Marschke, & Vandergeest, 2020; Hendrickson, 2020). Black, Indigenous and People of Color (BIPOC) were already disproportionately affected by issues in the food system, including low-wage labor and access to healthy food (Gray, 2014; Kato, 2013). These issues have been brought into stark relief by the pandemic, both in terms of growing food insecurity rates as well as the fact that food retail workers and farm laborers are on the forefront of "essential workers" who are most exposed

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to COVID-19, and as a result are disproportionately affected by the pandemic (Alkon et al., 2020). Food access for children has been affected by school and early care closures, as these sites are often the primary source of meals for children, most notably in BIPOC communities (Bowen, Brenton, & Elliott, 2019; Poppendieck, 2011). There is also concern about how the pandemic will affect career trajectories for youth, as many professional development opportunities, such as internships for college students, have been cancelled as a result of the pandemic (Aucejo et al., 2020).

Supply chains have also been disrupted by the pandemic, once again revealing pressure points and bottlenecks that are the result of concentration in the food system (Grandin, 2020; Hendrickson, 2020). Meat shortages, accompanied by excess livestock and plummeting prices for producers, have increased demand for local meat beyond the capacity of processors. Many fisheries and produce growers lost their primary wholesale markets due to restaurant closures. While some producers have been able to pivot to online marketing platforms, others have been left behind as their markets dry up (Carolina Farm Stewardship Association [CFSA], 2020).

For CEFS, these issues hit close to home, affecting our community partners and stakeholders. We see our work to challenge systemic racism as all the more critical in this current moment, and a key component of all our programming. We also have witnessed the power of existing community networks to respond quickly in a crisis. The following is an overview of how CEFS' community-based food systems initiatives have mobilized to respond to the COVID-19 pandemic.

CEFS Community-Based Food Systems Response

Community Networks and Racial Equity

Community Food Strategies,¹ which organizes and supports 36 adult and two youth food policy councils, has convened this statewide network twice a month during the pandemic for co-learning and support, and has begun monthly racial identity caucus sessions. Community Food Strategies also led a six-part online series, "Facilitating Virtually,"² to share best practices for increasing participation, engagement, and forward movement in online meetings. In addition, Community Food Strategies has channeled US\$24,500 in micro-grants to 25 food councils³ to support immediate and long-term community-based efforts, such as hunger relief, gardens, farms, and small businesses, with an additional US\$100,000⁴ previously scheduled to be distributed in the fall of 2020. These funds were allocated using a shared gifting⁵ process that gives food councils the power to decide how funding should be distributed, with an emphasis on equity.

Requests for racial equity trainings that build a deeper analysis around the impacts of structural racism on the food system have increased tremendously. CEFS' Committee on Racial Equity in the Food

¹ Community Food Strategies is a multi-organizational project supported by team members across seven organizations: Appalachian Sustainable Agriculture Project, Care Share Health Alliance, Carolina Farm Stewardship Association, Center for Environmental Farming Systems, Food Bank of Central and Eastern NC, Kindred Seedlings, and NC Rural Center. Community Food Strategies is funded by the W.K. Kellogg Foundation and the Blue Cross Blue Shield of North Carolina Foundation.

² <https://communityfoodstrategies.org/2020/03/20/facilitating-virtually/>

³ These microgrants were made possible early on in the pandemic by the Blue Cross and Blue Shield of North Carolina Foundation, which, in addition to a grant supporting Community Food Strategies, made additional funding available that Community Food Strategies distributed to communities. See more at <https://communityfoodstrategies.org/2020/05/20/covid-grants/>

⁴ Shared gifting funding has been provided by the Blue Cross and Blue Shield of North Carolina Foundation, the W.K. Kellogg Foundation, NC Local Food Council, Self-Help Credit Union, and the Carolina Farm Stewardship Association. <https://communityfoodstrategies.org/2021/02/09/shared-gifting-resonates-2020/>

⁵ See more at <https://rfsocialfinance.org/2018/01/16/gifting-power/>

System (CORE)⁶ has increased its offerings of racial equity trainings and moved them to a virtual platform, increasing participation from 45 to 75 people per training. The goal of CORE's trainings is to create institutional change such that systems of oppression that cause crises that disproportionately affect BIPOC communities are completely and irrevocably dismantled.

Schools, Early Care and Education, and Youth Programming

CEFS' Farm to School (F2S)⁷ program and the Farm to School Coalition of NC⁸ redistributed US\$72,000 of grant funding⁹ to 18 School Nutrition programs.¹⁰ Grants were used for efforts ranging from buying vegetables grown by small farmers, to funding farm infrastructure for school-run production farms that teach agriculture and supply produce locally. F2S also partnered with a local anti-racism education organization to provide a virtual five-part series on racial equity attended by 172 participants. CEFS and NC Cooperative Extension's Farm to School Working Group supported 38 county agents¹¹ to partner with schools to distribute seed kits, planting, and activity guides along with school meals during COVID closures, reaching over 15,500 families.

The 15 community teams participating in the 2020 NC Farm to Early Care and Education¹² Collaborative¹³ remained connected to share strategies and resources about how to continue feeding children. Early care and education (ECE) providers in the Collaborative participated in "Learning Bursts,"¹⁴ a virtual training series that replaced in-person meetings, including topics on gardening, cooking, and racial equity. As an example of how local food systems strengthened resilience,¹⁵ one center found that having an existing relationship with a local dairy prior to the pandemic helped them to continue providing fresh milk in spite of national supply chain disruptions.

The Food Youth Initiative (FYI)^{16, 17} develops and implements curriculum with a racial equity lens and works to support primarily BIPOC and rural youth as they develop an analysis of justice, equity, and inclusion in food and climate systems. FYI hosted a week-long digital summer gathering,¹⁸ guiding youth and their adult mentors from across NC through an interactive curriculum on food systems and climate justice. Youth were paid stipends and received a certificate for their participation. In partnership with the North Carolina Local Food Council,¹⁹ CEFS is developing a Remote Internship to Support Enterprises for Local Foods (RISE) program²⁰ to pair college students with producers who need to improve online marketing. Students are helping producers develop websites, social media, and e-commerce sites, enhancing economic opportunities for producers and providing professional development for youth.

⁶ <https://cefs.ncsu.edu/food-system-initiatives/food-system-committee-on-racial-equity/>

⁷ <https://cefs.ncsu.edu/youth/farm-to-school/>

⁸ <https://www.farmtoschoolcoalitionnc.org/>

⁹ Funded by Blue Cross and Blue Shield of North Carolina Foundation.

¹⁰ <https://cefs.ncsu.edu/youth/farm-to-school/covid-19-rapid-response/>

¹¹ <https://localfood.ces.ncsu.edu/local-food-farm-to-school/covidseedsharing/>

¹² <https://cefs.ncsu.edu/food-system-initiatives/nc-farm-to-early-care-and-education/>

¹³ Funded by the W.K. Kellogg Foundation.

¹⁴ <https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Aascds%3AUS%3A3a067890-2449-41d0-a686-5c55944dac03>

¹⁵ <http://www.farmtoschool.org/news-and-articles/preschools-farm-food-partnership-keep-kids-eating-local>

¹⁶ <https://cefs.ncsu.edu/youth/food-youth-initiative/>

¹⁷ Funded by the Triangle Community Foundation and the Alces Foundation.

¹⁸ <https://cefs.ncsu.edu/fyi-2020-summer-gathering/>

¹⁹ <http://www.nclocalfoodcouncil.org/>

²⁰ <http://www.nclocalfoodcouncil.org/rise-for-local-foods/>

Meat, Seafood, and Produce Production and Supply Chains

NC Choices (NCC),²¹ which supports niche meat supply chain development, worked in partnership with the NC Department of Agriculture and Consumer Services to direct US\$20,000,000 of legislative COVID-19 relief funds toward small-scale meat processing facilities. NCC is currently supporting project implementation and providing business consultation to awardees,²² in addition to offering alternative processing resources and training to farmers.²³ In an effort to build direct markets, NCC launched the successful MeatSuite.com online platform²⁴ where customers can find local farms selling meat in bulk.²⁵ Bulk meat sales are more affordable for consumers, help farmers move inventory, and circumnavigate COVID processing bottlenecks. MeatSuite received over 22,000 visits in the first few months, helping farmers secure new sales.

The NC 10% Campaign²⁶ is collaborating with NC Sea Grant²⁷ to connect fisheries with local food home-delivery services by preparing fisheries for more direct-to-consumer markets and helping businesses handle these new products. Activities include helping businesses understand customer preferences; sharing resources about ordering, safely storing, and transporting seafood; and providing educational materials about different NC species and seasonality.

CEFS' Small Farm Unit²⁸ staff used specialty vegetable production data to show small farmers in NC and beyond how to generate realistic financial projections in response to COVID-19. We also collaborated with NC Cooperative Extension agents to bring the e-commerce platform MarketMaker²⁹ to North Carolina. MarketMaker was established with the support of the USDA to facilitate market relationships among farmers, buyers, vendors, and nonprofit organizations.

Empowering Mountain Food Systems³⁰ (EMFS) supports local food system development in western NC. EMFS channeled US\$46,390 of emergency funding³¹ to 14 farms, eight farmers markets, three aggregators, and one roadside stand for COVID-19–safe marketing equipment and key infrastructural investments, with more grants being released as new needs arise. EMFS also launched the #ShopSafeShopLocalNC Campaign to highlight safe direct marketing outlets. Finally, EMFS restructured an apprenticeship program, with students working virtually to help farms develop their online presence and sales platforms, serving as a model for the statewide RISE program.

Partnerships

In addition to the partners mentioned above, CEFS collaborated with the University of Kentucky to contribute to the USDA's Local Food Systems Response.³² As part of this collaboration, CORE assembled a listening session with Black food systems leaders who uplifted how BIPOC communities experience crises disproportionately. In addition, CEFS and the Duke World Food Policy Center³³

²¹ <https://cefs.ncsu.edu/food-system-initiatives/nc-choices/>

²² Funded by Blue Cross and Blue Shield of North Carolina Foundation.

²³ Funded in part by NC Cooperative Extension's Niche Meat Working Group and USDA's Beginning Farmer and Rancher Development Program.

²⁴ <http://www.meatsuite.com/>

²⁵ Funded by USDA's Beginning Farmer and Rancher Development Program.

²⁶ <https://cefs.ncsu.edu/extension-and-outreach/nc-10-campaign/>

²⁷ <https://ncseagrant.ncsu.edu/>

²⁸ <https://cefs.ncsu.edu/field-research/small-farm-unit/>

²⁹ <https://foodmarketmaker.com/>

³⁰ <https://cefs.ncsu.edu/food-system-initiatives/emfs-empowering-mountain-food-systems/>

³¹ Funded by the Appalachian Regional Commission.

³² <https://lfscovid.localfoodeconomics.com/about/>

³³ <https://wfpc.sanford.duke.edu/>

received a grant from the Blue Cross and Blue Shield of North Carolina Foundation to research the impacts of COVID-19 on the NC food system. This research will result in the North Carolina Food Resiliency Plan³⁴ to guide funders' future food systems investments so that they address structural inequities and promote long-term sustainability.

Conclusion and Recommendations

COVID-19 has taught us many lessons. As demonstrated above, our prepandemic work to support local food systems helped to build resilience in the face of COVID-19. Flexibility from funders to repurpose grant funds toward COVID response has been key to our ability to channel funding to grassroots organizations that are demonstrating creative ways to support communities. We have also learned that virtual events can increase access and participation for those who might not have been able to travel or take time off before the pandemic struck. As we support communities financially and with resources, we have observed that the pandemic is fostering adaptive business models, innovative strategies, and flexible solutions. This lesson has also triggered a new urgency for CEFS to elevate our services and assistance to North Carolinians and beyond. 

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³⁴ <https://cefs.ncsu.edu/food-system-initiatives/nc-food-resiliency-plan/>

COMMENTARY ON COVID-19 AND THE FOOD SYSTEM

A global food systems framework for pandemic prevention, response, and recovery

**JAFSCD
Responds to
the COVID-19
Pandemic**



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Abstract

COVID-19 has highlighted the dynamic relationship between pandemic threats and global food systems. Despite important connections, research and policy-making on food systems and pandemics largely operate in silos. We propose a framework that integrates food systems and pandemic planning and response, exploring the role of the food system in shaping pandemics and, consequently, the role of

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pandemics in disrupting a now global food system. This framework highlights important connections between food production, distribution, and consumption at each stage of the pandemic cycle: prevention, response, and recovery. We use recent experiences with COVID-19 to illustrate vulnerabilities in systems interaction during the prevention and response phases. Over the long term, in the recovery phase, food systems must transform, adopting an enhanced level of functioning to improve resilience. To reduce population health risks and promote sustainable food systems, we call for implementation of surveillance systems for both emerging infections and food systems functioning in order to strengthen global food supply chains, create stakeholder resource coordination mechanisms, and address underlying socioeconomic vulnerabilities. Multidisciplinary global actors should draw on lessons from the COVID-19 pandemic to prevent the inevitable next one.

Keywords

Food Systems, Food Security, COVID-19, Pandemic Response, Global Food System

Introduction

COVID-19 has highlighted the dynamic relationship between pandemic threats and global food systems. The emergence of SARS-CoV-2 is not only linked to food markets, but its widespread and facile transmission has also disrupted global food supply and demand (Ivanov, 2020). Despite important connections, research and policy-making on food systems and pandemics largely operate in silos (Chaudhary, Gustafson, & Mathys, 2018). We propose a framework that integrates food systems and pandemic planning and response, exploring the role of the food system in shaping pandemics and, consequently, the role of pandemics in disrupting a now global food system (Figure 1). This framework highlights several important connections between food production, distribution, and consumption at each stage of the pandemic cycle: prevention, response, and recovery. We use recent experiences with COVID-19 to illustrate vulnerabilities in systems interaction during the prevention and response phases. We provide recommendations for the recovery phase, calling on actors at the center of this framework—including national and international government organizations, private industry, and researchers—to integrate these systems to reduce population health risks and ensure sustainable food systems.

Prevention

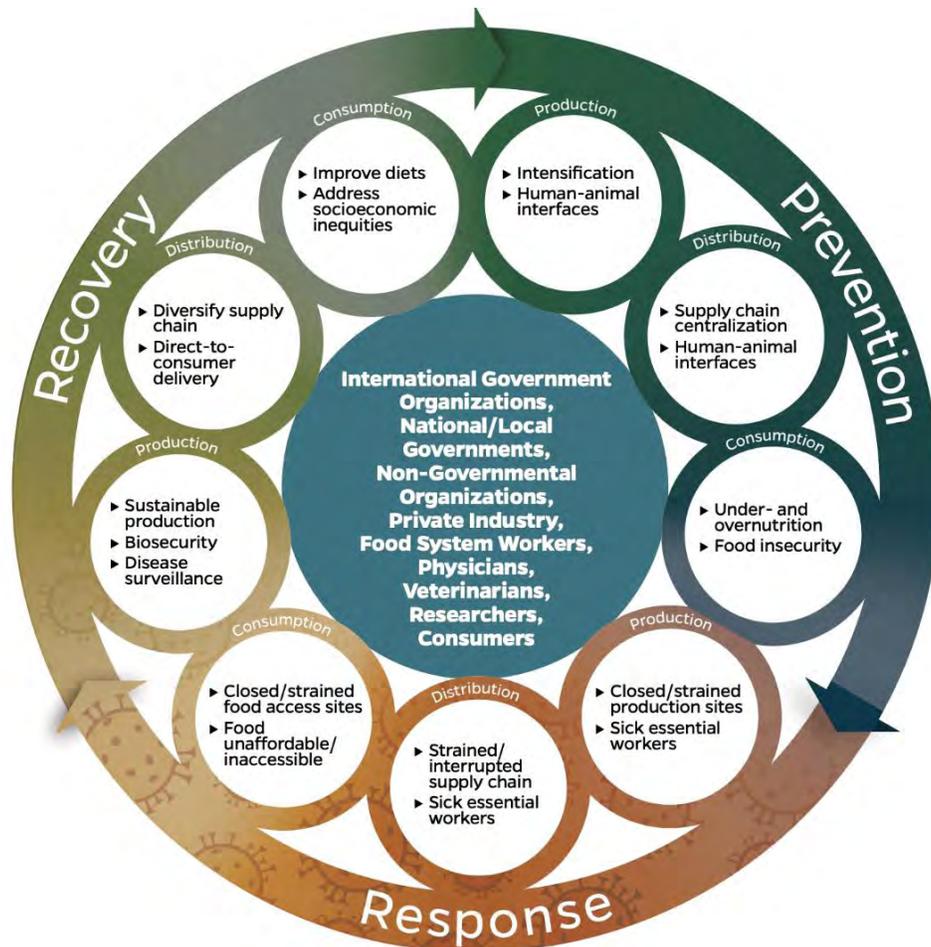
Food production operations impact the emergence of pathogens with pandemic potential. Current food production intensification practices, which prioritize volume and cost over quality and safety, promote increased human-animal and inter-species interactions (Benatar, 2007). Furthermore, changes in consumer demand and diets globally have led to increased deforestation and encroachment on animal habitats (Thornton & Herrero, 2010). These practices create opportunities for zoonotic pathogens to recombine and spillover into human populations (Wolfe, Daszak, Kilpatrick, & Burke, 2005).

A community's ability to prepare for and withstand pandemic threats is also a function of its food system, particularly its distribution operations. Food supply chains have increasingly moved towards consolidation, just-in-time delivery, and reduced redundancy in order to decrease costs and optimize efficiency (Food and Agriculture Organization of the United Nations [FAO], 2020a). This evolution has created choke points in the supply chain that make it ill-suited to respond to unexpected shocks.

On the consumption side, growing socioeconomic inequities, demonstrated by extreme poverty and under and overnutrition, put many populations at greater risk of food insecurity. Nearly two billion people, or 26% of the world's population, currently experience moderate or severe food insecurity (FAO, 2019). The bidirectional relationship between food insecurity and other infectious diseases has been well-established: food insecurity, exacerbated by pandemics, may also serve to propagate pandemics (Weiser

Figure 1. A global food systems framework for pandemic prevention, response, and recovery highlighting connections between food production, distribution, and consumption at each stage of the pandemic cycle.

Vulnerabilities in the prevention and response phases inform recommendations for actors at the center of the framework.



et al., 2011). Populations experiencing food insecurity do not have the resources to stockpile food and water in preparation for, or in response to, an emergency. Further, chronic diseases associated with food insecurity, such as obesity, may place food insecure populations at greater risk of pandemic-related morbidity and mortality (Kass, Duggal, & Cingolani, 2020).

Response

Government and community responses to reduce disease transmission, which have included forced closures of nonessential businesses, travel and stay-at-home restrictions, and worker safety regulations at essential businesses, have had downstream implications for the health and livelihoods of those employed along the value chain.

Food producers, including farms and processing plants, have been closed or strained due to illness among their essential workers, who by nature of their work, are at high risk of infection. For example, meat processing plant workers have experienced particularly high rates of infection due to lack of workplace distancing policies, insufficient personal protective equipment, and inadequate disinfection of high-

touch surfaces (Dyal et al., 2020). Additionally, in many countries, global migrant farm workers who have experienced job loss and are unprotected by occupational and migration policies, have been forced to repatriate, making unsafe journeys that put them at high risk of disease exposure (FAO, 2020b).

On the distribution side, crop destruction and excess milk disposal have been reported in some countries due to an overdependence on complex intermediate systems between the farm and table (Yaffe-Bellany & Corkery, 2020). Panic buying and consumer stockpiling has further strained some supply chains (Sim, Chua, Vieta, & Fernandez, 2020). Essential workers employed in food distribution, including restaurants, retail outlets, and food delivery services, have also been at increased risk of infection.

The pandemic has had severe consequences for food access and affordability. Forced closures of non-essential business has led to widespread unemployment, leaving many consumers with reduced incomes to purchase groceries and prepared foods. Many critical feeding sites such as schools, senior centers, and emergency food providers have been closed to limit community transmission (Van Lancker & Parolin, 2020). Estimates suggest that prevalence of global chronic hunger could double due to COVID-19 (Food Security Information Network, 2020).

Recovery and Recommendations

Restarting economic and social activity inevitably introduces new risks to food systems workers and consumers. As pandemic response restrictions ease, actors must both address short-term risks and pursue long-term food systems transformation—promoting an enhanced level of systems functioning by reducing vulnerabilities and improving resilience. We identify four key recommendations for priority action to integrate global food systems and pandemic planning and response efforts. These recommendations include both long-term goals and short-term action steps to achieve these goals. These recommendations should be tailored to socio-political contexts. We note that these recommendations are not comprehensive, but rather serve as examples for how actors can engage in systems integration.

- 1. Implement and strengthen surveillance systems for both emerging infectious diseases and food systems functioning:** Production and distribution factors that play a role in pandemic emergence, such as intensified animal production and wet markets, should be addressed in ways that decrease risk and ensure sustainability. In the short term, enhancing surveillance systems for early detection of pathogens will be critical. Stakeholders should identify high-risk human-animal interfaces and implement evidence-based pandemic prevention strategies combined with early warning surveillance. In the longer term, real-time monitoring and evaluation platforms for food system functioning and value chains should be implemented. Drawing on lessons from infectious disease surveillance systems, metrics for evaluating food system function should include assessments of flexibility, representativeness, stability, simplicity, and acceptability. These tools should further draw on existing resources developed by the United Nations (UN), such as the Food Security Information System (FSIN), Vulnerability Analysis and Monitoring Unit (VAM), and Agricultural Market Information System (AMIS), which support rapid assessment and monitoring of food value chain functioning at all levels of the global economy (UN, 2020).
- 2. Strengthen global food supply chains:** In the short term, innovations are needed that facilitate direct-to-consumer delivery by leveraging evolving mobile and transport technologies. Over the longer term, global public-private partnerships must diversify and create redundancy within supply chains, while minimizing waste. Improving traceability of resources and products along the supply chain can strategically inform restructuring systems. Regionally, supply chains can be strengthened by

establishing strong local primary producer foundations and ensuring diversity in chain size, structure, and marketing. This can allow for more direct consumer supply chains from local farms and markets. To promote global collective action and continued flow of goods, trade policy agreements should be designed to minimize trade barriers during emergencies.

- 3. Create local and global stakeholder resource and data coordination mechanisms:** Coordination mechanisms, both formal and informal, should be established between countries to promote the flow of goods and facilitate resource and data sharing during public health emergencies. Targeted multilateral agreements can serve as food system coordination mechanisms between countries. For example, Agricultural Ministers in Latin American and the Caribbean formulated a regional agreement to work together to coordinate food availability during this pandemic (FAO Regional Office for Latin America and the Caribbean, 2020). Similar agreements have emerged in recent months in other regions and among politically allied nations such as the Association of Southeast Asian Nations, the African Union, and the G20 (ASEAN, 2020; FAO, 2020a; G20, 2020). Looking ahead, these food system alliances should be maintained and expanded; similar alliances can also be established at the local and national levels. Having strong relationships in place prior to disease outbreaks can help to ensure food security during future emergencies.
- 4. Address underlying socioeconomic vulnerabilities:** The world is not on track to meet the United Nations 2030 Agenda for Sustainable Development goal of eliminating poverty in all of its forms. Rates of poverty, and its pernicious sequelae, such as poor diet and food insecurity, remain especially high in low- and middle-income and conflict-affected countries that may also be less prepared for pandemic threats (UN, n.d.). Long-term strategies to promote equitable, inclusive, and sustainable economic growth, such as improved nutrition, health, and sanitation services and better management of the natural resources on which subsistence farmers depend, may both reduce poverty and decrease pandemic vulnerabilities. In the short term, as countries develop reopening plans and economic recovery strategies, they must prioritize food access and affordability for vulnerable populations. Implementing policies that promote equity, such as expanding and ensuring portability of social safety net programs and compensating those who have lost income due to the pandemic, are important first steps.

Conclusion

COVID-19 is the latest example of a pandemic that has exposed vulnerabilities in the global food system. An approach that integrates food systems and pandemic planning is needed to guide policy-making efforts to effectively prepare for, respond to, and recover from future pandemics and develop a safe and resilient food system. This framework and recommendations provide a launching off point; there are myriad other ways these systems can, and should be, integrated. We call on multidisciplinary actors to respond quickly, maximizing what is being learned from this pandemic to promote future resilience for the inevitable next one. 

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COMMENTARY ON COVID-19 AND THE FOOD SYSTEM

New survey shows COVID-19's impacts on South Carolina oyster farmers and offers hope for recovery

JAFSCD
Responds to
the COVID-19
Pandemic



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Introduction

This article is a summary of six months of research on how COVID-19 has affected South Carolina oyster aquaculture farms. This research has four goals: to better understand oyster consumption and purchases, to assess the impact of COVID-19 restaurant closures and reduced seating capacity on oyster consumption, to forecast oyster consumption trends, and to discover methods for marketing oysters for home consumption.

The first two goals were researched at the height of the COVID-19 shutdown and were documented in three Clemson University Land Grant Press articles: “Impacts of COVID-19 Restaurant Closures on

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Co-principal investigators from Clemson University are Dr. Lori Dickes, Dr. Keith Walters, Dr. Rob Carey, Dr. Kenneth Robinson, and Jack Whetstone, Clemson University. Special thanks to Clemson graduate student David Cheplick and Matt Gorstein and Graham Gaines of South Carolina Sea Grant for their help reviewing survey questions.

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South Carolina's Shellfish Industry" (Richards, 2020a), "The South Carolina Shellfish Industry Faces a Challenging Recovery After COVID-19" (Richards, 2020b), and "The Post COVID-19 Restaurant Recovery May Take A While" (Richards, 2020c).

While performing this research, it was realized that more detailed consumer information was needed to accurately measure oyster consumption trends. Past consumer studies rarely separate oyster consumer statistics from general seafood or shellfish categories. And shellfish consumer surveys are easily skewed by shrimp consumption, which accounts for 70% of all shellfish eaten in the U.S. (U.S. Department of Agriculture Economic Research Service [USDA ERS], 2019), and of which 92% is imported (NOAA Fisheries of the United States, 2017).

Oyster Consumption: What We Knew Pre-Survey

National seafood surveys suggest that shellfish consumers have higher than average educational attainment and household income (Jahns, Raatz, Johnson, Kranz, Silverstein, et al., 2014) and are likely to be more than 50 years of age (Zhang, House, Sureshwaran, & Hanson, 2004). These studies also pointed out that most seafood consumption occurs away from home—between 62% (Zhang et al., 2004) and 90% (Richards, 2020d).

Consumption predictions based on past survey data are concerning for South Carolina's oyster industry, indicating that it may suffer longer than other agricultural commodities. The economic fallout of COVID-19 is reducing household income and those over 50 years of age may be less likely to visit a restaurant due to being in a high-risk group for COVID-19 complications.

South Carolina Oyster Consumer Survey

While oyster consumption in the U.S. is fairly low, at 0.18 pounds (0.08 kg) of oyster meat per capita (USDA ERS, 2019), South Carolinians consume almost twice this amount (Cheplick et al., 2020). This raised a question: are there differences between South Carolina oyster consumers and those in the general population? In July 2020, an oyster consumer survey was designed to research this question, with input from oyster growers, other Clemson researchers, and the South Carolina Sea Grant Consortium.

In August 2020, over twelve hundred (1,210) consumers in the South Carolina coastal and metropolitan areas were surveyed, which includes zip codes from the South Carolina counties of Greenville, Spartanburg, Richland, Lexington, York, Horry, Georgetown, Charleston, Colleton, Beaufort, and Jasper. Chatham County (Savannah, Georgia) and the zip codes contained by Charlotte, North Carolina, were also included. Of the consumers surveyed, 905 were oyster consumers and 305 were non-oyster consumers.

Survey Results: Consumer Demographics, Oyster Consumption, and COVID-19

We found that survey results were somewhat consistent with national surveys with respect to education and household income. However, South Carolina oyster consumers tended to be under 45 years of age (Table 1). Our survey also found that the 76% of oyster consumption occurred away from home, at restaurants and oyster roasts (Richards, Motallebi, & Dickes, 2020), which was exactly the midpoint of the range previously mentioned.

COVID-19 Impacts on Oyster Consumption in Restaurants

The survey also attempted to estimate the economic damage to South Carolina oyster growers caused by COVID-19 restaurant shutdowns and reduced dining capacity (Table 2). The results showed that over 60% of respondents either decreased or stopped their oyster consumption at restaurants due to COVID-

19. The reasons given for this reduction include that restaurants were closed or had reduced dining capacity, people were avoiding eating out due to COVID-19, restaurants were offering fewer oyster options, and oysters were not desirable for or offered for carryout dining.

Signs of Hope for a Future Recovery

There were three bright spots from this data: younger than expected consumers, higher than expected consumption at oyster roasts, and oyster consumption at restaurants not declining in all instances. The younger oyster consumer might mean that there will be a faster rebound in restaurant traffic. Oyster roasts are an outdoor activity that is safer and more acceptable for dining during the COVID-19 pan-

Table 1. Demographics of Oyster Consumers (n=905) and Non-consumers (n=305)

	Consume (Yes)	Do Not Consume (No)	Difference (Y-N)
Age			
Under 25	15.5%	14.8%	0.7%
25 to 34 years of age	31.0%	20.3%	10.7%
35 to 44 years of age	22.3%	20.3%	2.0%
45 to 54 years of age	12.9%	16.7%	-3.8%
55 to 64 years of age	10.1%	13.4%	-3.4%
65 to 74 years of age	6.7%	11.5%	-4.7%
75 years or older	1.4%	3.0%	-1.5%
Gender			
Male	32.0%	28.5%	3.5%
Female	68.0%	71.5%	-3.5%
Highest Level of Education Completed			
High School or Less	17.3%	23.6%	-6.3%
Some College or Associates Degree	35.8%	37.4%	-1.6%
Bachelors Degree	29.6%	27.5%	2.1%
Advanced Degree	17.2%	11.5%	5.8%
Household Income (self reported) (US\$)			
Less than \$29,999	18.0%	30.2%	-12.2%
\$30,000 to \$49,999	23.3%	19.7%	3.6%
\$50,000 to \$74,999	20.7%	24.9%	-4.3%
\$75,000 to \$99,999	14.1%	12.8%	1.4%
\$100,000 to \$149,999	14.9%	6.9%	8.0%
\$150,000 or greater	9.0%	5.6%	3.4%
Size of Household			
Only me	15.1%	15.4%	-0.3%
Two people	32.2%	32.5%	-0.3%
Three people	21.0%	25.6%	-4.6%
Four people	19.3%	13.8%	5.6%
Five or more people	12.4%	12.8%	-0.4%
Race			
White/Caucasian	69.8%	60.7%	9.2%
Black/African American	24.3%	36.1%	-11.8%
Asian	4.0%	1.6%	2.3%
American Indian or Alaskan Native	1.1%	1.6%	-0.5%
Native Hawaiian or Pacific Islander	0.8%	0.0%	0.8%

demic. Finally, almost 40% of oyster consumers either did not change or increased their oyster consumption during the pandemic (Table 2).

There is much more data from this survey that will be used to help oyster producers recover from COVID-19 losses.

These results will be published in 2021 and will include regression analyses and zip-code mapping to help oyster growers market their products more effectively. Also, 2021 will hopefully see a COVID-19 vaccine and a return to some degree of normalcy.

Table 2. COVID-19 Restaurant Impacts on Consumption (n=905)

	Frequency	Percent
How Has Your Consumption of Oysters at Restaurants Changed		
I have increased my consumption of oysters	75	8.3%
I have not changed my consumption of oysters	285	31.5%
I have decreased my consumption of oysters	298	32.9%
I have stopped consuming oysters due to COVID-19	247	27.3%
Reasons Consumption Decreased at Restaurants (n=298)		
Closed or reduced dine-in capacity	200	67.1%
I am currently avoiding eating out due to COVID-19	140	47.0%
I do not want to order oysters for carry-out	101	33.9%
Restaurants offering fewer oyster menu items	63	21.1%
Restaurants not offering oysters for carry-out	57	19.1%

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Food access initiatives: An integral piece of the Revere, Massachusetts, COVID-19 response

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**JAFSCD
 Responds to
 the COVID-19
 Pandemic**



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Introduction

Cambridge Health Alliance (CHA) is a community health care system that serves the region north of Boston, including the city of Revere, Massachusetts. In an effort to confront the root causes of poor health, CHA has engaged in an initiative to address the social determinants of health, including food insecurity, homelessness, and unemployment. In 2017, we learned that 51% of our patients in Revere screened positive for food insecurity. In response, we committed to increasing our patients' access to healthy foods.

Unfortunately, the COVID-19 pandemic has exacerbated Revere's existing financial and health challenges: unemployment spiked, and during several periods of the past seven months, the city experienced the second-highest infection rate in Massachusetts. To support the community, we worked with The Greater Boston Food Bank (GBFB) to expand our monthly free produce

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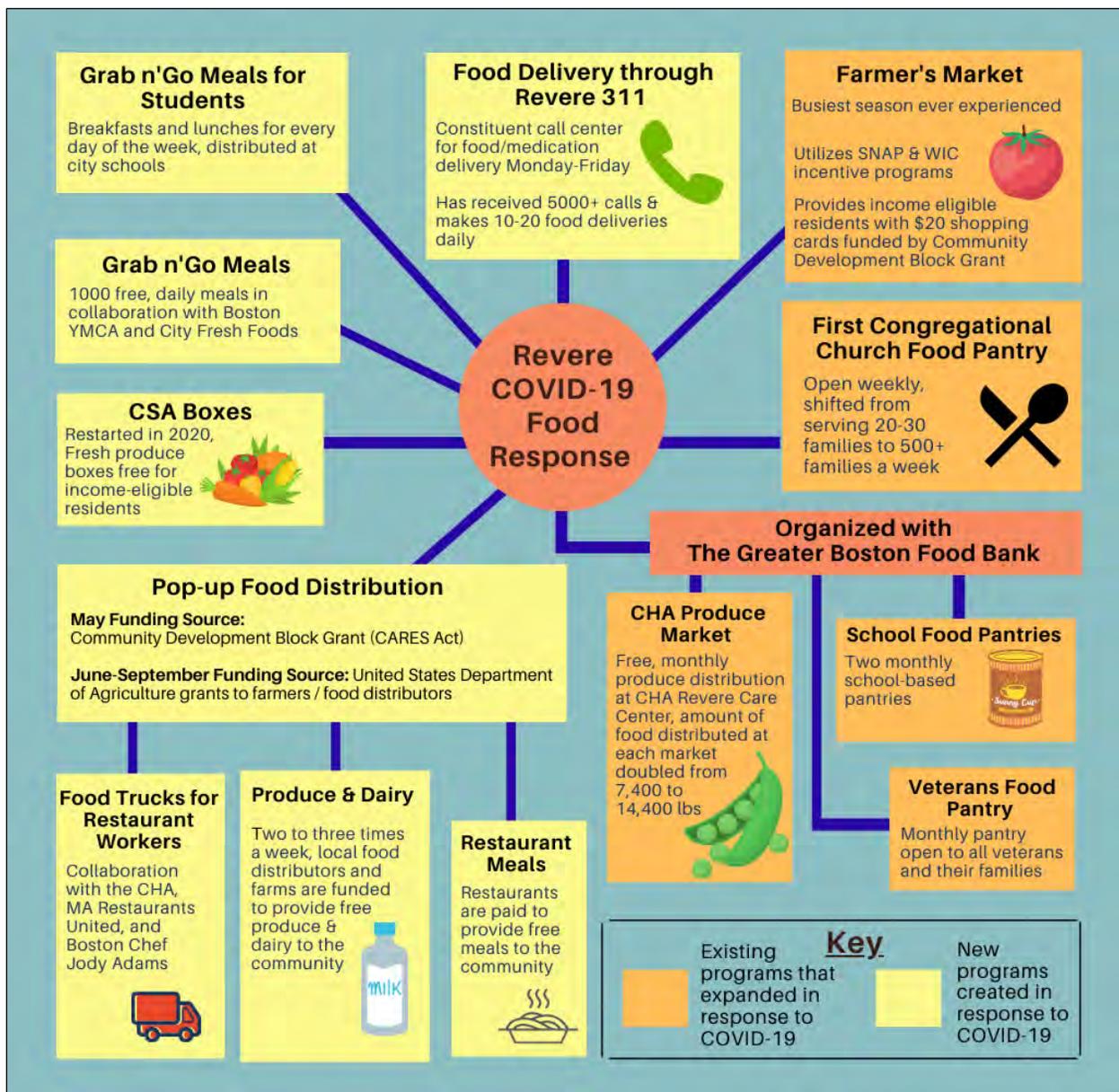
We would like to thank Charlie Giuffrida, Dimple Rana, and Ralph Decicco for sharing their knowledge about and experiences in Revere's pandemic response. We are also appreciative of Kim Hanton's guidance and feedback.

market at our local health center. We also joined forces with city leadership to promote the produce market, organize food truck pop-ups, and support the city’s rapid expansion of innovative and coordinated food distribution programs. Figure 1 illustrates the components of Revere’s food response.

Ultimately, the true heroes of Revere’s COVID-19 food mobilization were city leaders Charlie Giuffrida, assistant director of Parks &

Recreation; Dimple Rana, director of Outreach and Healthy Community Initiatives; and Ralph Decicco, volunteer coordinator and chair of the Revere Commission on Disabilities. We spoke with them, as well as with Dr. Rachel Zack, senior data analyst at GBFB, and Jean Granick, community health improvement manager and Revere Mobile Market director at CHA, to highlight the key components and best practices of Revere’s community food assistance response to COVID-19.

Figure 1. The Community Food Response to COVID-19 in Revere, Massachusetts



The following interview has been edited for brevity and clarity.

Molly Babbin: What were the most important steps to building a coordinated food response in Revere?

Charlie Giuffrida: One of the first things we did was assemble a team. We agreed immediately that we needed to repurpose city staff. For example, I'm the assistant director of Parks and Recreation. However, I'm not doing Parks and Recreation anymore because they repurposed me for food distribution.

Dimple Rana: We worked on finding a central food distribution center. We decided to use a public middle school to house the food pantry, the delivery system, the pop-ups, and our grab 'n' go program.

Charlie: The food pantry in Revere already had the infrastructure to provide food. We helped them move from their 30+-year church location to the school. We developed a delivery system around that food pantry for people who were in quarantine, mobility challenged, or just scared to leave their home. We found out about their needs using Revere 311, which is our way to directly interact with constituents. We have conversations with residents, listen to what they're dealing with, and connect them to the services they need. In the 10 minutes we've been on the phone, I have received four requests for help via 311.

Then we realized that when the government passed the CARES package, trillions of dollars were available. Our local businesses were suffering, so we created a pop-up program in May and paid local businesses to give us food. We distributed produce and dairy twice a week and had multiple food truck events. [See Figure 2.]

Figure 2. Pop-up Food Truck Event with Meals from Several Boston Restaurants



Photo by Jean Granick.

Dimple: After the CARES Act funding was gone, the USDA started another initiative and worked with farms directly to fund them. They enlisted farms and food rescue organizations to become the pop-up program distributors.

Charlie: So, because of the USDA funding, the pop-up program we had in May morphed into a situation where, all of a sudden, vendors started calling us saying, "Hey, I have to find a community partner. Can you be that person?"

Overall, we built a food distribution system composed of volunteers, existing infrastructure, repurposed city staff, CARES money, and local vendors. We did what we could for 60 days until the USDA arrived with reinforcements and allowed us to continue our programs throughout the summer.

Dimple: We also have a farmers market dedicated to serving low-

income residents. We have incentive and federal programs that allow residents who qualify to shop at the market. This is the sixth season that we've run the farmers market, and this has been the busiest season ever. We also restarted our community supported agriculture (CSA) program. We had attempted it back in 2015, but it wasn't successful. Now, we're averaging 50 to 70 CSA produce boxes weekly, and we have Community Block Development Grant money to subsidize the cost for income-eligible residents.

Ralph Decicco: Without volunteers, we would not be able to run these programs. We had volunteers helping with delivery to the most vulnerable, and volunteers coming to the food pantry to help. At the beginning of the pandemic, we had an outpouring of volunteers. We had people from school departments, teachers, college students, and residents. [See Figure 3.]

Molly: How did CHA and GBFB adapt to support the community response in Revere?

Jean Granick: We knew our patients were in need of food, so we adapted our monthly produce market: we eliminated registration, added non-perishable items, recruited nonclinical staff as volunteers, and put measures in place to ensure social distancing. CHA's city and nonprofit partners helped promote the market, and we have reached over 650 households.

Dr. Rachel Zack: During the first six months of the COVID-19 pandemic, in order to support the increased demand for food assistance, GBFB more than doubled the amount of food distributed to Revere, from an average of 39,000 to 87,000 pounds a month. [See Figure 4.]

Molly: How did you get the word out to Revere residents?

Charlie: First, we made 15,000 phone calls to residents. We called seniors, families, and new moms. And we did a lot of grassroots stuff. The Parks and Recreation staff were in the parks almost every weekend all summer, handing out masks and passing along information about our food programs.

Our city also has a strong social media presence. Four city platforms were amplifying the food programs, especially to immigrant communities. We had the newspaper, Revere TV, and mailers to help reach our senior community. Everything we did said, "Call 311." We just stayed consistent on that message.

Next, we convened a committee of about 25 community Facebook page administrators to coordinate our social media messages around specific core issues. So, let's say we were going to talk about masks. In the Parks and Rec department, we

Figure 3. Volunteers Bag Food for Revere's First Congregational Church Food Pantry



Photo courtesy of city of Revere, Mass.

Figure 4. CHA Produce Market Expands to Meet Community Food Needs Throughout COVID-19



Photo by Jean Granick.

would talk about the importance of [wearing] masks outside. The Mayor's Office would talk about the science of masks. The Police Department would talk about enforcement of wearing masks. The Department of Public Works would talk about the cleanup of masks. We would attack the issue from all sides.

Overall, we're noticing other people are reading what we're doing, and more people are connected to the city than ever before.

Molly: What advice do you have for others organizing food responses during this time?

Charlie: First, research best practices from other communities as much as possible. Also, be flexible: my city and my union allowed me to repurpose

myself. The government can be very black and white, and this is an emergency situation where you need to be able to go into a gray area and do what you need to do.

My recommendation to anyone in emergency operations is: Become best friends with your school department. The school system has an incredible reach, no matter where you are. Also, involve all of your departments—not only police, fire, public works, and the mayor's office, but also the library and parks and rec. Each city department has their own constituency that they can reach.

Dimple: Your network and relationships are really important. The work of my department, Healthy Community Initiatives, has been focused on healthy eating and active living, and we had already

built all of these relationships. We knew where to go and people knew who to come to. Even with the food pantry—we had a long-standing relationship with the church and the volunteer who runs the food pantry. Building that trust over the years enabled them to feel comfortable moving locations.

Molly: Do you think that the newly developed COVID-19–related programs will have a lasting effect on food insecurity in Revere?

Dimple: That’s part of the work that we were doing, even pre-COVID: developing Revere’s food economy. We’re definitely learning a lot of things with COVID about hunger relief and food security, and how that ties in with the policy changes that we’ve been working on, such as the farmers market incentive programs. Prior to COVID, the farmers market had been our anchor around small food business development and helping immigrant informal food businesses become formal food businesses and entrepreneurs. That’s all tied in with

economic mobility, workforce development, small business development, and part of the antidisplacement plan for the city. And so, we really want to keep away from the band-aid approach. We want to look at the policies and systems and the environment and really change things.

Molly: Do you think there will be a long-term effect of having hundreds of residents volunteering?

Ralph: We’re trying to bring the community together. Trying to unite it. So that’s what we’re hoping will happen with all these volunteers. People are meeting people that they probably would have never known. They’re helping people in the community, and they’re meeting people from different backgrounds.

The Cambridge Health Alliance continues to value, sustain, and grow relationships to address food insecurity. With our passionately local outlook, we believe that partnerships are critical to the health of our community. 

Operating principles for collective scholar-activism: Early insights from the Agroecology Research-Action Collective

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Abstract

Scholar-activism is attractive to researchers who want not just to learn about the world, but about how to change that world. Agri-food studies have experienced a surge in the past two decades in researchers who see closer ties to social movements as key to food systems change. Yet to date,

much scholar-activism depends on individually negotiated researcher-movement relationships, which may or may not be sustained long term and where knowledge can remain siloed. The Agroecology Research-Action Collective (ARC) seeks something different. Born of a desire to subordinate scholarship for scholarship's sake to the needs and exigencies of movements, ARC envisages *collective* processes, horizontal non-exploitative learning among ourselves and with movements, and mechanisms for multidirectional accountability. This reflective essay is the story of how ARC

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set out to “get our house in order”: to organize ourselves as scholars committed to systematizing more accountable and reciprocal relationships with frontline communities and grassroots movements. We first share the Principles & Protocols that guide our actions and the process through which we developed them. We then discuss two interconnected arenas in which ARC is developing a community of practice guided by the Principles & Protocols. The first arena is through integrating participatory education into our everyday teaching and mentoring. The second arena is working to achieve broader social and institutional change by sharing methods and strategies for mobilizing resources and legitimating knowledge, both old and new.

Keywords

Scholar-Activism, Agroecology, Participatory Action Research, Community-Based Research, Food Systems, Food Sovereignty

Introduction

The public’s rising interest in sustainable food and agriculture over the past two decades has dovetailed with multiple interconnected crises—in climate, biodiversity, human health, and democracy, among others—leading many scholars to say they want to make a difference. A wide array of social scientists in North America asking the knotty question “What will it take to transform food systems?” have arrived at the answer: in collaboration with frontline communities and organizations.¹ The resultant surge in research has opened up space to delve into root-cause dilemmas: asking what dismantling racism in the food system looks like, exploring how to transform an industry that employs a third of people on the planet, and identifying where to begin intervening in agri-food systems that contribute to diet-related disease epidemics, emit up to a third of greenhouse gas emissions, and produce tremendous yields but fail to nourish people equitably.

Yet, as scholars participating in these dia-

logues, we worry that such scholarship may miss the mark in terms of advancing social change. We have had countless conversations with community organizers, activists, and farmers, both urban and rural, who share stories of feeling used or burned by both researchers and the universities under whose auspices those researchers work. As a result, skepticism pervades in the communities we imagine we are serving, collaborating with, or trying to understand. This tension is nothing new, as scholar-activists have been openly discussing such challenges for decades (Borras, 2016; Hale, 2008; Hall & Kidd, 1978). Precisely because this type of work has been poorly understood or executed in the past—whether by neglecting to share the fruits of research or failing to listen to collaborators’ needs from the start—scholar-activists fail to gain traction on “making a difference.”

Responding in part to this deficit, over the past decade, memoranda of understanding (MOUs) produced in partnership between scholars and research partners have become more sophisticated and radical, outlining guideposts for a mutually beneficial researcher-community partnerships (e.g., Superstorm Research & Disaster Collaboratory, Healthy African American Families, Karuk-UC Initiative, Civic Laboratory for Environmental Action Research Lab). Calls for data sovereignty (community members’ control over data they provide to researchers) have become more pronounced, especially from Indigenous scholars and organizations (Hudson et al., 2020). Some of these protocols have even been institutionalized into review boards and university standards (such as at Memorial University, Newfoundland, and University of Victoria, B.C.). However, institutional recognition is not the norm; with a few notable exceptions (e.g., the Karuk-UC Initiative), the deep decolonizing work represented by tribal MOUs mostly exists as independent initiatives and agreements between individual researchers or projects and their partner organizations. MOUs may or may not extend to a wider network of scholar-activists

¹ Frontline communities are those that most directly experience the adverse impacts of environmental and social injustice. Frontline movements, in turn, refer to organized communities fighting against dangerous work conditions, toxic living environments, and systematic oppression. In the food arena, examples of such groups in the U.S. include the Rural Coalition, Community to Community, and the Federation of Southern Cooperatives.

or have a shelf life beyond the length of the project.

This gap between the desire for engaged, effective, accountable research and its successful and sustained execution led us to develop the Agroecology Research-Action Collective (ARC) in 2017. ARC is a group of roughly 50 scholar-activists² who focus on issues of farm justice, food justice, food sovereignty, and agroecology in the North American context. Roughly 85–90% of us identify as social scientists, but we represent a range of biophysical and social science disciplines, including soil science, horticulture, ecology, geography, agroecology, sociology, anthropology, science and technology studies, international relations, and public policy. Our scholarship is also not confined to the academy: We work in universities, community colleges, nonprofits, and independent positions. Many of us engage in community-based or activist work of one sort or another, including with farmers' organizations, farmworkers, small nonprofits, and activist groups. For some of us, this activity has been central to our personal and political lives. For others, it has been central to our professional careers. For many of us, it is both. While we share the mission of advancing agroecology in North America, for many of us, scholar-activism was—and remains—ignited by social movements abroad.

Early on in the formation of ARC, we were challenged by long-time food sovereignty organizers to “get your house in order”—to organize ourselves as scholars committed to systematizing more accountable, reciprocal relationships between researchers and the communities with whom we work. This call to action from grassroots allies was less about asking scholars to get more involved with frontline organizing than it was about asking us to look internally at our institutions and think

deeply about our ethical commitments. It also reflected an important current trend in U.S. and international agroecology: Many individual scholars have dedicated themselves and their research to working in and with movements to advance food system transformations. Yet, not enough analysis has been done to address the issue of how to foster alliances or coalitions between scholar-activists and other actors in movements for agroecology, food sovereignty, and agrarian justice (Duncan et al., 2019). This is the work ARC set out to do. We wanted to bring together a cohort of scholar-activists and begin building “formal operating mechanisms” for ourselves that move beyond individually negotiated researcher-movement relationships to envisage collective processes, horizontal non-extractive learning, and mechanisms for accountability. Adopting and adapting operating mechanisms can help scholars overcome the gap between their desire to do research with a practical impact on social change and pervasive obstacles to such work.

In this reflective essay, we discuss a set of Principles & Protocols we have developed for this purpose. Designed to be simple and easy to circulate, they are something frontline groups can use to negotiate with researchers and that researchers can use to co-design transformative research with frontline organizations. We first outline the early organizing efforts and movement feedback through which we arrived at the idea of ARC, an autonomous organization of scholar-activists. Next, we sketch the collaborative process leading to the development of the Principles & Protocols. Finally, we discuss (1) teaching and mentoring and (2) institutional change as two areas in which activist-scholars can make it easier to reconcile their professional demands with their commitments to support frontline groups.³

² For the purposes of linguistic diversity, we use “scientist,” “researcher,” “scholar,” and “academic” as loosely interchangeable terms in this text. We want to underline, however, that of course not all scholars exist within the academy; a number of ARC members work in civil society organizations or independently. Similarly, research and scholarship can be done *by* grassroots organizations and community actors; trained professionals certainly do not own this domain of practice. Though we use “scholarship” to primarily refer to formal science or research, we do not wish to restrict that term: ARC’s goal is that “scholarship” will be produced in *relation* between academics and/or scientists and social movement knowledge-makers.

³ Our article represents the experience and perspectives of the authors (as coordinating committee members and co-founders of ARC) and not ARC as an organization. We share what we have developed not to say that it is the most “correct” approach, but to offer our experience as a way of building shared knowledge about research that is more accountable, more reflexive, and more directly in

Accountability and Reciprocity: Doing Research Differently

Though scholar and activist identities have been marbled since at least the time of the ancient Greeks (Calhoun, 2008), and, in non-Western traditions, through cultures of Maya, Aymara, Quechua, and other Indigenous thinker-doers, the recent burst of scholar-activism in food systems research is noteworthy. Over the past five years, several workshops, articles, and special issues have been dedicated to documenting the struggle to do accountable food justice research (Croog, Hayes-Conroy, & Gutierrez-Velez, 2018; Orozco, Ward, & Graddy-Lovelace, 2018; Herrera, 2018; Levkoe et al., 2016; Reynolds, Block, & Bradley, 2018). Conventional research practices, this scholarship suggests, often lack transparency or a means for research protagonists to shape research questions, methods, or how the “subjects” are represented, thus reproducing what some scholars have named an extractive colonial research dynamic (Bradley & Herrera, 2016). Even self-consciously “inclusive” research, where research questions come from the community and their active participation is prioritized, can retrench colonial habits. “Inclusion is a form of diversification but it can also be violent,” notes the Civic Laboratory for Environmental Action Research (CLEAR), explaining that “inviting voices into spaces not built for them or that undermine their messages, lived experiences, and expertise can often work against the well-intentioned goals of inclusion” (CLEAR, 2018, “Decolonizing your syllabus?” para. 2; see also Tuck & Yang, 2012).

These dynamics can impede both good scholarship and social change. Becoming an expert in new political developments in social movements, frontline communities, or some aspect of what Gilmore calls “the politically and oppositionally new” (Gilmore, 1993, p. 71) can advance one’s academic career. Yet the prevailing university institutional culture creates pressures for pursuing individualistic research that is often disarticulated from

larger struggles for change (Gilmore, 1993). Researchers’ disciplinary skills and the needs of partner organizations are often mismatched; communities may not know what they want out of a research process; and defining “the community” in community-based research can be empirically, politically, and personally challenging (Pulido, 2008). Movement groups also express concerns about university teams obtaining funding that would otherwise go to frontline organizations,⁴ teams not sharing “participatory” grant funding, and grassroots organizations simply not having enough resources to participate in research, even when that research is beneficial to them.

Different approaches to resolving these tensions, in turn, have generated lively debates within scholar-activism. For example, productive frictions exist between schools that view the “production and mobilization of knowledge” as the primary task for scholar-activists (e.g. Calhoun, 2008) and those who see the principal role for such scholars as resource agents, channeling capital, access to privileged spaces, and information towards social movement needs (e.g., Derrickson & Routledge, 2015). Some theorists understand scholar-activists as integrated *in* movements, such that movements’ knowledge becomes imbricated in their own knowledge production (Brem-Wilson, 2014). Others argue in favor of complementarity: “an autonomous, two-way, mutually reinforcing interactive approach that recognizes the ability of both peasants and scholar-activists to generate knowledge (Borras, 2016)” (Duncan et al., 2019, p. 6).

In recent years, researchers have also explored the particular challenges of how to relate scholar-activism to food movements. For instance, Duncan et al. (2019) discuss the place of researchers in the larger European food sovereignty movement and whether they can form their own constituency within the movement’s governance architecture. In Europe, activist-scholars in this arena tend to focus on their individual research agendas and are primarily accountable to their home institutions, even

service of food systems transformation.

⁴ Although major science funders (National Science Foundation, U.S. Department of Agriculture, U.S. Department of Energy, National Institutes of Health) generally do not hold competitions for which frontline organizations are eligible, there is direct competition when it comes to foundation dollars.

though they seek to collaborate with and be more accountable to movements. As a result, they have a fragmented identity and struggle with issues such as a lack of collective organization, the inability to formulate a shared position, and a weak recognition by movements of their contributions as supporters of food sovereignty. Simultaneously, activist-scholars worry about overshadowing movement knowledge and leadership through asserting their expertise. Responding to these tensions, Duncan et al. (2019) call for the creation of “formal operating mechanisms” that can help researchers move beyond individually negotiated researcher-movement relationships and towards collective processes that require and reproduce non-hierarchical and mutually beneficial relationships rather than extractive and oppressive ones. This is the challenge to which ARC’s collective development of Principles & Protocols responds.

While reflecting these debates in food scholar-activism, ARC also carries forward old traditions in agroecology in which researchers insert themselves into grassroots political and social struggles as activist-scholars (Fals-Borda & Rahman, 1991; Rappaport, 2008). Orlando Fals-Borda, the intellectual forebearer of participatory action research (PAR), honed his thinking through working with campesinos within the Colombian Ministry of Agriculture in the late 1950s (Wakeford & Sanchez Rodriguez, 2018). Drawing on Freirean approaches to transformative adult education, Fals-Borda co-organized the first international meeting of participatory action researchers in 1978, crafting a list of principles upon which a majority of further action-research approaches, including ours, draw heavily (Hall & Kidd, 1978; Wakeford & Sanchez Rodriguez, 2018). These principles then informed social process methodologies using on-farm action research and cycles of participatory analysis and reflection that were key to the spread of agroecology across Latin America in the 1980s and 1990s (Holt-Giménez, 2006).

Inspired by these early PAR efforts, contemporary agroecology combines scientific methods, on-farm practices, and social movement organization (International Planning Committee for Food Sovereignty, 2015; Méndez, Bacon, Cohen, & Gliessman, 2015; Vandermeer & Perfecto, 2013).

Though it bears emphasizing that there is no singular “agroecology,” the trend in the past decade has been towards deepening the explicit entanglement of the natural and social sciences and defining a politics of systemic transformation (Anderson, Bruil, Chappell, Kiss, & Pimbert, 2019; de Molina, Petersen, Peña, & Capor, 2019; Rosset & Altieri, 2017). This trend includes, for example, recognizing that the struggle over ideas, meaning, and narratives in agroecology has very real implications for the material struggles to advance a more just and sustainable food system (Giraldo & Rosset, 2017). It means multiple lines of research into the key drivers of bringing agroecology “to scale” (Brescia, 2017; Mier y Terán et al., 2018), with emphasis on the roles of crises, social organization, training and education, effective agroecology practices, favorable markets and policies, and external allies. It means interrogating how such external allies have been critical to agroecology movements in documented cases around the world: from pivotal NGO support for the *Campesino a Campesino* movement in Central America (Holt Giménez, 2006) to the controversial Hindu Ashrams backing the Zero Budget Natural Farming movement in India. “Academics,” many accounts suggest, are linchpins in agroecology’s success (Gliessman, 2017; Mier y Terán Giménez Cacho et al., 2018; van den Berg, Kieft, & Meekma, 2017). But, to our knowledge, the agroecology literature has not directly addressed how to foster such alliances or coalitions between scholar-activists and other actors in the movement.

ARC Origins: Getting Our House in Order

In 2014, the UN Food and Agriculture Organization (FAO) convened the First International FAO Agroecology Symposium, followed by several regionally specific agroecology conferences around the world. But North America was not included in these regional dialogues, largely due to a lack of organized presence for agroecology on the continent. A group of academics, who were loosely affiliated with each other through shared agroecology interests, set out to assemble a multistakeholder alliance across research, education, and advocacy sectors to fill this gap. We sketched plans about what we wanted to do, beginning with a mission statement for outreach to groups whom we hoped

would join our envisioned large and wide-ranging initiative, which we dubbed the North American Agroecology Forum. Even the earliest activity, however, underlined for us the paradox of advancing a project which we expected would be of value—but movements may not agree. Toward understanding if, where, and which grassroots groups would be interested in this forum, we recognized the need to involve movement stakeholders at the earliest stages of the decision-making process. But we quickly found that even drafting something as apparently simple as an invitation statement assumed certain ideas about who gets to define “what agroecology is.” Making such decisions required more diverse participation, which we sought out—with surprising results. In spring 2016, representatives of several grassroots and civil society organizations, including the National Family Farm Coalition, Rural Coalition, the Institute for Agriculture and Trade Policy, WhyHunger, Pesticide Action Network North America, Food First, and La Vía Campesina, came together to discuss our nascent effort, and gave us a wake-up call with the following list of concerns:

- Would the North American Agroecology forum be willing and able to work with frontline groups to co-develop ethical and accountable principles and terms of engagement?
- How would the forum synchronize with existing groups and group processes? Would it destabilize or displace them?
- Would forum members be willing to go to the spaces where movements are already living and working?
- To what extent would the forum be available to support the urgent survival and policy priorities of frontline groups?

Grappling with our own responses to these questions, we held a series of further meetings with frontline groups. Taken together, their advice was that we *abandon* the effort to build a large, multisectoral coalition. We had to get “our house” in order by being much more reflexive about what we academics were doing. We had to organize as researchers and scholars inside the institutions we

know and within which we work. We had to figure out how we will dialogue with communities in ways that are not just “responsible” but that empower communities as coequal partners in producing knowledge about food systems and how to change them. Scholar-activists, we understood, always exist on both sides of the university-community equation; to borrow from the scholar Antonio Gramsci, we in fact represented the “traditional intellectuals” in positions of privilege while we pursued counter-hegemonic work in undoing hierarchies of privilege, knowledge, and power. How many of us were willing to commit “class suicide” (Cabral, 1966)? How could we join with communities’ many organic intellectuals without reconstituting hierarchies or undermining their expertise?

As part of working through these questions, the authors cofounded ARC in April 2017, as a group of scholar-activists who were willing to commit to this process and to take seriously the challenges of partnering with social movements on an equal footing. We circulated an invitation that spring and about 20 people initially joined. Over the next year, ARC built its decision-making procedures, membership, and working groups, with a coordination committee (including the authors) providing the administrative support required for ARC to function as a collective. We began holding monthly ARC-wide calls where core members collectively make decisions about projects, and when needed, take online votes to assure that all ARC members can participate. Generally, ARC operates on a consensus principle. In November 2019, ARC held its first-ever constituent assembly to define strategic directions and enrich community-building; by then we had grown to roughly 50 members, with 20–30 members participating very consistently and actively, including at the assembly.

ARC differs from the efforts reported in Duncan et al. (2019) in that we are consciously creating a network of activist-scholars who all work on agroecology and food sovereignty, across multiple institutions and organizations, some university-based, some independent, some NGO-based. To name a few examples, one of us specializes in community-based approaches to advancing agroecology for food security, nutrition, and gender justice in Malawi (Bezner Kerr, Hickey, Lupafya, &

Dakishoni, 2019). Another of us focuses on food movement organizing in U.S. cities, with an eye to mass incarceration and racial stratification (Sbicca, 2018). Several of us work on farmworker rights, agrarian justice, and social change effected through grassroots organizing (Graddy-Lovelace, 2017; Madrigal, 2015), in transnational politics (Shattuck, Schiavoni, & VanGelder, 2018), and via storytelling (Montenegro de Wit, 2014; Wills & Sampson, 2018), while several others have long-running research programs on agroecology, food sovereignty, and sustainable food systems in Canada, the U.S., and Latin America (Anderson, 2013; Iles, Graddy-Lovelace, Montenegro de Wit, & Galt, 2016; Mendez, Bacon, & Cohen, 2015; Patel, 2009; Wittman & Blesh, 2010). A good many of us in civil society work to expand the purchase of agroecology (and counter the power of agribusiness) in U.S. and international policy contexts (Chappell, 2019; Ferguson, 2019; Ishii-Eiteman, 2019; Varghese, 2020). And another cohort is advancing agroecological learning: how collective learning and cooperation occurs, where theory and practice most efficaciously entangle, how land and territories can be regenerated through working knowledge and transformative to education for solidarity and care (Anderson, Maughan, & Pimbert, 2018; Tarlau, 2019; Meek, 2020). We realized that there was a catalytic potential in organizing our scholarship *together*.

To date, ARC has created a community of shared knowledge and practice centered on monthly online meetings and, pre-COVID-19, travel to participate in movement-led spaces. Working groups have undertaken specific projects, such as Green New Deal policy recommendations in support of agroecology and food sovereignty,⁵ and organized scientific reviews of FAO agroecology reports.⁶ Learning with and from grassroots organizations motivates the work many of us do as educators, as we discuss further below. We also learn from each other, transmitting know-how on participatory research and education from the more seasoned scholar-activists to those of us with less skill and experience in this area. This creates a

community of shared practice that is essential to “scaling” agroecology within—and beyond—the institutions whose resources can be brought to support frontline practitioner communities. Between 2017 and 2020 we have grown in many ways, moving from aspirations for conference planning to ongoing engagements with the U.S. Food Sovereignty Alliance, the People’s Agroecology Process, and other grassroots organizations. Getting to this point was facilitated, in large part, by having developed Principles & Protocols that reflect the horizontal, reciprocal relationships that can lead to better, more accountable knowledge production.

Making the Principles & Protocols

Recognizing that diverse communities of practice have developed guidelines for community-based research, in 2017 we began by surveying existing literature and memoranda of understanding. Some texts we drew inspiration from included “Practicing Pikyav” (Karuk–UC Berkeley Collaborative, n.d.), a policy which UC Berkeley researchers co-developed with the Karuk people in northern California to guide collaborative projects in areas from water access to food security. Using a codesigned protocol, the Food Dignity project (Porter, 2018) worked over seven years with community-based organizations that provide food aid to study how those groups invest in building solidarity networks. The STEPS Centre’s Practicing Ethical Activist Scholarship for Sustainability Transformations framework (Gwiszcz, 2016) was formulated between scholars at the University of Sussex and three community-based networks working on environmental justice, learning for sustainability, and socio-ecological policy. We also drew on a terms-of-engagement memo between the farm bill practicum class at American University and frontline organizations (which we discuss further below).

We assembled these texts, organized themes conceptually, and highlighted elements specific to agroecology research and practice. This first draft was then shared with coordinators at several organizations with whom we had existing connections—

⁵ <https://agroecologyresearchaction.org/green-new-deal/>

⁶ <https://agroecologyresearchaction.org/response-to-hlpe-draft-report/>

the HEAL Food Alliance, the National Family Farm Coalition, the U.S. Food Sovereignty Alliance, the Community Alliance for Agroecology, and the Pesticide Action Network North America—with a request for comments. Specifically, we needed feedback on what was helpful? What was missing? Which elements could be changed and how? We also workshopped the principles internally.

Formally adopted by ARC in September 2017, the collectively agreed upon Principles & Protocols (ARC, 2019) below are intended to provide guidelines for participation as researchers in ARC. These

principles are not intended to be comprehensive or definitive. They certainly do not represent a comprehensive distillation of PAR, decolonial, feminist, and other engaged approaches. Nor are they novel in activist-scholar practice. They *do* represent a preliminary list of things that we and our community collaborators find useful in the beginning of a process of creating research that lives up to the demand for accountability, reciprocity, humility, and solidarity. We put them forward in hopes that a short list will be of practical use, that these principles will be refined, debated and improved, and ultimately help change research practice.

- **Principles of collaborative research development**

1. Research questions should, from the earliest stage, emerge from a **process of dialogue** between researcher(s) and community and/or movement partners.
2. The process of research after definition of research questions must involve **ongoing collaboration** in all steps, such as research design, implementation, data collection, and so on.
3. These guidelines themselves are subject to **continual development** in dialogue with community and movement partners—at this stage, they exist as a baseline to work from and will evolve as the group evolves.
4. This also goes for individual projects: ARC members will **review and revise** this list with community and/or movement partners in new research efforts.

- **Principles of ethical processes**

1. **Transparency:** Researchers must be open with their goals, needs, constraints, and in particular the resources involved in a project (i.e. budgets, sources of funding) to all collaborators.
2. **Accountability:** Researchers must justify their decisions and actions to community partners, not making decisions unilaterally without consultation and keeping to agreements that have been made. Once a collaboration is established, accountability goes both ways, as researchers need also to feel that their input and agreements are respected and valued by partners.
3. **Do No Harm:** We know that while trying to actually “do good” by pursuing impactful engaged research we can inadvertently harm those we are seeking to support. We must think through the impacts of our work at every stage and avoid harmful impacts (reputational, financial, political) to the best of our ability.
4. **Respecting alliances:** When working with collaborative groups (like networks, alliances, coalitions), researchers must be careful to not pick off and work with individuals in a way that sidelines or subverts the group’s decisions and values.
5. **Respecting other knowledges and analyses:** Since our goal is to build shared analysis, we must be open to and accepting of knowledges and analysis that are not our own and commit to taking these seriously even when our analysis differs.
6. **A commitment to the long term and relationship-building:** As much as possible, being “in it for the long haul” through building projects, authentic relationships, and power over time.

- **Principles of “resourcing”**

1. **Remuneration** of partners for time and expertise (honorariums) and providing for travel and other costs associated with the research process.

2. **Providing valuable work** to partners (e.g., grant writing, research on requested topics, digging fence post holes on the farm, etc.): build capacity in all areas of expertise—in both research and partner communities—such that interdependence cultivates equity.
 3. Strive to **avoid competition** with community partners in fundraising; seek funding from sources not available to community groups, leverage existing resources; include everyone in budgeting issues (beyond honorariums).
- **Principles involving data**
 1. **Interpretation should be dialogical**, with the goal of reaching shared analysis.
 2. **Write-ups** must be done **with time and space for feedback** from partners; stories should not be shared without permission; how data will be written up (by what process and timeline) should be discussed early on in research design. Wherever possible, co-authorship including community partners should be prioritized.
 3. **Dissemination** should be planned to be **broad** (i.e., beyond academic circles), include (on at least equal footing) public audiences, and remain attentive to potential (negative) impacts (see “do no harm” principle). When the research is presented, partners will be fully credited for their integral role, and not merely cited as protagonists or supporters, as appropriate.
 - **Work on institutions**
 1. We know that this approach to research is still not widely accepted within academic and other institutions and can be more difficult to pursue. Therefore, we commit to **using our positions within those institutions to move their internal values and support structures (e.g., funding, tenure decisions) toward this form of research.**
 2. Our ambitious and ultimate goal is to move from simply lowering disincentives to engaged research, to **engendering systemic change in “research” as a whole!**
 3. We also want to acknowledge that academia and other research institutions are not homogeneous, and individuals within them vary in power and privilege, according to (among other factors) race, gender, class, and positional status. Because some of us have more precarious positions in our respective institutions, we **invite the less precarious to leverage their privilege for their colleagues** as well as community partners.

We recognize that some protocols (e.g., cocreating research questions) are aspirational, and may only be appropriate in certain circumstances, whereas the principles underlying them (e.g., accountability, transparency, sharing of resources, non-exploitative relationship building) are non-negotiable. We expect good-faith efforts from ARC members to stay true to the principles and develop research processes in dialogue, with these guidelines shaping but not limiting what is possible and appropriate in every circumstance. We also recognize that many valid ways to do scholar-activism and engaged research exist. These principles, we hope, can be a *starting* point for other researchers and organizations with whom they collaborate to come to a shared understanding and

expectation about the research process in their particular situations.

These Principles & Protocols have associated benefits and challenges. On one hand, our individual experiences of negotiating accountable relationships with frontline organizations suggest that this practice facilitates a more robust method of co-producing knowledge, that is, of drawing on the different knowledges of researchers and frontline organizations to create a more accurate and ultimately effective way of knowing (Homsy & Warner, 2013). Dialogue between different kinds of knowledge, or *diálogo de saberes*, moreover, is a key tenet of agroecology and has been central to the ability of La Via Campesina and other social movements to develop and advance agroecological

understandings across diverse constituencies (Martínez-Torres & Rosset, 2014).

On the other hand, developing the Principles & Protocols was really just a start. How would we hold ourselves accountable to them? What theoretical and practical contradictions might they embed? How could we overcome the real challenge that soon emerged for us: the near-impossibility of doing scholar-activism if it remained additive to the exigencies of the “real work” demanded by our professions? Most activist-scholars, including ARC’s members, juggle heavy loads of research, teaching, mentorship, publishing, fundraising, NGO management, and university service responsibilities. As long as activist-scholar work comes atop everything else and is not part of scholars’ recognized and rewarded proficiency, it represents an investment of time and resources antagonistic to sustaining our professional careers—to say nothing of our sanities. A way of nudging from competition to synergy is by finding manageable ways to center our professional lives more on scholar-activism.

In the next section, we share two ways that ARC is strengthening a community of practice in this respect. First is through mentoring and teaching, illustrated through the example of the farm bill practicum taught by one of our members at American University. Second is through working to change the incentive structures at institutions that inadequately recognize and reward scholar-activist research; such barriers put further strain on academics to choose between professional success and advancing social change.

Integrating Accountability and Participatory Research in Education

In “Breaking the Chains: How Activism can Help Change Teaching and Scholarship,” George Lipsitz (2008) argues that intellectual work in contemporary public institutions is constricted “in debilitating ways” (p. 93). The privatization of higher education and ideological opposition among elites to the very idea of public learning, he suggests, “pressure teachers to privilege technical expertise over critical, contemplative, and creative thinking” (Lipsitz, 2008, p. 93). Ironically, academics facing a gauntlet of high-stakes testing, school-to-work programs, and efforts to transform universities into

R&D arms of the military and transnational corporations can find themselves “too busy, too pressured, too embroiled in activity to think much about their philosophy, ideology, or structure” (Lipsitz, 2008, p. 92). Grassroot movement organizers are no less squeezed, indeed seldom enjoying the privilege of a pause in struggles for survival. By the same token, these constraints make common cause between scholars and movements—suggesting that we have much to learn from one another: “In both activism and the academy, we suffer when we do not know enough, when critical reflection becomes too far removed from practical activity, and when the imperatives of our daily work leave too little opportunity for analysis, reflection, and critique” (Lipsitz, 2008, p. 93).

Teaching and mentoring are invaluable *sites* of scholar-activism within which participatory-action, decolonial, and agroecological approaches can be cultivated with our students. It makes little sense to ignore the spaces where many of us spend significant portions of our days, and to overlook the formative power of working with students. A growing literature on pedagogy for sustainable food systems points to the potential of community-based learning and community-partnered research courses for equipping students with the knowledge and skills they need to work with communities, NGOs, and frontline groups to catalyze structural change for racial justice and economic equity (Bradley, Gregory, Armstrong, Arthur, & Porter, 2018; Swords, Frith, & Lapp, 2018; Valley, Wittman, Jordan, Ahmed, & Galt, 2018; Valley et al., 2020). Diverse models and designs exist for such courses. At the graduate level, if activist-scholars can introduce and connect professional and doctoral students to projects that are movement-led and movement-requested, the resulting collaborations can bring the faculty members’ mentoring and research roles more into alignment with activist objectives. Students can learn about the history and geography of science-movement research relationships and their tensions and challenges, which can provide insights to guide innovative doctoral dissertations and masters’ theses, and potentially their community and professional work thereafter. Faculty can learn to create synergies between their routine responsibilities and

community-based efforts, including through the courses they develop.

One example of such a course is the master's capstone farm bill practicum that Graddy-Lovelace teaches at American University (AU). This innovative course builds research collaborations between graduate students and community partners such as the Rural Coalition (RC) and National Family Farm Coalition (NFFC) and their member groups. These coalitions, composed of grassroots organizations like the Federation of Southern Cooperatives/Land Assistance Fund, National Latino Farmer & Rancher Trade Association, and Oklahoma Black Historical Research Project, work for transformational change to U.S. agricultural policy in general, and the farm bill in particular. In the typical business or policy school model, students conduct professional projects for their "clients." In this practicum, by contrast, the learning is mutual, iterative, and nonlinear. While Graddy-Lovelace took the lead in proposing the concept to RC and NFFC leaders, the organizations recognized the potential for useful assistance that could improve their capacity to chronicle, contextualize, and articulate grassroots agrarian justice priorities to multiple audiences, including policy-makers. AU administrators expressed curiosity with the first farm bill practicum of 2013 and have supported the class since, although they describe it as "rural development" rather than agrarian justice. AU also provided a few thousand dollars to assist student travel across the U.S. to farm sites, cooperative hubs, and key farmer-led meetings. Graddy-Lovelace attempted to secure institutional funds to remunerate community partners for their time and energy in these collaborations; AU declined and suggested seeking external funds.

How does the practicum work? Graduate students apply to join; most applicants have already taken a semester-long "Political Ecologies of Food & Agriculture" seminar on international agricultural policy debates. This course wrestles with dominant paradigms such as new Green Revolutions, feed-the-world white saviorism, and technocratic, agri-tech quick fixes. Students learn about the colonial origins of agriculture in the Americas, including Indigenous genocide and African enslavement. Students also absorb farm justice and

farmworker justice movement histories, Black and Indigenous women-led agrarian resistance, and food sovereignty organizing from Fannie Lou Hamer to the Nyéléni Declaration. Some applicants do not take the course, but have relevant backgrounds in agri-food practices, sciences, businesses, or policy; all students pack in a lot of reading during the first month.

Only after this historical, interdisciplinary orientation do students meet with the community partners. Depending on partner needs, students develop projects ranging from policy briefs, GIS maps, and agricultural economic data analyses to documentary shorts, data visualizations, photo essays, and literature reviews. These activities are guided by significant preparatory work by Graddy-Lovelace, who, in line with the Principles & Protocols, engages partners in ongoing dialogue, nurtures collaboration throughout the research process, and creates space for movement partners to readjust their needs as the process moves along. The CVs students submit in their course application help discern matches between their skills and interests and community needs; mutual interests are honed through dialogue and collective brainstorming into multiple, interconnected group projects. The ambitious goal is to design, implement, edit, and present research projects within the semester's tight timeline.

For example, students from the 2015 practicum traveled to Oklahoma to meet with and learn from Rural Coalition board member Willard Tillman, who cofounded and directs the Oklahoma Black Historical Research Project. Tillman and colleagues introduced students to the problems leading to—and emerging from—invasive red cedar across Oklahoma, including the disproportionate impact on Black farmers. Students from the 2017 practicum built on this foundation and returned to Oklahoma to continue gathering information. Working with Tillman and Rural Coalition leader Lorette Picciano, the students researched the issue through archival maps, USDA Environmental Quality Incentives Program (EQIP) secondary data synthesis, policy analysis, and academic literature review.

Another student team in the 2017 cohort traveled to Iowa to meet with longtime National Fam-

ily Farm Coalition member Brad Wilson, who shared his extensive, nondigitized home archive of historical documents from the 1980s farm crisis and related farmer mobilizations. Again, this collaboration involved a community partner providing primary source information, and the student-alums working to contextualize it within secondary data, policy history, and social and political theory.

In the seven years of this practicum's life, we have begun to see benefits within and beyond the university. A key one is pedagogical. Students learn more about U.S. agricultural policy and politics through this experiential learning process than textbooks can reveal. They witness and are invited to participate in community organizing with legacies in Civil Rights, Black Power, indigenous, farm justice, and farm-labor movements. From AU's side, initial concerns that community partners lacked the professional heft of a World Bank client have mostly subsided, as alumni report drawing directly on the valuable skills and knowledge they gained in their future endeavors. Many now work in various agrarian justice organizations.

Community partners, in turn, have gained deliverables for their own research needs, outreach, and movement building (many posted on <https://farmbillfairness.org>). In a somewhat surprising turn, community partners have requested that promising policy briefs be expanded into formal scholarly publications. Complicating Derrickson and Routledge's (2015) resource mobilization hypothesis, rather than value AU partners for resources that could be directed to their own organizational sites and spaces, frontline groups emphasized dissemination in *academic* outlets. They wanted their policy-relevant analyses to be peer-reviewed, published, and citable—potentially granting the work wider uptake and legitimacy than if buried in a shared folder, inbox, or obscure website. Still, the time-limited semester curtails time for fine-tuning and editing of projects. Often, at the final presentation, just as the masters students are about to graduate, community partners and the students will lament that the project has just gotten started.

Extending the collaborations into post-practicum space therefore has been another important outcome of the course. The practicum has

become biannual to allow for ongoing work with alumni in the long peer-review and revision process. Alumni from 2016 and Graddy-Lovelace published an open access article on contemporary policy discrimination against Black farmers (Orozco, Ward, & Graddy-Lovelace, 2018). Alumni from 2017 and Graddy-Lovelace co-authored a piece with movement leaders on the connections between USDA institutional racism in conservation policy and the invasive spread of red cedar on farming land in Oklahoma (Fagundes et al., 2019).

As COVID-19 exposes the injustices and vulnerabilities of the dominant U.S. agri-food system, the practicum becomes even more needed. Teaching it has shown that practical challenges persist in making synergies between academic responsibilities and community-based work: from toxic white tendencies to appropriate movement knowledge, to the transient semester. The practicum's demography (majority white) has not yet reflected the racial diversity of the frontline coalitions with which students are collaborating. High tuition and thus the potential for high debt likely discourage students of diverse backgrounds from applying to AU, contributing to its predominantly white composition. The course also needs to pull in new faculty expertise: community partners seek access to key skills beyond what Graddy-Lovelace can train her students in, such as statistical regression, advanced GIS, legal assistance, and marketing analysis. There remains an ongoing need to fairly remunerate low-resource farmers and movement leaders for their time and labor in mentoring students through these complex issues and struggles.

Creating Institutional Space for Scholar-Activist Work

Teaching and mentorship are ways to begin recentering the "side project" that ARC constitutes for many of us into a core professional competency. Especially as graduate students begin developing dissertation projects with movement partners and as faculty start building community-based courses, the roles of advising, research, teaching, and scholar-activism begin to more closely cohere. However, in order for this recentering to become feasible, deeper structural and institutional changes must occur.

It is no secret. Powerful, entrenched institutional cultures at universities and colleges help discourage scholars, including those in ARC, from becoming scholar-activists. Evaluation, recognition, and reward in academic life usually proceed through relentlessly individual and individualizing processes, in tension with activism, which usually encourages more collaborative and social thinking (Lipsitz, 2008). Scholar-activists often find themselves torn between what Duncan et al. (2019) aptly characterize as “dual political commitments,” as they are “accountable to two worlds with distinct principles, practices, modes of knowledge production (Juris & Khasnabish, 2013), and modes of evaluation, regulation and measuring impact (Borras, 2016)” (Duncan et al., 2019, pp. 5–6).

In response, ARC is pooling and exchanging ideas, strategies, and successful examples so that members can begin pressing for change in their home institutions. A number of groups of scholars and organizations (e.g., the Association of American Colleges & Universities) have produced valuable guidance that we can adapt to our values and situations. We have been examining opportunities for change that span university missions, academic cultures, reward structures, educational programs, aid to students, and logistical support for grassroots movements (Beaulieu, Breton, & Brousselle, 2018). We outline five interlinked opportunities here.

1. Remaking reward structures. Junior faculty are often counseled to save their activism for after tenure. This advice, unfortunately, sets up for a two-pronged dilemma of sidelining younger, energetic faculty from scholar-activism and delegitimizing such work as unworthy of intellectual merit. Toward shifting standards of legitimacy, faculty can advocate for revisions to tenure, promotion, merit review, and hiring policies. Junior faculty can defuse risk by organizing together and collectively demanding that their departments recognize the scientific value of collaborating with frontline groups in grants and research projects. Tenured faculty can support these efforts by making their revisions to existing departmental practices visible to everyone, not just review committees. For example, in their files for promotion, tenure, and merit reviews, faculty can publicly submit publications

with movement members as co-authors as evidence of work that enhances the rigor of science, rather than diminishes it. Instead of relying only on academic papers and books, faculty—junior and tenured alike—can insist that proof of scholarship take diverse forms such as reports, workshops, opinion essays, broadcasts, websites, GIS maps, software, and presentations for policymakers.

Faculty can also demand a reconceptualization of who should benefit from research. They can prioritize publishing in open access journals and books, refuse patents and other forms of intellectual property on publicly funded research, and work on creative ways to connect research findings to policy changes and material support for community organizing. Just as important, faculty can build collaborative research communities. Academic resources are usually awarded on a competitive basis, pitting individuals against one another in a struggle for power, status, and funding. By contrast, researchers can choose to cooperatively pool their resources; this in turn can reduce the drain on community groups that occurs when “elite” researchers capture their time and energy and can give underrepresented minority students and precarious faculty, like lecturers, greater access to community-based projects.

Faculty can leverage “diversity” efforts underway at many universities, where, as part of promotion and merit reviews, faculty are asked to voluntarily prepare statements about their contributions to diversity. Faculty can push their departments to make such statements mandatory and can use this space to document how research with grassroots movements and the development of new community-based courses strengthens diversity while also enhancing their chances of getting a promotion or pay raise. Campus administrations can be pressed to award off-scale raises to recognize those who have made extraordinary contributions to diversity interests through their research, teaching, or service. Departments and schools can also reserve some of their research funds specifically for faculty who choose to collaborate with underrepresented communities.

2. Mobilizing campus resources. Depending on the particular institution, faculty can commit to

using existing research support and educational resources toward advancing activist-scholarship. At the campus level, they can apply for teaching fellowships, research awards for junior professors, technology acquisition funds, or student union grants (e.g., for “greening the campus”). In some cases, universities have public service programs that offer small grants to help faculty develop or revise courses with a community-engagement element. Professional schools often require students to undertake team-based master’s capstone projects or policy analysis exercises; these can be opportunities to propose community-based ideas around which students can coalesce. Those schools—particularly law schools—may have practical clinics whose members could be interested in working on a community-driven problem. Faculty can also draw on research apprenticeship and internship programs, if these exist, to incentivize undergraduate students to join their activist-scholar projects with frontline partners. Students can provide important research staffing under faculty supervision. At UC Berkeley, for example, the Sponsored Undergraduate Research and Undergraduate Research Apprentice programs provide academic credit and grants to students. However, a highly uneven distribution of wealth and resources exists across the university sector, and many institutions do not choose to invest in such educational opportunities. Faculty can agitate either for greater access to or to create such programs if they do not already exist.

3. Supplying logistical support to movements.

Another way activist-scholars can support grassroots organizations is through providing material resources directly to movement partners. Faculty can learn how to route university and extramural funds toward community groups who wish to conduct or participate in research. Some researchers already make a point of including grassroots organizations in their grant applications as a testament to the “broader impacts” of their research, a criterion of funders such as the National Science Foundation. Activist-scholars can also provide access to library materials and electronic databases that are otherwise behind paywalls, secure classrooms and other spaces for

meetings and events, and use personal and institutional connections to continually press for better resourcing (money, labor time, information) of vulnerable communities on whose lives quality participatory research—to say nothing of the health of society writ large—depends. By doing all these things and *publicizing* it to their colleagues, activist-scholars can make it “normal” practice in the university to provide logistical aid to grassroots partners.

4. Centering anti-oppression. Following mass protests against systemic racism and police violence sparked by the murder of George Floyd in spring 2020, many universities across the U.S. face mounting demands from students for anti-racist change. We are in a critical moment that has already provided openings for more activist-scholarship. Students are calling for course content to be redesigned to integrate work by Black, Indigenous and people of color (BIPOC) scholars and to address the colonial origins of scientific knowledge-making. Graduates, undergraduates, and faculty are urging departments to hire BIPOC scholars, change mentoring guidelines to be more responsive to student needs, and value contributions to equity and diversity in promotion cases. Departments in multiple fields are contemplating incentivizing faculty to alter their authorship, citation practices, and research collaborations to include BIPOC and community voices. Importantly, too, students are asking for more teaching and research that reflects community priorities, such as the impacts of policing, food and housing insecurity, and reparations for land stolen from Indigenous peoples. As a result of these student demands, astute faculty now have more leverage to push for funding of community-based projects, fair remuneration of grassroots activists, and the other ideas we have outlined here.

Especially now, when universities face steep financial losses due to COVID-related fallout (declining enrollment, tuition fee discounts, the costs of switching to online teaching), their first instinct is to press forward an austerity regime. Staff, contingent faculty, and services are the first to be cut. But universities still have substantial resources that can be reallocated to alternative edu-

cational and research models—and faculty can organize around this goal.

5. Reshaping academic cultures. A fundamental way that faculty can make more room for activist-scholarship in their departments and professions is to show that their activities are very much “real work”—not additional or superfluous. This calls for reshaping the academic cultures that define universities. All of the foregoing actions can contribute toward the deep structural and cognitive changes that are needed. Faculty can engage their fellow department members in conversations about the value of including grassroots voices in research; they can demonstrate “viability” by garnering external grants to do community-based research; and they can draw skeptical peers into contributing to projects, thereby exposing them to different ways of knowing and observing the world. At land-grant universities, scholars can point to their institution’s public interest mission to justify what they do. In so acting, faculty challenge standard, often colonial, frameworks and categories of inquiry (CLEAR, 2018; Mignolo & Escobar, 2013; Rappaport, 2008). They widen who is defined as “expert” and which forms of knowledge are granted authority and legitimacy (Anderson, Maughan, & Pimbert, 2019). They implicitly affirm that all “scholarly” knowledge is not our own: we simply organize, filter, and renew knowledge that communities and activists already have. This holds true, moreover, across domains of science. Though agitating for institutional change has typically been the realm of social scientists, STEM colleagues must be encouraged and invited to join. Biophysical scientists, especially, contend with signals from colleagues that they are transgressing their disciplinary norms by engaging with frontline and grassroots groups—they are stigmatized as not being “scientific.”

Conclusions

In this reflective essay, we have addressed a gap that persists between the desire for effective research on food systems change and the often-frustrating experience many grassroots organizations have with researchers. Systematizing the kinds of ethical processes that can lead to a genu-

ine, accountable research partnership is one way to bridge it. By using these Principles & Protocols (or many of the excellent existing community MOUs) as starting points for discussion, food systems researchers may be able to form more effective partnerships that result in both better science and more direct impact on transitions to sustainable food systems.

ARC is part of, and has learned from, a long, vibrant tradition of PAR and agroecology scholarship. What distinguishes our efforts is our attempt to go beyond individually negotiated MOUs for community-based research to develop operating mechanisms to support our work both individually and collectively. We thus adopted the Principles & Protocols in late 2017. Given food systems scholars’ drive to have research more directly effect social change, we hope that these principles can show one path forward. While they are clearly not the only way, we hope that what we have developed may be of use to scholars committed to navigating relationships of accountability, reciprocity, humility, and solidarity with the communities they work with. Beyond our expectations, we have been inspired to see how the Principles & Protocols have *traveled*. In one case, a group of bioethicists involved in gene editing debates found these guidelines to be illuminating for their own work. In another case, we learned that a community organization had turned *down* a partnership with a research group because the scientists’ principles for engagement were not up to par.

Of course, much work remains to implement the Principles & Protocols in projects and everyday scholarly practice. Many tensions exist within ARC regarding how to translate its ethos into the often-fraught conditions of collaborating with grassroots organizations. ARC members continually wrestle with the problems of navigating institutions and disciplinary norms and practices that deter movement-oriented scholarship. These tensions will not be easily resolved, if at all. Yet, achieving institutional change can help alleviate many of these tensions. ARC’s strength lies in its diversity, in terms of geographies, disciplines, institutions, community relations, and individual histories that draw us to this work. By gathering a memberships of over 50 (and growing), ARC can mobilize its collective

resources to help press forward agroecology transitions in North America. Being so dispersed presents major challenges—yet gives us something catalytic when it comes together. 

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Where do “localphiles” shop? A mixed-methods case study of food-buying habits

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Abstract

Why, with local food’s rising popularity, do small-scale farmers report declining sales? This study used a mix of survey and interview methods to examine the priorities and buying habits of food shoppers in one midsized, lower-income metropolitan area of the U.S. Midwest. The study focuses on individual consumers’ decision-making because it aims to be useful, in particular, to small-scale farmers and advocates of their participation in local and regional food systems. Among shoppers’ stated priorities, the survey found broad support for local food and relatively low competition between price and local origin as purchasing priorities. However, findings also show an attitude-behavior gap, with only a limited increase in tendency among self-defined “local” shoppers to

purchase from locally oriented venues. As explanation for this attitude-behavior gap, survey and interview data point to differential definitions of “local food” and situational barriers (primarily inconvenience and lack of variety) preventing shoppers from buying local food. One factor offsetting these barriers was past experience growing one’s own food. Study findings are used to identify particular avenues for intervention by farmers, eaters, and other food systems builders to broaden access to local food through adjustments to marketing strategies, better alignment of wholesale outlets’ practices with the priorities of farmers and eaters, and improved public education about the food system.

Keywords

Local Food Systems, Shopping Behavior, Shopping Priorities, Attitude-Behavior Gap, Mixed Methods, U.S. Midwest

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Introduction

Direct-to-consumer farms are “taking a nosedive, no question,” one lifelong farmer told a group of hopeful newcomers at a beginning farmers’ training course in 2016. “This farm is way down in sales this year,” he said of his own operation. “We have a good reputation for good food, reliable. But a lot of CSA farms around the country have taken a hit in sales, and farmers markets have taken a hit in sales, too.”¹ The course moderator and fellow farmer chimed in, “it’s true; the market is softening. For years, demand was growing. But that’s not the case anymore.” Indeed, following a boom in direct-market food sales through 2015, farmers across the United States have reported in recent years that sales at farmers markets and through community supported agriculture (CSA) shares have been declining (Angelic Organics Learning Center, n.d.; Bishop, 2018; Huntley, 2016).²

Food marketing trends, however, suggest that “local food” still holds strong appeal for shoppers. Industry research firms report growing demand, referring to local food as the “next-gen organic” (Hesterman & Horan, 2017; Packaged Facts, 2019). Grocery stores across the U.S., including discount stores, offer the organic produce that used to be available only direct from farms, and some stores prominently display “Local” signs next to products. “No one sells local like Walmart,” claim advertisements for the retail giant (Philpott, 2012). New types of food sellers, like meal-kit delivery services, similarly tout their localness. “At the heart of Green Chef is supporting local, organic farmland, family farms, and craft economies,” claims one purveyor (Green Chef, 2017). Peach Dish promises “local” sourcing, with the tagline, “we know our farmers” (Peach Dish, 2017). While the precise meanings of “local” in these claims may be inconsistent, they do point to widespread enthusiasm for local food.

If shoppers want local food, why are direct-

market farmers having such difficulty selling their produce? Working through this contradiction has important implications for our food systems. Local food production can provide resilience to food systems (Zumkehr & Campbell, 2015). The small, diversified farms so central to direct-market local food provide rural employment and tend to use more ecologically sustainable production strategies than larger farms, while a robust local food economy can strengthen community bonds, particularly in rural areas that have been hollowed out by the past century’s industrialization of agriculture (Alonso & O’Neill, 2011; Bell, 2004; Goldschmidt, 1978; Goodman, DuPuis, & Goodman, 2012). However, a celebration of the local without enough reflection regarding what about local production is valuable risks leaving the term open for corporate cooptation and denies important inequalities that manifest at the local level (DuPuis & Goodman, 2005). For example, popularization of the “locavore” label makes eating local a virtue and normative goal, even as it remains inaccessible for many due to structural inequalities (DeLind, 2011), most notably race and income (Farmer, Menard, & Edens, 2016; Galt et al., 2017; Lambert-Pennington & Hicks, 2016).

A growing body of research is attempting to elucidate aspects of the conundrum of high interest in local foods co-occurring with declining direct-to-consumer farm sales. Many studies focus on better understanding consumer preferences. Quantitative studies predominate in research of local food buying (Feldmann & Hamm, 2015), with many reporting on generalized preferences or predicted future buying (Bellows, Alcaraz V., & Hallman, 2010; Carpio & Isengildina-Massa, 2009; Cholette, Özlük, Özşen, & Ungson, 2013; Cranfield, Henson, & Blandon, 2012; Onozaka, Nurse, & McFadden, 2011). Studies in various geographical locales have found favorable attitudes toward local food among a majority of respond-

¹ In CSA farms, people generally buy shares in the harvest by paying a fixed fee at the start of the year, then receive a portion of the harvest throughout the growing season.

² U.S. Department of Agriculture (USDA) data (from the Census of Agriculture and the Local Food Marketing Practices Survey) show that farms’ direct-to-consumer food sales increased steadily from 1992 to 2015. Changes in survey questioning structure make it difficult to infer statistical trends from government sources for more recent years, although the 2017 USDA census of agriculture suggests a downturn from the 2015 LFMPS (O’Hara, 2019; see also McFadden, Thomas, & Onozaka, 2009).

ents, often in a two-thirds to three-quarters majority (Brown, 2003). Because a favorable attitude may not lead to the purchasing of local food, many researchers have used a willingness-to-pay model of assessing the likelihood that people will buy local food, even if it costs more than other options (Carpio & Isengildina-Massa, 2009; Darby, Batte, Ernst, & Roe, 2008; Jekanowski, Williams, & Schiek, 2000). Darby et al. (2008) found that participants' willingness to pay for local was independent of the related variables of product freshness and farm size. They also found that respondents approached at farmers markets were willing to pay higher premiums for local food than those approached at grocery stores.

Such studies benefit from large and diverse samples of the shopping public and provide fine-tuned analyses of the correlations between preference for local food and various other values and personal characteristics. Many studies have found women, older, and higher-income respondents more likely to express a preference for local food (e.g., Feldmann & Hamm, 2015). However, there has been some inconsistency in the explanatory power of these demographic factors, with some scholars contending that belief and experience factors explain more of the local preference variation among study participants (Cranfield et al., 2012; Zepeda & Li, 2006). For example, John Cranfield et al. (2012) found that food buyers who also grew food or prepared meals from scratch stated higher preference for local food than other study participants. Cheryl Brown's (2003) preferences survey found that in households in which food buyers had been raised on a farm or were currently involved in an environmentalist group, respondents stated a higher willingness to pay price premiums for local food.

However, individuals' stated preferences and actual behaviors do not always correspond (Kemp, Insch, Holdsworth, & Knight, 2010). A great deal can mediate between individuals' willingness and what they actually buy. More thorough understanding of local food participation requires attention to abilities and obstacles.

Ethnographic studies illuminate the meanings of shopping behaviors, showing that in

addition to provisioning, shoppers also build social relationships and exhibit particular identities (Miller, 1998). Although qualitative methods have been much less commonly used than quantitative methods in local food buying research, they have helped to clarify the benefits and drawbacks that different people see in local food (Autio, Collins, Wahlen, & Anttila, 2013; Hinrichs, 2003; Ostrom, 2006). One key finding is the situational nature of such understandings: "local," a short and seemingly straightforward term, is semantically slippery, carrying various connotations and sometimes linked to contradictory political aims (Hinrichs, 2003; Ostrom, 2006; Winter, 2003). This makes it important for studies of local food-buying practices to investigate what "local food" means to a given study's participants. If people's preference for local food is based primarily on perceptions of freshness and responsible production, their food dollars could be more easily captured by nonlocal producers and wholesalers than if the preference is truly based on the place of production (Darby et al., 2008; Ostrom, 2006).

The present study addresses a part of this larger conundrum by asking the primary question: Where do people who state a preference for local food actually obtain their food? It also answers subsidiary questions: Do buyers with different stated preference levels for local food shop in discernibly different ways, and what accounts for any gaps between stated preferences and behaviors? This research takes a case study approach in one midsized metropolitan area of the U.S. Midwest and complements existing literature on local food buying through three methodological elements.

First, this study probes participants' past food buying. This focus on real-world behaviors complements existing research on consumer preferences and intentions to buy local food. The reporting of past behaviors offers a useful method of ground-truthing, but has not yet been as widely utilized (Dukeshire, Masakure, Mendoza, Holmes, & Murray, 2015; Zepeda & Li, 2006).

Second, many existing studies of local food-buying habits focus on one kind of venue, such as

farmers markets (Alonso & O'Neill, 2011; Conner, Colasanti, Ross, & Smalley, 2010; Dodds et al., 2014; Farmer et al., 2016) or, less commonly, grocery stores (Colloredo-Mansfeld et al., 2014). This study examines how shoppers behave across venue types, examining how they weigh multiple priorities to choose venues and determine how to spend their money at those venues. This is significant because farmers want to know where they are most likely to find customers who prioritize buying local food.

Third, this study combines quantitative data on reported food-buying behaviors with qualitative consideration of shoppers' reasons for these behaviors. This mixed-methods approach provides advocates of local food systems with an important window into food buyers' decision-making. It illuminates not only shifts in shopping behaviors over time, but also the decision-making behind attitude-behavior gaps, the differences noted by many researchers between study participants' stated intentions and their actual purchasing behaviors (Feldmann & Hamm, 2015). In this study, interviews probed the trends revealed by the survey results to allow for the inferring of causal lines between the many "contextual factors" left vague by quantitative studies (Feldmann & Hamm, 2015). In addition, observations and hypotheses suggested by interview responses, such as the reported necessity of frequenting many discrete venues to obtain one's food from local sources (see below), provided the impetus to run additional quantitative analyses.

The study's locale, Rockford, Illinois, is notable for its location and demographic characteristics. The U.S. Midwest is widely understood as an agricultural heartland, but local food sales have been much less prominent here than in the Northeast and West Coast (Low & Vogel, 2011; McIlvaine-Newsad, Merrett, Maakestad, & McLaughlin, 2008; Zepeda & Li, 2006). Using this mixed-methods case study as part of a broader comparative approach to examining food preferences and shopping behaviors in this region, and other areas where farmland abuts dense metropolitan areas, can clarify avenues for increasing the trade of locally produced food.

Methodology

Case Characteristics

Rockford lies in northern Illinois, approximately 90 miles (145 km) northwest of Chicago and 70 miles (113 km) south of Madison, Wisconsin. At the time of data collection (2017), Rockford city had an estimated population of 147,000, while the greater Rockford metropolitan area comprised approximately 338,000 (U.S. Census Bureau, 2018). The Rockford area's racial makeup was on par with Midwest regional averages, with a majority of White residents (80%) that was much larger than the metropolitan area of Chicago (49%), but lower than the Madison metropolitan area (86%). The next largest group reported in Rockford is African Americans (11%).

Like other Midwestern Rust Belt cities, Rockford flourished around a manufacturing base that has since eroded. The area struggles with high unemployment and depopulation of the city center. Recent efforts to revive the city's social life and employment have included renovating public buildings and making pedestrian-friendly streets, as well as establishing farmers markets, food-focused summer festivals, and support for new food businesses. Still, the Rockford metro area has a higher proportion of residents in lower income brackets than other northern Midwest metropolitan regions. Unemployment hovers 1 to 2 percentage points higher than Midwest regional averages; residents have lower educational attainment; and food stamp usage is also higher, at 16.9%, compared to 12.9% for the larger Midwest (StatisticalAtlas.com, 2018). As a lower-income metropolitan region, Rockford is an ideal case study for those interested in economically diversifying the local food movement.

Rockford's proximity to Chicago, Illinois, and Madison, Wisconsin, also likely influences its local food system. Many farms in the greater Rockford area serve the vibrant regional food networks of these larger cities. Each metropolitan area sustains more than a dozen weekly farmers markets during the growing season and has a lively farm-to-table restaurant scene. Madison, in particular, is known as a "foodie" town. Though it is ten times smaller than Chicago, Madison area residents buy approxi-

mately the same number of CSA shares as Chicago area residents.³

Data Collection

To investigate the importance of local origin compared to other factors in shoppers' food-buying preferences and practices, the principal investigator and two student assistants combined surveys and qualitative interviews. A targeted sample of food-buying venues was identified across a six-category venue typology: on-farm sales, farmers markets, specialty grocers focusing on natural and local foods, and other grocers (of three sizes: small independent, regional chain, and large chain). Permission to survey shoppers was obtained from 19 venues: three on-farm sales sites, five farmers markets, two specialty grocers, three small independent grocers, four regional grocers, and two large chain grocers.

Researchers stood by the entrance of each venue and invited individuals to participate in the survey. Potential participants were told that the survey addressed shopping habits, without specific reference to local food, to avoid selection bias, and were informed of the cash prize drawing incentive. The written survey questionnaire was kept short to increase response rates. First respondents were asked to list venues from which they buy food and then rank the venues in terms of their average yearly spending in each location. Next, the survey asked respondents about their attitudes toward localness compared to other factors, using the following written prompt: "Many factors influence food purchasing decisions. In relation to the other factors that matter, is it important to you to purchase

locally raised food? (Circle the one that applies to you)." A valence scale gave respondents the option to choose [1] "not important," [2] "less important," [3] "equal among factors," [4] "higher priority," or [5] "highest priority." For those not responding with "highest priority," the survey asked respondents to list and rank up to two other factors more important to them than "locally raised." It also asked them to report any food they raised themselves and the proportion of their yearly diet that this constituted.⁴ This ordering of questions, asking respondents to describe shopping behavior before reporting shopping preferences, aimed to avoid priming respondents to over-report venues oriented toward local food in order to align their ideals and actions. A total of 282 surveys were completed across all venues (Table 1).

Researchers inquired about each respondent's willingness to engage in a follow-up interview and provide contact information. The principal investigator conducted follow-up interviews by phone with 20 participants. Purposive sampling of interviewees (1) focused on those reporting a high local-food priority (80% ranked it 4 or 5 on the 5-point scale) and (2) included respondents contacted at all six venue types (two from on-farm sites, seven from farmers markets, two from local/natural grocers, two from independent grocers, five from regional grocers, and two from large chain grocers). Open-ended interviews lasted 20 to 30 minutes, gathering further information about respondents'

Table 1. Study Sample

	Venues in study	Total participants from venue type	Mean number of participants per venue
On-farm	3	40	13
Farmers markets	5	85	17
Local-natural grocers	2	28	14
Other independent grocers	3	42	14
Regional grocers	4	65	16
Large chain stores	2	22	11
All venues	19	282	15

³ Personal communication with a CSA farmers' coalition member (August 1, 2016) and an administrator of an Illinois local food advocacy nonprofit organization (September 22, 2016).

⁴ Cranfield et al. (2012) found that growing one's own food was positively correlated with the intention to buy local. The present study probes this correlation in relation to actual buying behavior, as opposed to intention.

buying priorities, their experiences in and motivations for raising their own food (if any), their attraction to certain food venues, why they do not buy locally produced food when they wish to (include their perception of obstacles), their perceptions of local farms, and their experiences with and perceptions of CSA memberships and mail-delivered meal-kit services.

Data Analysis

Descriptive statistics were tabulated regarding the prevalence of local food versus other volunteered priorities, the shopping locations reported, and the rankings of these venues. Survey participants were placed along a 1–5 scale based upon their stated local-food preference. To aid in the identification of trends, a binary grouping was formed, with those participants who ranked buying local food as highest or higher priority (4 or 5 on the survey scale) grouped as self-defined “local” shoppers, and those ranking localness as equal among factors or lower (1–3) grouped as “nonlocal” shoppers.

The researchers examined each reported food sales venue to determine the geographical scale of its food sourcing and sales, then placed them within the six venue types. These six types were used for descriptive analysis. To examine correlations between stated local preference and shopping behavior, the venues were coarsely grouped as “locally oriented” or “nonlocally oriented.” Locally oriented food venues are direct-marketing venues (including on-farm sales, online order-and-delivery direct from farms, and farmers markets) and stores that identify as “local” or “natural” foods stores and source a substantial portion of their foods locally. In contrast, other grocery stores (independent, regional chain, and large chain) were considered to be nonlocally oriented.⁵

Statistical tests were then run to examine initial study hypotheses. This included a one-way ANOVA to examine whether those surveyed at more locally oriented food venues matched this behavior with higher stated preferences for local

food, as well as a chi-squared test to determine whether self-described local shoppers were more likely to report spending their largest share of food dollars at a locally oriented venue than were nonlocal shoppers.

Deductive coding of interviews, guided by the main interview topics, identified trends in participants’ responses as a group and explored variation between self-described local and nonlocal shoppers. These trends were used to understand shoppers’ definitions of “local food” and their perceptions of their own stated priorities and any deviation of their shopping behaviors from those priorities, including through accounts of evolving or suddenly shifting food-buying priorities. This analysis also prompted further statistical analysis; complaints about the dispersed nature of local food shopping led to the testing of whether local shoppers buy food from a greater number of stores each year than do nonlocal shoppers (*t*-test).

Findings and Discussion

Comparative Interest in Local Food and Other Buying Priorities

Of the 282 respondents who answered the prompt, buying locally raised food was the highest priority for 21% (60 respondents), higher priority for 38% (107), equal among factors for 29% (82), less important than other factors for 6% (18), and not important for 5% (15).⁶ This produced a coarser grouping of 59% (167) self-identified local shoppers and 41% (115) nonlocal shoppers. These interest levels are in line with McFadden et al. (2009), who also found very few respondents professing little or no interest in local food (7%) and an overall skewing toward moderate and high interest. However, the proportion of respondents favoring local food in this Rockford sample was in the lower range of the percentages reported in the studies reviewed by Brown (2003).

For respondents who did not rank buying locally produced food as their highest priority, the

⁵ Large and regional chains in the Rockford area rarely marketed local foods at the time of data collection, making such categorization feasible.

⁶ These numbers include two respondents who reported food-buying priorities, but did not report any shopping venue information and are therefore not in the total number of surveys cited above.

most frequently offered priorities more important than localness were price and freshness. While each of these two factors was the highest priority for approximately the same number of respondents (47 cited price and 46 cited freshness), price was far more frequently reported as a second priority (40 cited price versus 14 citing freshness), suggesting that price was somewhat more important to shoppers overall than was freshness. While most factors do not exhibit any clear relationship with different levels of preference for local food, price and convenience are somewhat anomalous, as their frequency rises among shoppers with lower local food preference. Prioritization of freshness was consistent across local priority groups. Together, local food, price, and freshness were the highest priorities for 55% of respondents. The relatively high agreement about these top three factors is notable because “local” was the only potential buying priority identified by the survey. Other factors were independently offered by respondents.

Beyond these top three factors, other stated priorities were diverse and far less frequently noted (Table 2). Forty-two respondents reported prioritizing particular growing practices over local production (most often specifying “organic,” but also noting “no chemicals,” “no pesticides,” “no GMOs used,” or “grassfed”) and 38 respondents prioritized “quality.” It is notable that a significant number of respondents (22) differentiated “support for local farmers” or “support the local economy” from locally produced food, making this

the fifth most cited set of factors. “Convenience” and “store location” may be overlapping categories, in which case they would have a total frequency just lower than “quality.”

Defining Local Food

Survey data appear to show that local food is indeed a high priority for Rockford-area food buyers. However, like participants of other studies, Rockford respondents did not share a common definition of local (Hinrichs, 2003; Ostrom, 2006; Winter, 2003). When asked to define local food, most interviewees referred to geographical area, though the size of that area varied widely.

Responses ranged from food grown “within the 20-mile [32 km] radius of my house” to food from “Illinois and the states kind of around us.” In addition to this geographic focus, though, many interviewees defined local food by a range of factors including health, ecological sustainability, economics, and social obligation. Particularly strikingly, some interviewees identified local food not based on where it was grown, but where it was sold. Definitions included, “food from a store that is near your house” and food from “stores under a twenty-minute drive.”

As a result of these varied definitions, shoppers may be referring to vastly different concepts when asserting an interest in local food. Some respondents may perceive themselves to be financially supporting local food by spending at a locally owned independent grocery store, for

Table 2. Shoppers’ Fresh Food Buying Priorities

What priority is “locally produced food”?	n	What other factors are more important? ^a																					
		Price		Fresh		Growing Practices ^b		Quality		Support Farmers/Local Econ.		Store location		Convenience		Variety/Availability		U.S. Grown		Other		No answer	
		#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
5, Highest	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4, Higher	107	29	27	28	26	33	31	16	15	18	17	5	5	3	3	10	9	2	2	15	14	10	9
3, Equal to others	82	39	48	24	29	10	12	14	17	4	5	9	11	6	7	3	4	2	2	4	5	12	15
2, Lower	18	8	44	3	17	2	11	6	33					3	17	2	11			4	22	1	6
1, Not a priority	15	11	73	5	33	2	13	2	13			2	13	3	20					1	7	1	7
Total	282	87	31	60	21	42	15	38	13	22	8	16	6	15	5	15	5	4	1	24	9	24	9

^a Respondents were allowed to cite up to two other factors more important than local origin.

^b Examples of growing practices are organic, no chemicals, no GMOs, grassfed

example, even if the produce sold there was grown overseas. These different definitions of local food may help to explain why some respondents expressed only moderate prioritization of local food, but high prioritization of supporting the local economy (see Table 2).

Reasons for Prioritizing Local Food

When interviewees who reported prioritizing local food were asked about its benefits, they offered a range of responses, often describing these benefits as synergistic with other shopping priorities. Surveys asked participants to report factors that were more important than local production, but interviewees made clear that these factors existed in a “both/and” relationship as often as in an “either/or” relationship. For example, more than half of interviewees referred to the freshness of local food, with some explaining that this leads to better flavor and others asserting that food consumed more quickly after harvest contains more nutrients. Some shoppers believed local produce is also more likely to be grown in environmentally sustainable ways and with few harmful chemicals. As one man who had reported a local priority of 4 stated, “It’s kind of a trust factor. I think the local people will be more concerned with offering a good product, and maybe they have more interest in protecting the environment, using less pesticides, that kind of thing.” These people appreciated being able to “look someone in the eye and ask them” about the food they purchased. Even when faced with a hypothetical choice between a local, nonorganic product and a product labeled as organic in a grocery store, this preference for personal vouching led some to prioritize local. “I would still trust the farmers markets’ food more than I would trust a grocery store’s food, I think,” reasoned one interviewee.

However, not all respondents trusted word-of-mouth assurances. Interviewees who expected more institutionalized verification of growing practices saw localness and low-chemical food as somewhat contradictory priorities. Noting the lack of organic certification among farmers market and roadside vendors, some people felt the need to choose between either buying certified organic produce from stores or buying local food. When

asked how they would decide in such a case, the bottom line for many respondents was the impact of food on their bodies. “At this point,” explained one shopper who had listed “quality” as his highest priority, “I would probably go with the organic. You know, everything else being equal—price, looks, all that stuff—I would go with what is healthier to go into my body.”

One priority that showed particularly strong consensus among interviewees was support for local economies, whether understood to be a benefit of buying local or an alternative emphasis. As noted above in Table 2, 8% of survey respondents cited supporting local farmers or the local economy as a higher priority than buying local food. On the other hand, 14 of the 20 interviewees explained support for local economies as an inherent impact of local food. Some specified wanting “to support local people,” those “who are just working hard at making a living.” Many explained a desire for more robust local economies with diversity and competition, and those who worked in small businesses themselves identified some “self-interest” in their support of local food, as they aimed to enhance the buying power of others in their community and be viewed as cooperative community members.

Comparing Preferences and Behaviors

How do respondents’ degrees of stated preference for local food compare with their reported shopping behaviors? Altogether, respondents listed 96 different food venues, which included 46 locally oriented and 50 nonlocally oriented venues. The reported shopping behaviors of those with a higher stated preference for local food differed in some significant ways from other shoppers, but not consistently. Local shoppers were, indeed, more likely than nonlocal shoppers to report a locally oriented venue as the site where they spent the most fresh food dollars (i.e., listed and ranked first in the survey) ($p=0.004$) (Table 3). Local shoppers were also more likely to cite a locally oriented venue anywhere in their ranking than were nonlocal shoppers ($p=0.004$).

When these larger categories are broken down, a trend in overall spending is also somewhat evident for shoppers who report different levels of

Table 3. Participants' Reportings of Local-focused Food Venues

	Ranked locally oriented venue FIRST	Listed ANY locally oriented venue
Local shoppers (n=164)	34 (21%)	105 (64%)
Nonlocal shoppers (n=114)	9 (8%)	56 (49%)
	* $p=0.004$	* $p=0.012$

local-food preference. Altogether, respondents across local and nonlocal groups listed 13 on-farm sales venues, 22 farmers markets, 11 natural/local specialty grocers, 15 other independent grocers, 14 regional grocery chains, and 21 large grocery chains. Reported spending at the six venue types was compared for respondents with different local food priority levels. The following pie charts show, first, the proportion of stores in each venue type that shoppers listed within their top two venues; second, the venue types in their overall lists; and third, only the venues they ranked third or lower.⁷ Because survey participants listed their shopping places and ranked them according to dollars spent, the first set of pie charts represents the venues where shoppers spent the most money per venue. The final set includes venues where shoppers spent less money.

The charts in Figure 1 show that local shoppers were more likely than nonlocal shoppers to report spending a significant portion of their food dollars at locally oriented venues. Direct-market venues constituted 17% of top-ranked venues for self-described local shoppers, and just 8% for nonlocal shoppers (Figure 1). The shifts in shares of direct-market venues listed came primarily at the expense of regional grocers, and to a lesser extent, large chain stores. The proportions of local-natural grocers and other independent grocers were consistent within top-two and lower-ranked listings.

On the other hand, the correspondence between respondents' stated priorities and reported shopping behaviors was only modest. Figure 1 also shows the reliance among all groups of respondents on large and regional grocery chains. Large chains constituted between 32% and 55% of venues cited (among respondents for whom local food is the "highest priority" and for whom it is

"less important" than other factors, respectively), and the two categories together constitute no less than 61% of cited venues for any group (and as high as 81% for the group viewing localness as "less important"). In addition, local and nonlocal shoppers reported similar

proportions of different venue types within their lower-ranked venues. Both groups were more likely to cite markets with direct purchases from farmers as places where they spent less money than they were to rank them among their high-spending venues. The small size of many locally oriented venues may partially account for this trend, with people spending a smaller portion of their household food dollars at smaller venues. Although a CSA farm often aims to become its members' primary source of produce (and sometimes eggs, dairy, and other products, as well), and many "local" and "natural" food stores strive to become their customers' primary shopping venues, the larger regional and national chain grocery stores remain central for food shoppers who expressed all levels of local priority.

In addition, the food venues at which researchers encountered shoppers did not robustly correspond with their stated local preferences. A one-way ANOVA examining the mean local importance rank for participants contacted at each type of venue found a difference at the $p<0.05$ level ($F(5, 276) = 3.06, p=0.01$). However, the Tukey HSD test showed only two pairings of participants at different venue types to be significantly different: farmers markets and regional chains ($p=0.039$), and specialty grocers and regional chains ($p=0.046$) (Figure 2). None of the other pairings of venue types showed significantly different local rankings. In addition, there was no consistent trend, even at a nonsignificant level by which those surveyed at more locally oriented venues reported a higher local food priority. This suggests that characteristics other than a venue's local orientation were more influential in shaping shoppers' buying behaviors.

This lack of correspondence was found despite

⁷ The mean number of food venues listed per respondent was 3.3, and less than 6% of respondents listed more than five food venues.

Figure 1. Reported Spending on Fresh Food, with Participants Grouped by Level of Local Food Priority

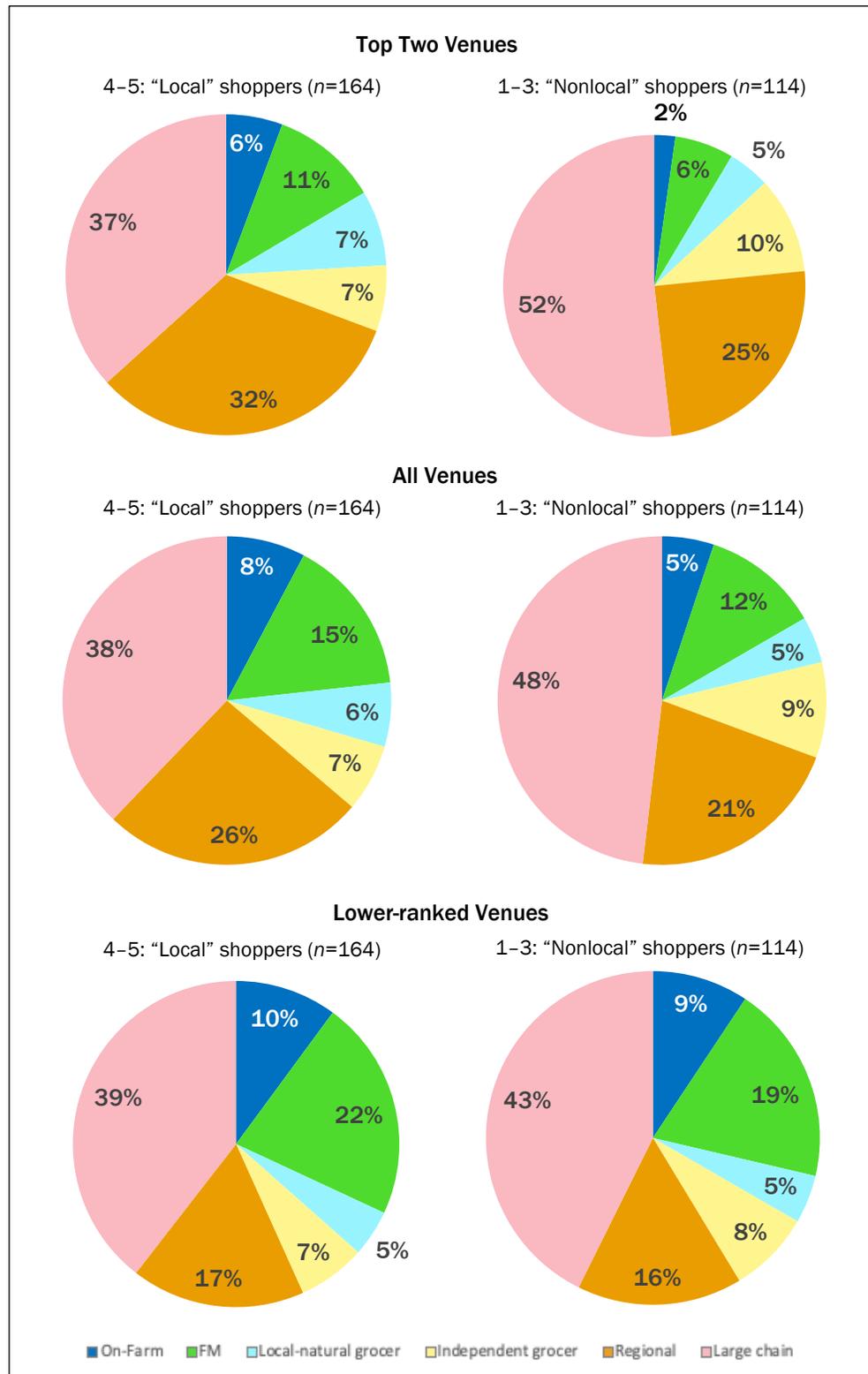
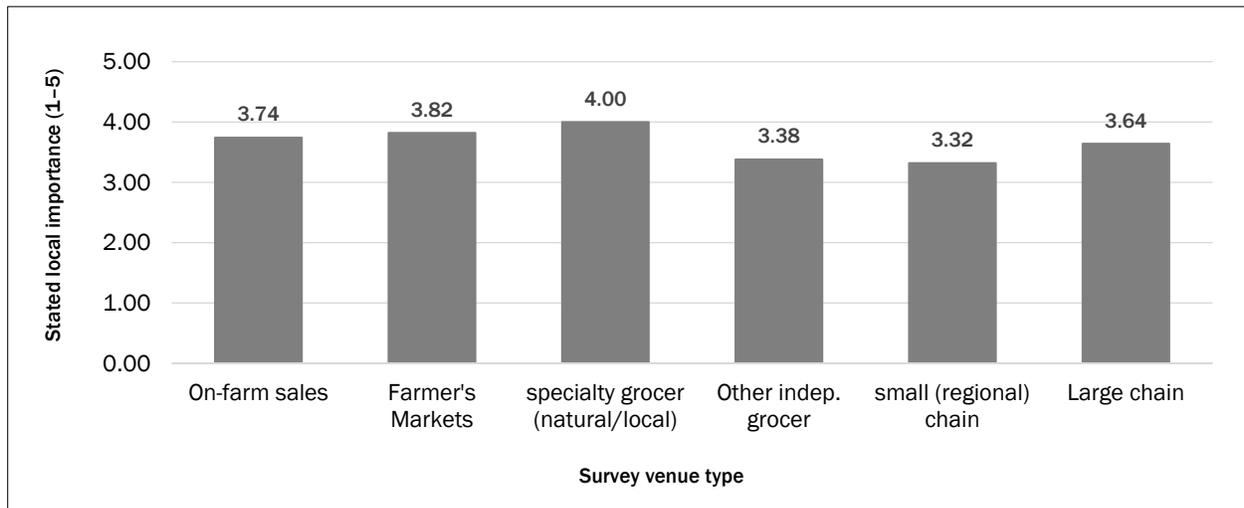


Figure 2. Mean Local Food Importance Rankings, by Survey Venue Type



the fact that respondents did show some year-round loyalty to particular types of venues. In other words, the venue type where researchers happened to encounter each respondent did serve as a useful snapshot of that respondent's overall shopping tendencies. In Figure 3, charts show the number of times respondents reported buying food at food venues of different types. Each chart reports the responses of survey participants encountered at a different type of food venue. Respondents encountered at on-farm sales venues reported a larger proportion of on-farm venues among their listed food venues than did respondents encountered at other venue types. This trend held across all venue types except farmers markets. This, too, indicates that people choose shopping venues based on preferences unrelated to the availability of local food, but indirectly tied to venue type. This interpretation is supported by interview data; when asked what drew them to their top-ranked venues, many shoppers noted a favored product that was available only at specific stores, described the aesthetics they preferred (from wide aisles to cosy, small stores), or appreciated the variety of products available at particular venues.⁸

Finally, because one of the most commonly cited obstacles to buying local reported by interviewees was the necessity of visiting many venues

to complete their shopping, one could expect that shoppers most committed to local food would visit more venues. Many farmers markets have limited variety, interviewees explained, and even a large farmers market or farm stand does not carry the variety of produce found in a grocery store. Off-season, the challenge grows. As one woman explained: "I know people who go to the farms year-round. But then it's like, maybe I'm gonna have to drive for 40 minutes, and then I'm going to go there and they're not going to have everything I want, or I'm not going to like it." However, as a group, local shoppers did not report visiting a greater variety of different food venues, nor as individuals were they more likely to trek between multiple venues to provision their households compared to nonlocal shoppers (Table 4). Furthermore, the proportion of all venue listings and the diversity of venues reported by each group of shoppers were both in line with their overall representation among survey respondents.

Explaining Behaviors: Why Not Buy Local?

The pattern that emerges here of self-described local shoppers is of individuals who include one or more direct-market venues and/or locally oriented grocers in their regular shopping circuits. However, such venues constitute a relatively small proportion

⁸ The farmers market exception may support this interpretation, as the markets serve a dual role of entertainment and shopping, and many survey respondents did not report buying from the farmers markets at which they were encountered.

Figure 3: Frequency at Which Respondents Reported Different Venue Types, Grouped by the Venue Type at Which They were Surveyed

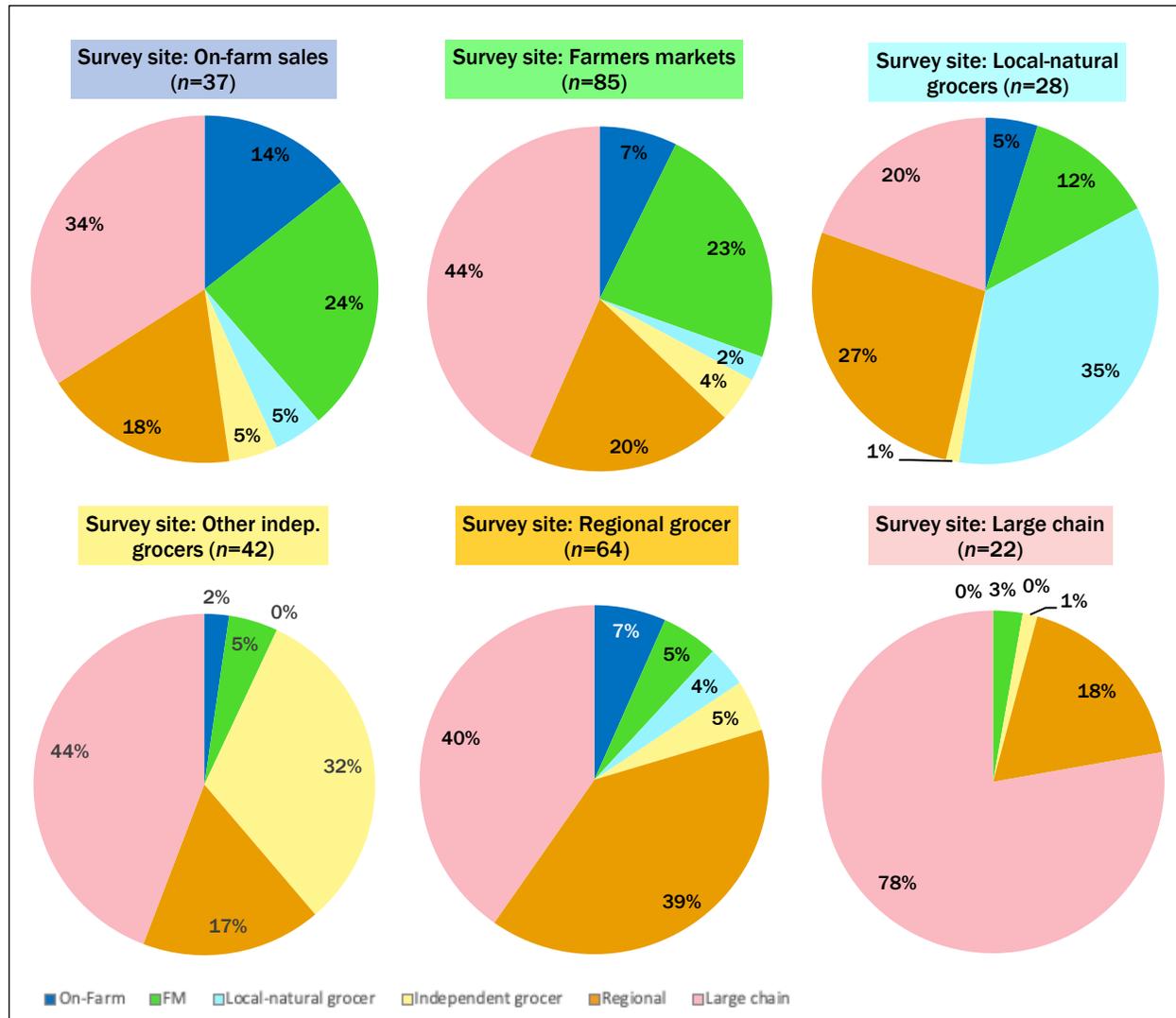


Table 4. Shopping at Multiple Venues

	Mean # of venues reported	% of survey respondents	Variety of venues frequented by group	Discrete venue reportings by individuals
Local shoppers (n=163)	3.39	59%	82 (85%)	553 (60%)
Nonlocal shoppers (n=114)	3.27	41%	65 (68%)	373 (40%)
Total	<i>p</i> =0.296		Total: 96	Total: 926

of the food venues they frequent, and large chains and regional grocers remain central for food provisioning. On average, they visit the same number of venues as nonlocal shoppers. Follow-up interviews with survey participants provided insights

into three key contextual factors mediating between individuals' priorities and their food-buying behaviors.

Cost was noted as a barrier, but only by five of the 20 interviewees. Despite frequent concerns

among small-scale farmers that their food is perceived as overly expensive, interviewees did not highlight price as the most significant barrier. In addition, the five respondents who specifically noted having some financial stress were not more likely than the group to highlight price as a barrier.⁹ Even several respondents who mentioned price tempered their comments by acknowledging farmers' justification in charging high prices. As one low-income restaurant worker explained,

Honestly, a lot of times [it's] price. I don't make a ton of money and it's unfortunately hard to justify spending that much more money on produce sometimes. ... I understand it's a fair wage for the amount of effort [the farmers] are putting in and everything, and we don't put enough associated value onto our food a lot of times. We just accepted this idea of cheap food because of farm subsidies and things like that, so we are just detached from it. It's a little bit shocking at times, but at the same time, I'm still poor. Despite the fact I can understand it, I can't necessarily get around it at this time in my life.

Other participants denied that local food is more expensive, asserting that farmers market prices compared favorably with those in grocery stores. "A lot of the stores are more expensive and the produce aren't as fresh," reported one elderly woman on a fixed income who highly prioritized local food. A middle-aged father agreed, saying farmers market prices were "a lot better than your grocery store." Another respondent who initially asserted that farmers market food is "a lot more expensive" then paused and corrected herself: "The vegetables aren't really, but the meat is."

Inconvenience (specified by 11 of 20 interviewees) and a lack of variety (specified by 14) were far more important local food barriers for interviewees. As noted above, interviewees across both local and nonlocal groups found it cumbersome to visit multiple venues, sometimes quite far apart, to

complete their food shopping. This was the most frequently noted inconvenience. A number of interviewees explicitly wished for more locally produced foods at nearby grocery stores. "I wish that [the farmers] could go to, like, the local market, like Woodman's, and put their local stuff out." In addition, three people spoke of farmers markets' limited hours, often falling during their own work shifts. One final inconvenience mentioned by several people would apply as a challenge for eating fresh food more generally, but may be particularly pronounced if the main local food venues of an area are roadside stands and farmers markets that do minimal washing and prepping of produce: "The pace of life we have," explained one man, "is very fast, and sometimes you don't have enough time for cooking and preparing food."

Interviewees noted a lack of variety both in terms of seasonality and regional limitations. "We don't really do seasonal," reported one mother of young children. Her kids "love watermelon, so we eat watermelons all year round." Most shoppers have become accustomed to accessing any type of food at any time of year. However, most farmers markets close in the fall, farmers can supply only winter and storage crops through other venues, and Rockford's temperate climate is unsuitable for citrus and many other crops that interviewees viewed as mainstays of their diets. Even those striving to eat more seasonally noted limitations such as not being able to afford the necessary time to can and freeze harvest-season bounty. Interviewees also noted a lack of variety, even during harvest season, at their local farmers markets. Reported one recent transplant from Chicago, "it was a lot of the same stuff at the farmers market here in Rockford," unlike the greater variety he had found in Chicago markets.

Two additional concerns drawn from ethnographic work with small-scale farmers (McKee, 2018) were probed with interviewees. First, as farmers have watched the rise of mail-order meal-kit services coinciding with the fall of their own sales, some fear that these fresh food

⁹ Although quantitative socioeconomic data were not gathered from interviewees, one-quarter mentioned being under financial stress, including one person who relied on Illinois' Supplemental Nutrition Assistance Program, a retired woman on a fixed income, and three individuals with low-income jobs.

vendors are direct competition. However, among this study's sample, meal-kit services were not appealing. In fact, not a single interviewee spoke positively of them, and 13 of the 14 interviewees asked directly about them reported that they would not want to try such a service. Interviewees perceived meal-kit services to be expensive and to offer them little control over their diets.

Second, farmers relying on community supported agriculture (CSA) have seen membership numbers declining and wonder how potential customers view this model of food purchasing. When asked about their perceptions of "CSA," most interviewees (12 of 20) were not familiar with the term. However, when the model was described as a person paying a farmer at the beginning of the season for a share of the harvest and then receiving food deliveries each week, many reported being familiar with the concept. Among those with some exposure to the service, interviewees spoke favorably of CSA's ability to support local farmers and of the great taste of the produce received. They spoke less favorably of the consumers' lack of choice in the produce received, the inconvenience and inflexibility of delivery arrangements, and the food they ended up wasting when receiving large batches of produce weekly or biweekly. Notably, expense was not a common concern preventing participation in CSAs (mentioned by only two interviewees).

In contrast to these barriers, participants' past experience growing food was an influential factor prompting them to purchase local food (a finding supported by Dukeshire et al., 2016, and Cranfield et al., 2012). Repeatedly, interviewees reported that growing some of their own produce made them "more aware"—aware of the hard work required to grow food, the seasonality of crops, and the normalcy of irregular shapes and imperfections. This awareness made

individuals more appreciative of how fresh food should look and taste. As one respondent explained, just growing her own tomatoes for one summer motivated her to seek out local sources: "I sorta realized that the flavor of tomatoes from the store are [sic] completely different from when you get them at the farmers market." Parents said that the experience of growing up with gardens made their kids more open to eating a variety of vegetables, making it easier to eat what was locally in season.

This growing of one's own food did not replace local produce purchasing—only one interviewee estimated growing enough food to offset what she would otherwise buy from local producers—but instead made respondents more appreciative of local food. A few specifically reported greater appreciation for farmers' labor after growing their own food. Stated one shopper who ranked localness as his highest priority, "You do notice the hard work you put in maintaining it, so it doesn't bother you to think you have to pay a little bit more." While interview comments provide evidence of a causal relationship between growing food and prioritizing local food purchases, Table 5 suggests that, among the larger sample of survey participants, both the likelihood of raising one's own food and the portion of yearly food raised were slightly higher for those who more highly prioritize local food.

Implications and Conclusions

Facing the conundrum of local food popularity and declining direct-market sales, small-scale farmers

Table 5. Participants' Raising of Their Own Food

Local importance ranking	n	Percentage of respondents raising any of their own food (%)	Portion of yearly food raised by self	
			Mean (%)	Median (%)
Local, 4–5	165	48	15	0
5, Highest	60	42	13	0
4, Higher	105	51	16	20
Nonlocal, 1–3	115	34	8	0
3, Equal to others	82	37	10	0
2, Lower	18	39	8	0
1, Not a priority	15	13	3	0

and advocates of local and regional food systems need contextually grounded and nuanced analysis of the multiple, interwoven factors shaping people's food-buying practices (McKee, 2018). This study uses a mixed-methods approach that accounts for shoppers' actual behaviors and their understandings of those behaviors. It does so in the U.S. Midwest, where local food consumption lags far behind the potential of local farm supplies (Zumkehr & Campbell, 2015), and in one of the nation's lower-income metropolitan regions, the inclusion of which will be critical for establishing food systems that are both economically robust and just. These findings offer insights useful to local food advocates in this geographical region, in particular, and avenues for comparative investigation in other locales.

Several findings, in particular, warrant further discussion. This study found that shoppers desired local food in high proportions, comparable to other studies (Brown, 2003; Feldmann & Hamm, 2015). However, a large portion of respondents saw local production as nearly balanced with other priorities. Such individuals are unlikely to significantly alter their shopping habits to access local food. Thus, further interventions, either to influence their priorities or make local food easily accessible at their current shopping venues, would likely be necessary to direct their dollars toward local food production.

Price was among the other priorities noted by this sample of shoppers, but not a dominant one. Respondents in other studies have reported price to carry widely variable levels of importance in relation to other factors, from high (Farmer et al., 2016) to moderate (Dukeshire et al., 2015) to statistically insignificant (Tregear & Ness, 2005). In this study's explicit querying of participants' shopping priorities in comparison with local origin, price and freshness were important (the top two priorities *volunteered* by respondents), but more people ranked local food as being "most important" than either of these factors. One possible interpretation of the inverse trend between price and localness noted in Table 2 is that those most concerned with price are also least concerned with buying local, and that they are therefore not the shoppers on whom farmers should be focusing

their efforts. On the other hand, interview data show many shopping priorities to be synergistic, rather than competing. Although some interviewees described local food as expensive, others asserted the opposite. Overall, the relatively low salience of price as a barrier to buying local food, compared to other factors, is notable given the Rockford area's relatively low-income status. One would expect its salience to be even lower in higher-income areas. These findings suggest that interventions reducing the perceived inconveniences of local food would increase local food purchasing as effectively as price-cutting measures, and could do so without cutting into small-scale farmers' meager profits. Still, further mixed-methods research focused on the issue of price would be useful to work through these somewhat conflicting indicators. The gathering of respondents' demographic and economic data, along with open-ended interviews, could zero in on these price questions: To what extent does price compete with local origin as a shopping priority, for whom is it a barrier, and why?

This study found some correspondence between stated preferences and behaviors, but also a notable attitude-behavior gap (Feldmann & Hamm, 2015). Locally oriented venues constitute a relatively small portion of shoppers' high-spending food venues over the course of the year, even among those who most highly prioritize localness. And those stating a local priority were not more likely than those without such a priority to trek to many small venues to provision their households. Some of this gap may be explained by the semantic flexibility of the term "local." Some interviewees saw themselves as buying local food if it came from nearby stores (regardless of production locale), and even for those concerned with place of production, a local food range included a 300-mile (483-km) radius reaching to southern Indiana for some, and only a 30-mile (48-km) radius for others.

However, much more of this attitude-behavior gap can be traced to barriers in the food-buying context, and these barriers point to three potential avenues for intervention: among food producers, eaters, and infrastructure shapers. For farmers, this study offers promising directions for action, but also some cautionary notes. First, people interested

in local food can be found shopping at all types of venues, but are somewhat more likely than other shoppers to spend at farmers markets and on-farm sites. Second, people producing some of their own food are particularly likely to highly prioritize local food and to appreciate those benefits most often voiced by small- and midscale farmers, such as freshness, nutrition, and the value of farmers' labor. Thus, farmers may find allies and clients by advertising not only at traditional direct-market venues like farmers markets, but also at school and community gardening programs, 4-H and similar youth groups, and even local gardening stores.

For those farmers committed to a CSA model, participants' unfamiliarity with the term "CSA," coupled with their enthusiasm for the approach, suggests that marketing about or re-labeling of the model could attract participants. Respondents' aversion to trekking between multiple venues lends some support to "whole diet CSA" approaches that gather diverse foods into shares (Horton, 2013). However, to the extent that such approaches provide one-stop shopping at the expense of choice, it may be unattractive to shoppers (e.g., raising complaints such as those regarding CSA and meal-kit services).

It should be recognized, though, that farmers are already using a variety of strategies to adapt, from efficiency gains to marketing innovations, despite the strain this puts on slim profit margins and heavy work loads (McKee, 2018). These options for farmer interventions must be complemented by adjustments on the part of eaters, wholesale purchasers, and others involved in the food system. For eaters, the degree to which this study finds shoppers' behaviors diverging from their ideals can be a cautionary reminder as we plan our food buying. The findings also suggest several areas in which eater education could be useful. First, while establishing a unified definition of local food may be neither feasible nor desirable (Ostrom, 2006), the semantic uncertainty found in this study suggests the need for more comprehensive discussions of the term's meanings and more critical evaluation of its use in advertising. Eaters also need to clarify their desires for their food system and understand how their actions contribute to shaping it. For example, while multiple

interviewees wished for local food to be available in large grocery stores, none expressed an awareness of the barriers small-scale producers face in marketing to grocery stores. Wholesale distribution reaches plentiful customers but brings much lower prices, and small-scale farmers report a variety of barriers to their accessing these markets, including institutional buyers' expectations for minimum shipment sizes, inflexible timing, and uniform appearance of produce (McKee, 2018). As a result, large farms dominate these marketing channels (Low & Vogel, 2011). However, grocery stores' policies rely heavily on consumer preference research. If consumers demand locally produced food in terms amenable to small- and midscale production, new opportunities for such farmers may be opened. This requires eaters to attain deeper understanding of the entire food system, from production to consumption and waste generation.

Many of the barriers to local food buying highlighted in this study are not easily solved by individuals. The key inconveniences noted by interviewees—limited local food sales points and the necessity of visiting many such venues—have persisted for at least the past two decades (Brown, 2003; Conner et al., 2010; Wolf, 1997). Novel methods of aggregating produce from multiple farms and consolidating marketing services, such as food hubs, may help local food producers overcome obstacles to wholesale distribution (Barham et al., 2012; Berti & Mulligan, 2016). However, some studies suggest that these innovations predominantly benefit farms that are already relatively large, and/or focus on few crops (Colasanti et al., 2018; King et al., 2010). These barriers require cooperative action to shift the infrastructures of food production and distribution. Adjusting agricultural subsidies to support not only large-scale grain farming, but also smaller-scale fruit and vegetable production, could enable smaller-scale farmers to compete at wholesale prices and reach customers at the grocery stores where they wish to shop. Alternative distribution schemes, such as farmer cooperatives and food hubs, must also attend to the specific needs and skills of small- and midsize farms (Barham et al., 2012; Blay-Palmer, Landman, Knezevic, & Hayhurst, 2013).

Finally, this study points toward several fruitful directions for further research. First, similar studies combining quantitative comparison of shoppers' shopping behaviors in other locales would be useful, particularly those with contrasting socioeconomic profiles and from other U.S. regions. Would the relative importance of price and localness shift dramatically with factors such as average household income? And beyond this small sample of interviewees, which of these priorities are seen as synergistic versus competitive? Second, the relationship found here between experience raising one's own food and degree of local food prioritization warrants exploration. What accounts for this correlation? And does the experience of raising food also close the attitude-behavior gap, leading eaters to buy a greater portion of their food from local sources? Third, while this study focused on household food shoppers in response to the current interests of small-scale farmers in the region, recent trends suggest the need to investigate mediated marketing channels as well. National studies show that farmers' sales to local intermediaries

such as grocery stores and schools are rising, even as direct-to-consumer sales decline (Plakias, Demko, & Katchova, 2019). The USDA has recently begun tracking food sales from farmers to distributors and hubs, but this tracking does not follow through to the final buyer, so little is known about who purchases that food or why. A more thorough understanding of the value chains that constitute local and regional food systems would help farmers find buyers, help eaters understand how their actions affect food systems, and enable local food advocates to build effective infrastructure and education campaigns. 

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Farming the future: Youth enthusiasm and transforming Nepal's economy through agriculture

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Abstract

The authors conducted a study in December 2019 to investigate youth enthusiasm in Nepal for transforming the economy of the nation through farming. A total of 320 respondents from four towns in three districts were selected for interviews that used a pretested questionnaire. Descriptive statistics were employed to analyze the data. Most of the youth had positive perceptions and enthusiasm toward farming, but many felt that farming was “burdensome,” due mainly to its perceived perception to provide only a low income.

Almost half the respondents (45%) were found to have a low level of contribution to economic transformation through farm involvement, with high (34%) and medium (21%) levels of contribution to the economy, respectively. There are several constraints hindering youth engagement with agriculture and overall agro-economic development. The major constraint is access to credit and markets, followed by poor social perception of farmers, inadequate government and extension service resources, access to modern technology, and other factors. The study authors recommend that the government and NGOs encourage youth engagement with agriculture by enhancing agricultural education, extension, financial support, and so forth. There is a need for extension program staff and policy-makers to better understand the role of youth in the community development process.

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Keywords

Agro-enterprises, Economy, Farming, Extension, Nepal, Youth, Beginning Farmers, Agricultural Education

Introduction

Agriculture has been called the backbone of the national economy for the majority of developing countries (Lawal, 2011; Mogue, Yu, Fan, & McBride, 2012). As 66% of the population of Nepal is directly engaged in farming, agriculture contributes to nearly 28% of total national GDP (Khanal & Shrestha, 2019). The population is predominantly rural, and agriculture remains the primary occupation, with the majority of farmers engaged in subsistence agriculture. In the past, the scope of farming was limited to the production of crops and goods for human consumption. With the rapid advances in science and technology, however, the present scope of agriculture extends to areas such as macroeconomics, environmental science, forestry, aeroponics, and hydroponics. The significant potential for agricultural development in Nepal is predicated on rapid advancement in numerous fields of science and technology. Consequently, agricultural development means economic development.

No sector of a national economy can attain its intended level of development unless the involvement of youth is ensured (United Nations, 2008). Countries that are considered high economic achievers rely substantially on the continual efforts of youth (United Nations, 2018). It is vital to emphasize nurturing youthful knowledge and attracting skilled, capable youth to agriculture (Fatunla, 1996). Nevertheless, in developing countries most youth are highly apathetic toward agriculture (Adedoyin & Jibowo, 2005). This has contributed to severe unemployment in the agriculture sector and a shortage of sustainable livelihood activities among youth (Breitenbach, 2006). However, youth in developing countries have different perspectives regarding the acceptability of farming. In the less developed countries of Africa, youth non-engagement in agribusiness has partly been ascribed to there being few attractive resources in agriculture and to disconnects between youth program offerings and vocational training and the actual require-

ments of agricultural sectors (Aphunu & Atoma, 2010; Nhamo & Chikoye, 2017).

Because community development is a dynamic process involving all segments of the community, including the often-overlooked youth population, significant progress in farming could be achieved through youth involvement. Youth participation in organized groups facilitates their engagement in the community. As most Nepali youth are relatively disadvantaged in terms of access to skills and social capital, with little engagement with organizations, many regard farming as a 'no-go' area for career options. The perceived lack of techniques, experience, and knowledge in agriculture makes it less interesting to disadvantaged youth. Contemporary agriculture, transformed by globalized markets and new technologies, requires significant effort on the part of new farmers to gain skills necessary for success. Disadvantaged youth have less of the initiative required to succeed in this field. Some youths accept working in farming passively, largely due to originating from poor families, having deficient literacy, or having failed in other jobs (Chaudhary, 2018). Nepal's agriculture sector is experiencing manpower and entrepreneurship weaknesses because Nepali youth who have more initiative and drive often seek foreign employment (The Rising Nepal, 2014). Moreover, institutional efforts to involve youth in collective action at the execution phase of project management leave little space to negotiate the interests of youth (Gebremariam, 2017; Hartley, 2014; Proctor & Lucchesi, 2012). The scientific and farming communities of Nepal need to realign the country's youth to cope with the bottlenecks arising while transforming economy through agriculture (Jabed, 2016).

The Nepali government is developing strategies and policies for youth-empowering programs (Hosein & Yadav, 2017). Extension programs, basic farming education for youth, and other policies are being implemented to persuade youth to become more interested in farming. The government is developing financial, social, and technological tools and packages in collaboration with private agencies for helping youth in agriculture. However, despite agriculture's ample money-making potential for youth, challenges related

specifically to youth involvement in farming and, more important, options for surmounting them are not extensively documented.

Objectives

The main objectives of the study were to understand the attitudes of youth toward agricultural work, assess their levels of enthusiasm, and explore how attitudes affect their potential contribution to the economy, in the area of Nepal on which the study focused. The specific objectives were to investigate the perceptions of youth toward agricultural production, describe the role of different agencies involved in youth development, examine the factors that attract youth to farming, and discuss the constraints limiting youth engagement in farming activities.

Limitations of the Study

Research on connecting youth with agriculture through their enthusiastic involvement is not a new approach, and we recognize that there are a number of potential limitations to our study. We sought to cover a larger area and involve more respondents than previous studies, but we acknowledge that we were not able to do so. The study was conducted in a small part of the country with a sample who was at least engaged in some kind of occupation related to agriculture. A detailed study with a larger area and a more representative sample from a wider range of vocations could be helpful for generalizing the results for all parts of Nepal. We were inexperienced with quantitative research tools that would enable us to fully analyze our data to answer our research questions. Even in terms of qualitative data, we did not capture as much information as we initially envisaged due to time limits and lack of funding.

Youth and Economic Transformation

Franklin D. Roosevelt said, “We cannot always build the future for our youth, but we can build our youth for the future” (The Franklin Delano Roosevelt Foundation, n.d.). This highlights how much value youth represents for economic transformation and what youth can do for nations when empowered to be agents of positive change. One major critique of youth empowerment is that most

relevant official programs take a risk-focused approach, emphasizing what goes wrong with youth performance rather than what goes right. To youth, such an approach portrays development as a process of merely overcoming risk and may dissuade them from youth development programs (Guerra & Bradshaw, 2008). The risk-based approach can obscure the reality that adolescence is a period when youth can master skills and ideas. Research suggests that invigorating youth with the idea of entrepreneurship in the farming sector enables the attainment of economic goals at community and national levels (Bruton, Ketchen, & Ireland, 2013; Díaz-Pichardo, Cantú-González, López-Hernández, & McElwee, 2012; Sinyolo & Mudhara, 2018). Youth contributes significantly to land and agricultural reform, in turn sustaining youth enthusiasm (Gwanya, 2008). Largely because of their increased connectivity via social media and hence increased access to information, youth can conceive of ways to shape the economies around them in ways never possible before (Fletcher, 2019). Youth can be the driver of agribusiness, generating high returns on agricultural investment by using new ideas. In general, agribusiness does not mean just farming, but incorporates industries and services from farm production and processing to wholesale and retail, which can create youth job opportunities. Economic transformation, as used in this study, means a higher average income, broader diversity of economic enterprises, and greater contribution to GDP through agriculture produce surplus income (Allen et al., 2016; Leavy & Smith, 2010; Roepstorff, Wiggins, & Hawkins, 2011). Despite increasing recognition of the value of youth, too little is known about realizing the economic potential of youth for national development, thus slowing the pace of economic development.

Youth Vision-2025 and Youth Unemployment

Buckminster Fuller said, “You never change things by fighting the existing reality. To change something; build a new model that makes the existing model obsolete” (as quoted in Haber, 2007, p. 363). Keeping social and economic transformation central, Youth Vision-2025, approved by

the Government of Nepal in 2015, aims at preparing youth for roles such as agricultural laborer, agro-businessperson, entrepreneur, and policy-maker in order to change the nation from underdeveloped to rapidly developing within the next 10 years (Nepal Government Ministry of Youth and Sports, 2015). The plan stresses unity, equity, justice, harmony, and inclusion in order to enhance collaboration; it also focuses on the need to invest directly in youth for the economic progress of the country. The program also includes a Guarantee of Rights and Realization of Obligations, which encourages youth to work freely and independently.

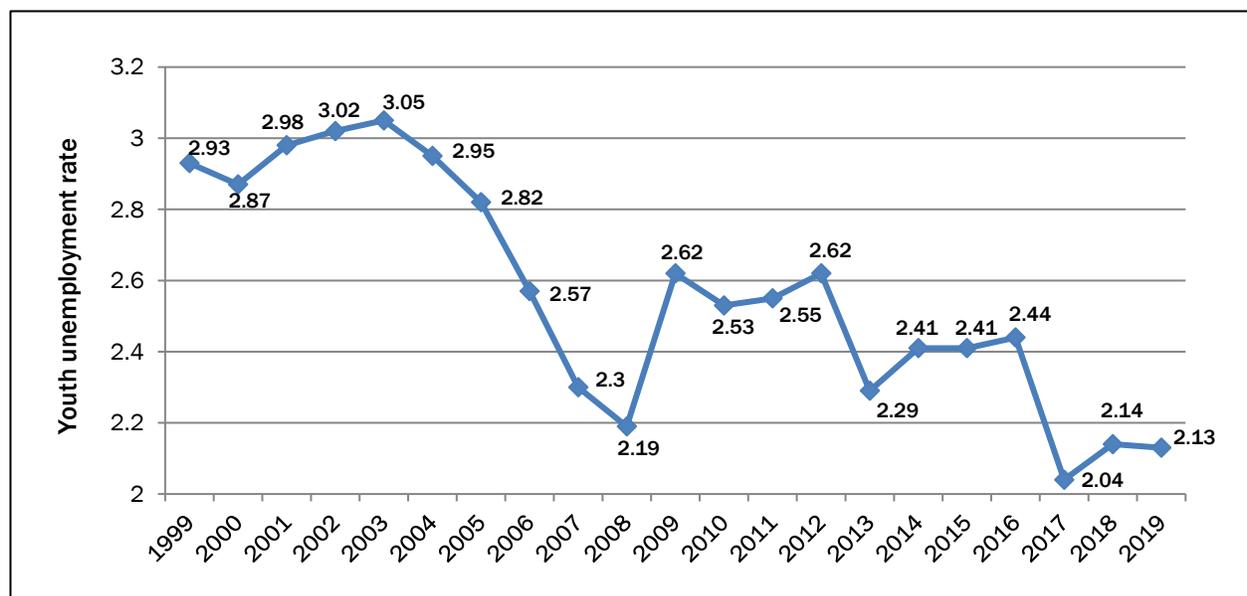
However, Nepal is lagging behind other nations in providing youth employment that is sufficiently productive and remunerative, potentially imposing considerable, enduring economic and social costs (Raju & Rajbhandary, 2018). As noted above, educated youth have a problem staying and working within the country due to the attraction of foreign employment with higher earnings. Every year many Nepali youths choose against their preference to leave the country for jobs or for higher education. Nevertheless, the youth unemployment rate of Nepal is decreasing in comparison to historical rates of unemployment. In 1999, the youth unemployment rate was 2.93%; in

2019, it fell to 2.14% (Statistica, 2020). From 1999 to 2019, the highest youth unemployment rate was 3.05%, in 2003 (Statistica, 2020). The government has been successful in supporting unemployed youth, especially those engaged in farming, as a large portion of the annual national budget is allocated to agriculture. The youth unemployment rate from 1999 to 2019 is shown in Figure 1.

Methodology

The study was conducted in December 2019 in four communities in three districts of the southern lowlands of Nepal: Nawalparasi East, Nawalparasi West, and Chitwan (see Figure 2). A total of 320 youths, 15 to 35, were selected randomly from the study areas. Interviews were conducted with the help of a questionnaire for both quantitative and qualitative information (see Table 1). Data was gathered in face-to-face interviews by using a pretested semi-structured questionnaire and by observation. Primary data was obtained through the key informant survey (KIS), questionnaire survey, focus group discussion (FGD), and an online survey with the respondents. The FGD involved gathering people from similar backgrounds or experiences together to discuss a specific topic of interest. The respondents were asked questions about their perceptions, attitudes,

Figure 1. Youth Unemployment Rate in Nepal, 1999–2019



Source: Statistica, 2020.

Figure 2. Study Areas

- A. Study Areas in Nepal (Map prepared by Subodh Gyawali.)**
- B. Study Areas in Nawalparisi West and Nawalparisi East, Nepal**
- C. Study Areas in Chitwan District, Nepal**



beliefs, opinions, and ideas. Secondary data was collected through the Youth Development Committee (YDC), Ministry of Youth and Sports (MYAS), Central Bureau of Statistics (CBS), annual reports, journals, etc. Information about the work of youth agencies and agricultural organizations in empowering youth were collected through YDC and MYAS, and the unemployment status of the youth population was assessed from CBS. Other related data was collected through reports, web pages, journals, and documents.

Results and Discussion

Socioeconomic Characteristics of the Respondents

The majority (81%) of the respondents were male (Table 2), which suggests that women's historic lack of rights to land ownership has hindered their

engagement in agriculture. As in many traditional societies, women's rights to land and property have been unrecognized, and thus many women have been vulnerable by being almost entirely dependent on the men in their lives for basic economic survival. However, the Nepal government has been introducing several proactive measures to promote women's access, ownership, and control over land and property (International Organization for Migration, 2016).

About 64% of the respondents were in the age group 18–28. Most (78%) of the individuals interviewed had received at least some secondary or postsecondary education; they were more educated than the average young Nepali. The nuclear family is dominant (82%) and about 93% of the families have a male as the household head. The average monthly income of respondents was US\$220–

Table 1. Sample Distribution in the Study Area

District	Area	Male [# (%)]	Female [# (%)]	Total [# (%)]
Nawalparasi West	Bardaghat	97 (30.31)	21 (6.56)	118 (36.88)
Nawalparasi East	Binayee Tribeni	76 (23.75)	18 (5.63)	94 (29.38)
Chitwan	Ratnanagar (Tandi)	53 (16.57)	12 (3.75)	65 (20.31)
	Bharatpur (Baseni)	34 (10.63)	9 (2.81)	43 (13.44)
Total		260 (81.26)	60 (18.74)	320 (100)

Source: Field survey, December 2019.

Table 2. Socioeconomic Characteristics of the Study Respondents

Variable code	Variable name and description	Mean	Mode category
GEN	Gender (Male=1)	0.81	Male
AGE	Age (18–28=1)	0.64	22–26
HHS	Household size (3–6=1)	0.62	4
FMT	Family type (Joint=1)	0.18	Nuclear
HHH	Household head (Male=1)	0.93	Male
MAR	Marital status (Married=1)	0.23	Arranged marriage
EDU	Educational level (Secondary/ Post-secondary=1)	0.78	Secondary education
INC	Income per month (\$180–\$250)	0.73	US\$220–US\$230
EMP	Employment status (Employed=1)	0.63	Studying + working
MAP	Membership in any programs (Member=1)	0.36	Nonmember
FBG	Family background (Agricultural=1)	0.83	Agricultural
FEN	Farming experience (5–10 years=1)	0.45	5–10 years
FOI	Field of interest (Animal husbandry=1)	0.36	Plant science
ABR	Respondent returned from abroad (Returned=1)	0.23	Non-gone abroad

US\$230. Less than three-fourths (73%) had monthly earnings in the range of US\$180–US\$250. More than three-fourths (77%) of the youths are single, indicating that agriculture employs a many single youths, especially when farming is the major source of self-reliance and income. The results showed that 64% of the respondents do not belong to any agricultural program, while 36% are program members. Nearly two-thirds (63%) were employed. Most family backgrounds of the respondents were agriculture (83%). The study area was an agrarian community, so nearly half of the people already engaged in farming had a farming experience level of 5–10 years (45%). About 64% of the respondents were interested in crop production and 36% were interested in animal husbandry. Nearly one-fourth (23%) of the respondents had traveled outside Nepal, while the remainder had never been abroad for work or study purposes.

Agencies Involved in Empowering Youth in the Study Area

Farming is not always an easy or appealing career option, but an increasing number of youths are reorienting to farming as an entrepreneurial enter-

prise through creative efforts (Young Professionals for Agricultural Development [YPARD] Nepal, 2019). Considering agriculture as a platform from which youths can be inspired to build professional paths, a number of government organizations (GOs), nongovernmental organizations (NGOs), and private agencies have implemented agricultural programs to increase youth engagement in agricultural work in Nepal. As noted above, 36% of the respondents belonged to such efforts. In the study area, youths are very active and have formed many organizations among themselves that work for common objectives. Milijuli (Together) is an agricultural organization formed by more educated youth with the intent to revolutionize agriculture with their skill and knowledge. YUWA is a specialized group of young farmers formed in the study area to solve agricultural problems jointly. The GOs in the study area that are providing support are governed by the Association of Youth Organizations Nepal (AYON), which acts as an umbrella organization for youth organizations to encourage cooperation, dialogue, networking, and collaboration. Some of the organizations are described in Table 3.

Table 3. Agencies Involved in Empowering Youth in the Study Area

Agency	Date Established	Role
We Inspire Nepal (WIN)	2012	Inspire personal development; conduct motivational seminars and trainings
Change Fusion Nepal	2008	Help youth direct their vision and skills through social entrepreneurship with four components: Mentorship, Knowledge, Funding, and Networking
YUWA	2009	Promote youth participation through empowerment and advocacy, work actively to develop youth-adult partnership in several areas
Open Space Nepal	1997	Unite youths and provide them with a platform to interact with others, develop skills and take leadership; work to activate youth through three areas of advocacy: media, education, and innovation
Youth Initiative	2001	Develop youth potential, encourage positive change in society
4-H club	2014	Promote youth-related awareness programs for self-employment and -reliance at the community level in agriculture and economic efforts
Forum for Rural Welfare and Agricultural Reform for Development (FORWARD)	1997	Improve food and nutrition security, household income and resource conservation, integrate social mobilization, agriculture, livestock, fisheries and aquaculture
Local Initiatives for Biodiversity, Research and Development (LI-BIRD)	1995	Capitalize on local resources, innovations, and institutions for sustainable management of natural resources for improving livelihood of smallholder farmers

Source: Focus group discussion, 2019.

Several other organizations and clubs were noted in the study areas, such as Baal Samaj Nepal (Children Society Nepal) in Tandi, Creative Youth Society (CYS) in Bardaghat, Friendship Youth Society (FYS) in Baseni, Deurali Youba Club (DYC) in Binayee Tribeni, Ideal Youth Group (IYG) in Bardaghat, and Buddha Youth Club (BYC) in Binayee Tribeni. In the Chitwan district, youth generally are getting the infrastructure that is needed for development. The multidisciplinary agencies have long been used by agriculture extension as a means to engage youth in economic, social, and agricultural development. Extension agents help in building relationships with potential collaborators, identifying shared interests of youth, and creating new opportunities to extend their work in ways that benefit community farmers. Among the study areas, Bardaghat in Nawalparasi West has the highest number of youth engaged in farming, likely due to the active role of youth organizations, extension services, and the interest of youth. While some youths are members of at least one agency in the study areas, most of them have not been a part of actual agricultural enterprise and programming.

Level of Youth Involvement in Agro-Enterprises

Although the youth population of the world is anticipated to increase substantially, employment and entrepreneurial opportunities for young people remain limited, especially in economically stagnant developing countries (Technical Centre for Agricultural and Rural Cooperation [CTA], 2017). Engaging rural youth in agribusiness has become an important strategy to create employment opportunities in Nepal. Not all young people are inspired by the notion that farming provides a productive career and profitable returns. The level of youth involvement in agro-enterprises varies with factors such as the opportunities available, their beliefs and attitudes, and location. Nevertheless, several studies have shown that the increasing profitability of agribusiness has attracted youth to agro-enterprises in many developing countries including Ghana (Banson, Nguyen, Bosch, & Nguyen, 2015; Yeboah, Sumberg, Flynn, & Anyidoho, 2017), Ethiopia (Bezu & Holden, 2014; Tadele & Gella, 2012), and Nigeria (Baumüller, 2018; Fawole &

Olajide, 2012). The level of youth involvement in agro-enterprises in this study is shown in Table 4 and Figure 3.

Most youth are involved in crop production (33.13%), horticulture (15.31%), and cattle or buffalo rearing for meat and milk production (10.00%) to sell in nearby markets. A notable share, about 9%, were engaged in farming business: dealing with the entrepreneurship of their own firms, or agro-marketing (trading in agricultural goods). A relative few are involved in work such as farm labor, farm maintenance, and feed-processing industries. While it was found that the plurality of the youths in the study area is actively involved in crop production, their involvement in other sectors of agricultural enterprise needs to be encouraged.

Economic and Personal Attitudes of Youth toward Farming

Although agribusiness could be well-positioned to absorb youth and thus reduce unemployment, this has not been the case, as only one-third of the youth population is engaged in agriculture in Nepal (Central Bureau of Statistics Nepal, 2019). Perceptions and behavioral attitudes play an important role in influencing enthusiasm of youth for farming. A youth decides to commence any sort of business activity primarily if it is perceived

Table 4. Level of Youth Involvement in Agro-Enterprises

Agro-enterprise Practice	Frequency	Percentage	Rank
Crop production	106	33.13	1
Horticulture	49	15.31	2
Cattle or buffalo rearing	32	10.00	3
Farming business	29	9.06	4
Agro-marketing	21	6.56	5
Farm labor	19	5.94	6
Poultry	15	4.69	7
Goat rearing	13	4.06	8
Farm maintenance	12	3.75	9
Feed processing	9	2.81	10
Aquaculture	7	2.19	11
Piggery	4	1.25	12
Apiculture	4	1.25	13
Total	320	100	

to be more profitable and feasible than alternatives (Liñán, Santos, & Fernández, 2011).

A five-point Likert scale (1=Strongly disagree [SDA], 2=Disagree [DA], 3=Undecided [UD], 4=Agree [A], 5=Strongly agree [SA]) was used to assess significant differences. Respondents were asked to choose different categories signifying different strengths of agreement and disagreement. This category was scored and the sum of the scores measures youth attitudes toward agriculture. The personal and economic attitudes toward farming of the study subjects are tabulated in Table 5.

The average scale value is the index which determines the overall attitudes of youth toward farming, calculated by the following formula:

$$AVS = \frac{\sum (S_i * f_i)}{N} / 5$$

AVS=average value scale

\sum =summation

S_i =scale value

f_i =frequency of importance given by farmers

N=total number of interviewed youth (320)

Most respondents strongly agree with the idea of a positive role for agriculture in the development of society. At the same time, however, farming is perceived as a burdensome occupation to be

engaged in. The majority agreed that farming is an acceptable way of life to them, disagreeing with the statement “Farming reduces one’s prestige in society.” Farming is considered not only for the aged, less privileged, and uneducated, but also as appropriate for educated youths. Most youths agreed that farming creates employment and is a successful enterprise. Yet, most of them do not perceive farming as a beneficial venture. To them, returns from farming are unattractive; they view farming as a low-income profession.

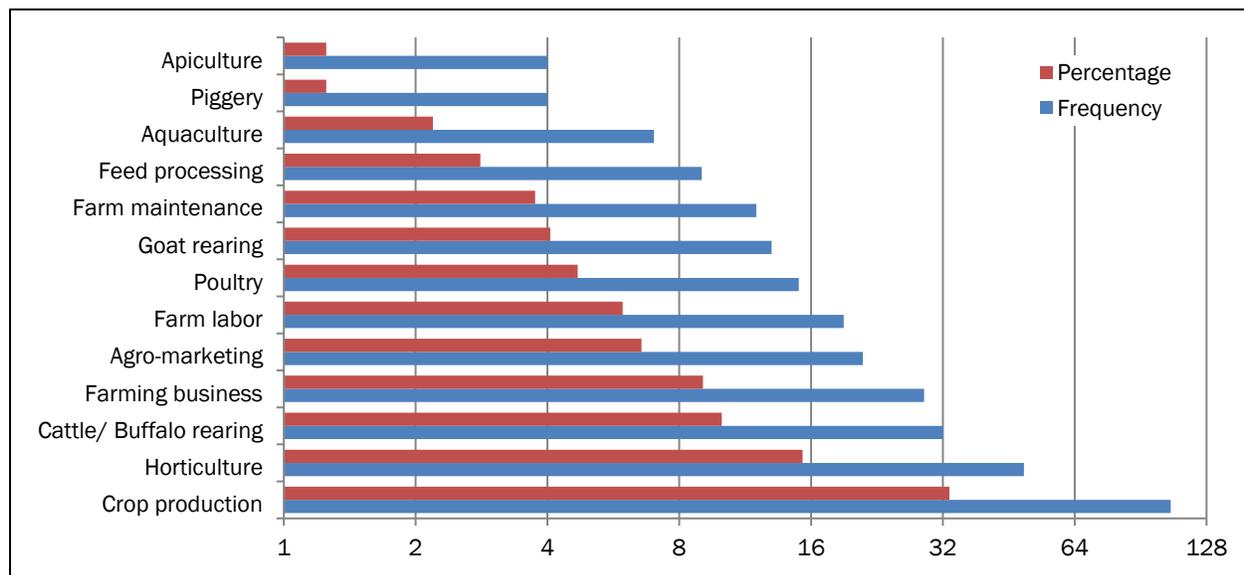
What Attracts Youth to Agriculture?

Agriculture tends to attract young people when it is perceived as “profitable, competitive, and dynamic” (Kaini, 2019, para. 3). The factors determined in this study that attract youth to agriculture are shown in Table 6.

Most youths are actively engaged in agriculture due to the absence of other desirable job opportunities or because they originate from agricultural family backgrounds. The personal reasons that guide youth toward agriculture include the high value placed on family land ownership and the value placed on being self-employed; only a few are involved in agriculture with the aim of providing jobs for others. Some (about 4%) intentionally

Figure 3. Level of Youth Involvement in Agro-Enterprises

The red bar represents the percentage of each category of engagement field; the blue bar represents the number of respondents (N=320).



want to get involved due to a heart-felt “passion.” Very few (1.25%) are motivated through being agricultural graduates; for this reason, they choose farming over other careers. Some youths are engaged in agribusiness due to perceiving a good deal of opportunity for young entrepreneurs: 8.75% and 7.19% are involved due to opportunities for various forms of agribusiness.

Constraints Faced by Youth in Transforming the Economy Through Agriculture

Various constraints hold back the development of youth engagement in agriculture in many developing countries, including Nepal. Social, economic, and technological constraints faced by youth in farming are ranked and shown in Table 7.

Major social constraints to active participation in agriculture are society’s overall perception of farmers, followed by lack of support from the government, poor basic farming knowledge and inadequate access to extension facilities, and less respect for

young farmers. The most severe economic constraint for most of the respondents is inadequate credit provision, followed by high costs of transportation, heavy insurance and taxation burdens, low prices of products, inadequate access to mar-

Table 6. Factors that Attract Youth to Agriculture

S. N	Statements of Reasons	Frequency	Percentage
I. Psychological reasons			
1	Absence of other desirable job opportunities	54	16.88
2	Agricultural family background	48	15.00
3	High value of land ownership	32	10.00
4	Self-employment	29	9.06
5	To provide jobs to others	9	2.81
6	Feel passion for agriculture	13	4.06
7	Farming is not a risky practice	11	3.44
8	Agricultural graduate	4	1.25
II. Economic reasons			
1	Many opportunities for young entrepreneurs	28	8.75
2	Opportunities for business in agriculture	23	7.19
3	Credit acquisition opportunities	10	3.13
4	Poverty alleviation	16	5.00
5	As a profession for side-earning	32	10.00
6	Offers profitable returns	11	3.44
Total		320	100

Table 5. Attitude of Youth Toward Agriculture (N=320)

Statements	SA 5	A 4	UD 3	DA 2	SDA 1	Average scale value	Rank
I. Personal attitudes							
Agriculture contributes to rural development	220	96	4	—	—	0.83	1
Farming is burdensome	98	84	48	42	48	0.61	2
Farming is the acceptable way of life to me	65	84	70	57	44	0.57	3
Farming reduces one's prestige in society	63	48	16	144	49	0.50	4
Farming is for aged people	45	48	19	153	55	0.46	5
Farming is for the less privileged	38	42	26	166	48	0.45	6
Farming is for uneducated people	13	28	68	96	115	0.38	7
II. Economic attitudes							
Farming creates employment	148	84	23	30	35	0.69	1
Farming is a successful enterprise	67	62	48	70	73	0.52	2
Farming is a beneficial venture	63	58	26	107	66	0.50	3
Farming return is attractive	48	56	21	121	74	0.47	4
Farming generates low income	45	48	13	150	64	0.46	5

Table 7. Constraints Faced by Youth in Transforming the Economy Through Agriculture

Statement of Problems	SA 5	A 4	UD 3	DA 2	SDA 1	Average scale value	Rank
I Social constraints							
People's perception of farmers	123	86	20	52	39	0.73	1
Lack of incentives from government	98	86	16	64	56	0.67	2
Poor basic farming knowledge	98	73	14	80	55	0.65	3
Access to extension facilities	56	83	31	81	69	0.59	4
Young farmers are less respected in society	70	57	26	78	89	0.56	5
II Economic constraints							
Inadequate credit provision	124	98	28	40	30	0.76	1
High cost of transportation	92	106	18	64	40	0.69	2
Inappropriate insurance and taxation policies	88	93	23	69	47	0.67	3
Low prices of products	83	93	9	75	60	0.64	4
Access to markets	63	93	24	82	58	0.61	5
Poor returns on investment	59	71	16	92	82	0.59	6
III Technological constraints							
Poor access to advanced ICT innovations	92	117	19	65	27	0.71	1
Storage facilities	86	104	28	63	39	0.68	2
Unavailability of modern machinery	84	102	23	64	47	0.67	3
Lack of input processing units	70	97	34	64	55	0.64	4
Irrigation deficits	68	79	12	96	65	0.59	5

Table 8. Youth Contribution to Agro-Economic Transformation

Overall contribution level of youth	Frequency (N=320)	Percentage
High	109	34
Medium	67	21
Low	144	45
Total	320	100

kets, and poor returns on investment. Difficulty with obtaining credit is due mainly to high interest rates, which reflect both transitional issues of economic transformation and structural problems with agriculture. Lack of side-business support (e.g., lack of financial support from non-agricultural business, low profitability, and macroeconomic uncertainty) makes banks view the agricultural sector as a high risk for loans. (Open Space Nepal and Change Fusion Nepal are working to make credit more accessible to young farmers.) Inadequate access to advanced information and communication technology (ICT) ranked first among the technological

constraints, followed by unavailability of storage facilities and modern machinery, lack of input processing units, and irrigation deficits.

Youth Contribution to Agro-Economic Transformation

The level of personal contribution to economic transformation was self-

determined by the respondents, taking into account problems and strengths. Economic transformation, as used in this study, means a higher average income, broader diversity of economic enterprises, and greater contribution to GDP through agriculture. Table 8 shows the self-perceived levels of the contribution of respondents to building the economy through transforming the agricultural system.

Nearly half of the respondents (45%) were found to have a low level of contribution to economic transformation through farm involvement, and 34% and 21% of the respondents had a high and a medium level of contribution, respectively.

Conclusions and Suggestions

There are many psychological, economic, and social factors that attract youth to farming, and most youth have a positive perception of farming; thus, the number of youth engaged in agriculture is increasing. Due to the absence of alternative desirable job opportunities in the country and/or to having originated from an agricultural family, a large number of youths are willingly or unwillingly engaged in agricultural profession. The majority are primarily involved in horticultural crop production and animal rearing, which generates direct, attractive returns and thus increases youth enthusiasm toward agriculture. This positive attitude makes youth more engaged in agricultural enterprises that contribute to the economic development of Nepal.

Nevertheless, their contribution to economic growth remains well below its potential. Several constraints limit youth participation in the agriculture sector. Major challenges include inadequate access to credit, a low social perception of farmers, limited access to advanced ICT innovations, and high costs of transportation. GOs, NGOs, youth development agencies, United Nations organizations concerned with agriculture (e.g., the Food and Agriculture Organization [FAO], International Fund for Agricultural Development [IFAD]), and youth organizations primarily operated by youth (e.g., YUWA, Open Space Nepal) should provide support and incentives such as banking and credit facilities, subsidized agricultural inputs such as seed, fertilizers, and pesticides, and extension services to nurture and sustain youth in agricultural professions.

There needs to be an augmentation of knowl-

edge of basic farming practices among youth by developing agricultural training programs and strengthening existing ones. Efforts are needed that focus on a broad variety of agricultural economic contributions: not only crop production, horticulture, and cattle rearing, but farming business and agro-marketing as well. Agricultural science and entrepreneurship programs should be made widely available and strongly encouraged among students. GOs and NGOs can play facilitating roles by developing programs such as pension plans, crop and livestock insurance, and managed market infrastructure. Youth who are currently in the agricultural professions should be motivated, encouraged, and honored so that others will take a stronger interest in farming, and promote agricultural and economic transformation in Nepal. Investment, training, and extension programs in Nepal have been limited in scope. Future work on youth empowerment and involvement in agriculture should be motivation-based. Initiatives such as networking and partnerships that encourage youth to enter farming professions should be developed. It is hoped that the findings of this paper present clear insights into efforts that will foster effective community transformation through agricultural development.

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The role of community-based efforts in promoting sustainable diets: Lessons from a grassroots meat-reduction campaign

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Abstract

Decreasing the consumption of meat and dairy has been identified as an effective strategy for protecting the health of humans and the planet. More specifically, transitioning to diets that are lower in animal-source foods and higher in fruits, vegetables, legumes, and whole grains offers a promising

opportunity to better align consumer behaviors with contemporary nutritional and ecological goals. However, given the limited understanding of how these changes in dietary behaviors can be best promoted, there is a need to explore the merits of

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community-based approaches to meat reduction and their capacity to advance more sustainable practices of eating at the individual, household, and community levels. To address this gap in the literature, we surveyed more than 100 American households participating in a communitywide, 12-week-long Meatless Monday challenge and tracked the changes in their knowledge, attitudes, beliefs, and food choices over a nine-month period. The case study provided herein highlights a number of key findings from our evaluation. Most notably, our results demonstrate the value of community-based efforts in initiating and maintaining dietary behavior change and provide preliminary insights into the unique roles of multilevel interventions and diverse stakeholder engagement in promoting healthier, more sustainable diets.

Keywords

Behavior Change, Capacity Building, Community Engagement, Community-Based Intervention, Climate Mitigation, Dietary Change, Meatless Monday, Health Promotion, Meat Reduction, Sustainable Diets

Introduction

Background

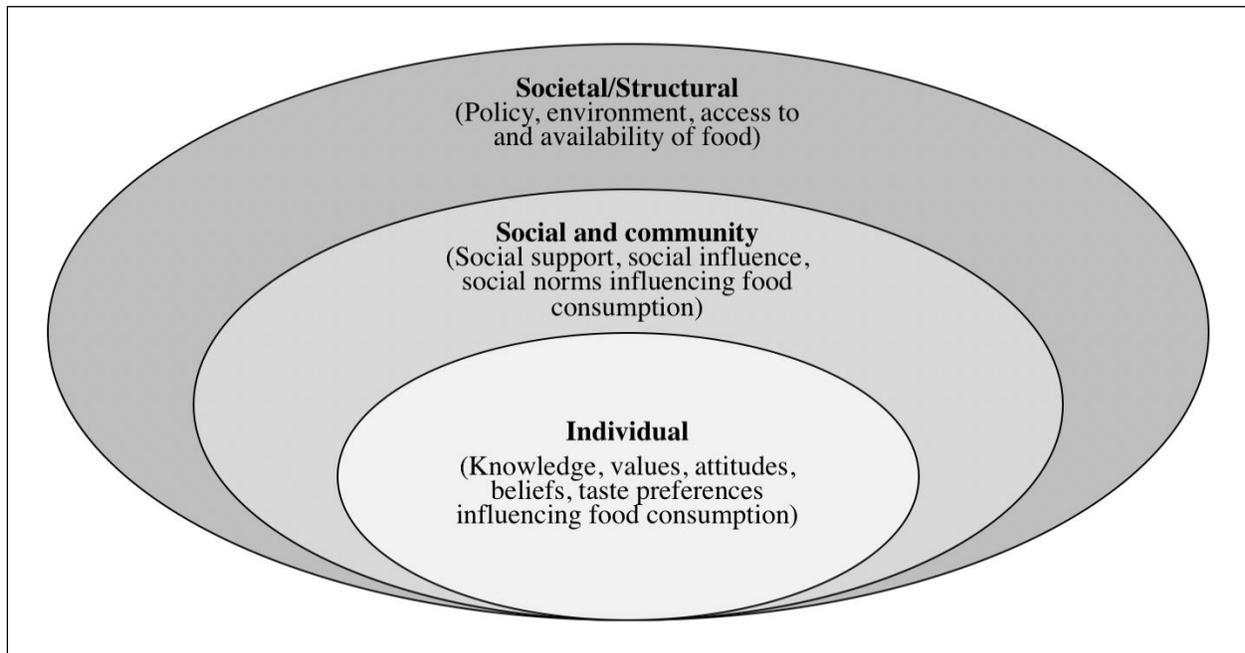
Prior research has indicated that the same eating habits that are associated with higher rates of morbidity and mortality are also frequently the most environmentally damaging (Clark, Springmann, Hill, & Tilman, 2019; Tilman & Clark, 2014; Willett et al., 2019). Dietary patterns involving comparatively more red and processed meats have been known to increase the risk of earlier mortality (Pan et al., 2012; Zheng et al., 2019), obesity (Larsson & Orsini, 2014), and a number of other chronic illnesses, including colorectal cancer (Chan et al., 2011), cardiovascular disease (Micha, Michas, & Mozaffarian, 2012), and type II diabetes (Pan et al., 2011). Furthermore, due to its high resource demands and the negative externalities tied to its systems of production, the global livestock industry is also a major contributor to climate change (Gerber et al., 2013; Herrero et al., 2016; Pachauri et al., 2014), deforestation (Gerber et al., 2013; Keenan, Reams, Achard, de Freitas, Grainger, &

Lindquist, 2015), biodiversity loss (Chaplin-Kramer et al., 2015; Jones et al., 2013; Whitmee et al., 2015), water scarcity (Hoekstra, 2012; Mekonnen & Hoekstra, 2012), and antibiotic resistance (Hardy, 2002; Mathew, Cissel, & Liamthong, 2007). For these reasons, interventions that are able to meaningfully attenuate the demand for meat have the capacity to simultaneously reduce the noncommunicable disease burden and mitigate the effects of livestock-associated ecological degradation (Clonan, Wilson, Swift, Leibovici, & Holdsworth, 2015). This is especially true when these efforts are focused in high-income settings, where meat tends to be consumed at greater rates (Hayek, Harwatt, Ripple, & Mueller, 2020; Kim et al., 2020; Semba et al., 2020).

Despite the positive nutritional and ecological implications associated with shifting to more plant-forward diets, there is a limited empirical understanding of how these transitions can be best promoted (Bianchi, Dorsel, Garnett, Aveyard, & Jebb, 2018a; Bianchi, Garnett, Dorsel, Aveyard, & Jebb, 2018b; Hartmann & Seigrüst, 2017). Dietary behaviors, like meat consumption, are influenced by a variety of factors existing at the individual level (e.g., knowledge, values, attitudes, beliefs, and taste preferences), the social and community level (e.g., social support, social influence, and social norms), and the societal or structural level (e.g., policy, environment, access to and availability of food) (see Figure 1) (Beverland, 2014; Graça, Godinho, & Truninger, 2019; Hilliard, Riekert, Ockene, & Pbert, 2018; Jabs, Devine, & Sobal, 1998; Macdiarmid, Douglas, & Campbell, 2016; Pohjolainen, Vinnari, & Jokinen, 2015). Many studies in behavior change have therefore emphasized the importance of context-appropriate, multilevel interventions that target change on multiple socioecological tiers contemporaneously (Bronfenbrenner, 1977; Glass & McAtee, 2006; McLeroy, Bibeau, Steckler, & Glanz, 1988; Schölmerich & Kawachi, 2016; Stokols, 1996).

In the context of dietary behavior change, many studies have specifically explored the significance of individual-level factors on consumers' decision making. The influence of health-related motivations on consumers' decisions to reduce their meat intake, for example, has been well

Figure 1. A simplified socioecological model adapted from Bronfenbrenner (1977) and the Centers for Disease Control and Prevention (CDC, 2020). This conceptual framework illustrates the concentric spheres of influence that have been known to impact dietary behaviors at the individual, community, and structural levels.



documented (Clonan et al., 2015). One nationally representative survey conducted in 2018 by Neff, Edwards, Palmer, Ramsing, Righter, and Wolfson found that considerations related to personal health (50%) and cost (51%) were consumers' two most frequently cited reasons for reducing their consumption of meat, while other factors, like concerns over the environment (12%) and animal welfare (12%), were significantly less pronounced (2018). That being said, other studies have found environmental motivations to be an increasingly salient factor in Americans' decisions to reduce their meat intake—a phenomenon that has been particularly evident in populations already taking steps to engage in more sustainable behaviors (de Boer, Schösler, & Aiking, 2017; Mullee et al., 2017; Stoll-Kleemann & Schmidt, 2016). There is additional evidence to support that individuals' concerns over climate change may be predictive of their attitudes toward meat reduction, with higher levels of concern being associated with a greater willingness to adopt more plant-forward diets (de Boer, de Witt, & Aiking, 2016). It is important to consider, however, that many of the findings

discussed herein are based on cross-sectional data and therefore do not provide meaningful insights into how these attitudes and behaviors can evolve over time.

Past research has indicated that eating behaviors—those related to meat consumption, in particular—are not easily changed (Glanz, 1999; Graça, Calheiros, & Oliveira, 2015; Hartmann & Siegrist, 2017). Interventionists have therefore taken vastly different approaches toward accomplishing this end. Based on our review of the existing literature, we concluded that many of these documented efforts can largely be categorized into one of two groups: (1) interventions that target individual-level factors through educational messaging, usually by highlighting how specific food choices may negatively impact human and environmental health (Bianchi et al., 2018a); and (2) interventions that target societal or structural factors, usually by drawing on behavioral economic principles (e.g., nudging techniques) to either physically alter the retail environments where food items are purchased or to improve individuals' access to different types of food (Bianchi et al., 2018b; Garnett,

Balmford, Sandbrook, Pilling, & Marteau, 2019). While these studies have provided important insights into the benefits and limitations of each of these categories of approaches, notably less empirical attention has been given to the relevant social- and community-level factors that can similarly play a salient role in facilitating these changes in consumer behaviors.

A recently published systematic review conducted by Bianchi and colleagues suggests that individual-level behavior change methods that target the conscious determinants of human decision making alone can be difficult to scale or offer few, if any, long-term effects on dietary preferences over time (2018a). These findings underscore a well-founded asymmetry between individuals' self-reported intentions and their observed behavioral outcomes (Marteau, 2017; Roberto & Kawachi, 2015). Interventions that have utilized nudging techniques, on the other hand, have demonstrated some success in altering individuals' meat purchasing behaviors (Bianchi et al., 2018b; Garnett et al., 2019; Roberto, Larsen, Agnew, Baik, & Brownell, 2010), but they are highly spatially constrained and unlikely to motivate change outside the physical limits of these decision contexts. Furthermore, they do little to educate audiences about why these behaviors are socially and environmentally preferable—an interventional trait that may be critical in priming other pro-environment lifestyle changes (Byerly et al., 2018; Cavaliere, De Marchi, & Banterle, 2018).

When practiced in isolation, these strategies do not always take into consideration the larger social and community contexts in which individuals engage in their dietary behaviors. Neglecting these factors can undermine the success of these interventions, either by muting their effects or making them unlikely to lead to long-term change (Schölmerich & Kawachi, 2016). Prior research has suggested that identifying and understanding the ways in which these contextual factors differentially influence behavior at various socioecological levels can be helpful in guiding the design and implementation of more appropriate and more durable health promotion strategies (Schölmerich & Kawachi, 2016). Several community-based interventions seeking to promote dietary change, like

the Shape Up Somerville campaign (Folta et al., 2013) and the Veggie Thursday campaign (Hunter College New York City Food Policy Center, 2017), have leveraged these principles to develop programs that target change through multiple channels: by working with local community networks, fostering community buy-in, coordinating with community organizations, and altering the built and local policy environment (Ashfield-Watt, Welch, Godward, & Bingham, 2007; De Cocker, De Bourdeaudhuij, Brown, & Cardon, 2007; Folta et al., 2013; Pekka, Pirjo, & Ulla, 2002;). While there is evidence to suggest that these interventions have been effective in bringing about behavior change, more robust evaluation measures are needed, both to fully understand the mechanisms of their success and to determine whether they are capable of maintaining these changes in diet in the long run.

For the reasons outlined above, there is a growing interest in the role of community-based efforts in advancing public support for meat reduction initiatives, but there are inconsistencies in how the term has been operationalized (Alexander, Reddy, Brown, Henry, & Rounsevell, 2019; Caro, Frederiksen, Thomsen, & Pedersen, 2017; Moberg, Andersson, Säll, Hansson, & Rööös, 2019; Springmann et al., 2018; Zhang, Giabbanelli, Arah, Zimmerman, 2014). As we have elected to understand them, communities encapsulate both the physical settings and the social networks of people that occupy a specified space (McLeroy, Norton, Kegler, Burdine, & Sumaya, 2003). Communities are sites where individuals, organizations, and structures intersect. It is in communities where people make decisions, interact with their networks, and exert social influence. In addition to comprising the settings where individuals generate the vast majority of their carbon emissions, communities encompass complex social, economic, and political landscapes, which can be vitally important in addressing both the real and perceived barriers that can inhibit dietary behavior change (Israel, 1985; Trickett et al., 2011; Wandersman & Florin, 2003). Municipal climate action plans, for example, allow communities to experiment with low-risk and low-cost campaigns that can create lasting changes to the physical and social environments in which

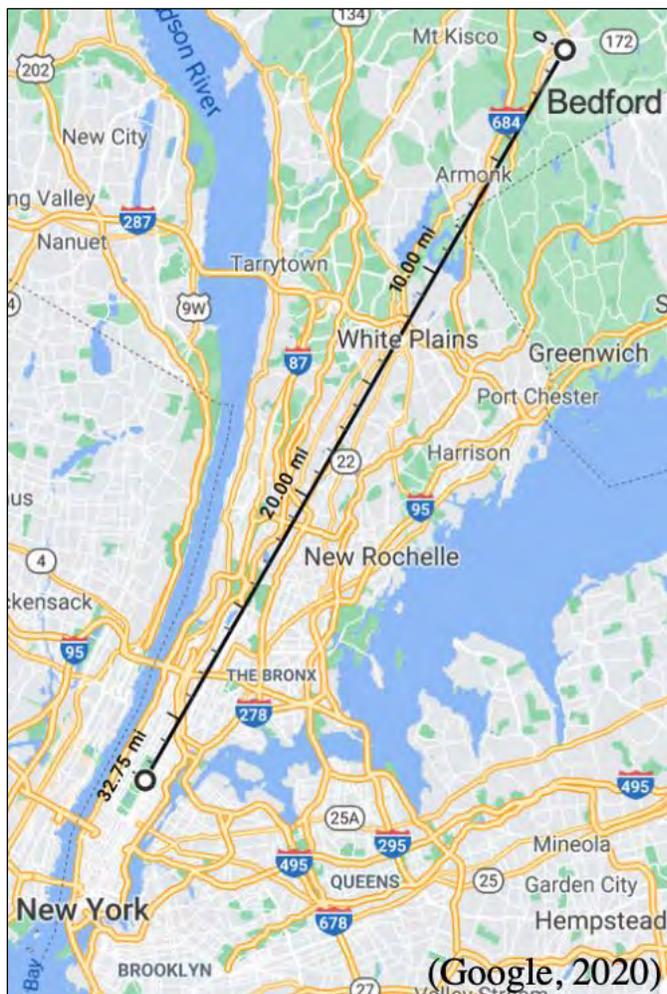
people live and eat. Community-based interventions can be effective in this domain because they exert influence on three fronts (1) by prompting individual agents to make more sustainable food choices (i.e., at the individual level), (2) by engaging stakeholders and encouraging organizations to lend supportive action (i.e., at the social and community level), and (3) by altering the choice architecture of the environment in ways that make certain food choices more accessible and automatic (i.e., at the societal or structural level) (Rose, 2018; Wandersman & Florin, 2003). In this article, we define community-based interventions as those that work across multiple levels within a given setting by

fostering and engaging existing relationships, networks, resources, and structures to improve people's health and well-being (McLeroy et al., 2003). Below, we provide an overview of a community-based intervention that worked at multiple levels to reduce meat consumption in the town of Bedford, New York: the *Bedford 2020 Meatless Monday Campaign*.

The Bedford 2020 Meatless Monday Campaign

Bedford 2020 is a 501(c)(3) organization headquartered in Bedford, New York (see Figure 2). It was formed in 2010 with the mission of lowering municipal greenhouse gas emissions by 20% before the year 2020. It was later tasked with fulfilling the sustainability goals outlined by the town's Climate Action plan. The organization includes a total of nine task forces collectively responsible for implementing community programs that address mitigation targets across a number of environmental domains. Earlier programs undertaken by the coalition included campaigns that sought to reduce residential energy use, increase municipal recycling efficiency, preserve local land and water resources, and strengthen the regional food system by supporting local agricultural producers. In March 2017, the coalition hosted a food forum focusing on the importance of meat reduction as a strategy for climate change mitigation. The town then held an environmental summit a year later in collaboration with Meatless Monday¹ and the Johns Hopkins Center for a Livable Future to educate residents about contemporary climate issues and to begin assembling a constituency of local advocates to lead and organize a new sustainability initiative focused on reducing the community's meat consumption. As a result of this summit, the coalition launched the *Bedford 2020 Meatless Monday Campaign* (hereafter, the *Campaign*), a meat reduction campaign advocating for a one-day weekly abstention from meat to raise awareness about the environmental and climate-related consequences associated with both individual- and community-level food choices.

Figure 2. Google Satellite Image Depicting Bedford and its Relative Proximity to New York City



¹ Meatless Monday is a nonprofit public health initiative with the goal of reducing meat consumption by 15%.

The *Campaign* recruited households to join the challenge for a total of 12 weeks. During this time, the messaging strategy focused primarily on educating audiences about the health-promoting and carbon-saving qualities associated with more plant-forward diets, as well as the benefits posed for animal welfare and the environment. By working with a team of volunteers to solicit the support of local businesses, media outlets, and government organizations, the *Campaign* was able to engage community stakeholders across a diverse set of professional and personal networks within Bedford, allowing its reach to extend beyond the households who initially signed onto the pledge. As demonstrated in Table 1, these stakeholders within

the community were responsible for managing different components of the initiative.

The *Campaign* utilized several different strategies to promote dietary behavior change among the pledged participants and the broader Bedford community. Priming, for instance, was an important component of the *Campaign* that helped generate preliminary interest in the initiative by leveraging the momentum of the sustainability programs that had been previously implemented within the community (Papies, 2016; Roberto & Kawachi, 2015). Because residents had already been oriented to these environmental issues prior to the start of the *Campaign*, this approach was used to target individual-level factors by capitalizing on the

Table 1. Partners involved in the Bedford 2020 Meatless Monday campaign

Partnership Category	Description of Involvement
Volunteers	A team of 25 volunteers helped design and implement the Bedford 2020 outreach strategy. They invited community members to take the pledge and took promotional flyers to local restaurants to sign them on as partners. Volunteers also tabled at local events, including the Climate Action Summit, and contributed content to social media and weekly newsletters.
Restaurants	All 26 of the restaurant partners had already offered vegetarian options in their eateries, but some agreed to incorporate additional fare on Mondays to highlight the partnership between Meatless Mondays and Bedford 2020. Bedford 2020 presented restaurant managers with graphics and captions for social media posts, which provided them with marketing assets they could distribute through their channels.
Businesses	For most businesses, the more interesting aspects of the campaign were the cross-promotional opportunities it generated and the marketing assets it provided them with. Businesses hung up posters, gave out brochures, and posted assets related to the campaign on their social media channels. Concurrently, Bedford 2020 shared these posts, promoted participating businesses, and posted recipes provided by local chefs and wellness experts.
Town library	The town library set up a display of vegetarian and plant-based cookbooks, posted information about the campaign on social media, displayed flyers, and hosted a movie night featuring <i>Wasted: A Food Waste Story</i> , which was followed by a panel discussion that invited chefs, farmers, and restaurant owners to talk about the nexus between food and climate. Bedford 2020 volunteers tabled to promote Meatless Monday both before and after the event.
The local hospital	The local hospital invited Bedford 2020 representatives to attend their Wellness Committee and Employee Congress meetings to share information about the campaign in their cafeterias and to encourage employees to take the pledge and participate.
Schools and houses of worship	Local schools and houses of worship put up flyers promoting plant-based eating.
Food pantry	The local food pantry worked with Bedford 2020 to translate a Meatless Monday flyer and brochure into Spanish and promoted the campaign to its clients.
Town board	Bedford 2020 approached the Town Board and successfully convinced them to pass a resolution supporting the Meatless Monday campaign as an important effort among willing participants to reduce greenhouse gas emissions. All of the members of the Town Board also took the pledge. The story was run in local press outlets, which helped the <i>Campaign</i> gain exposure.

community's past efforts to align the behaviors of the town's members with its Climate Action plan.

Bedford 2020's communication strategy also targeted community-level factors by leveraging the social influence of various stakeholders within the town (Farrow, Grolleau, & Ibanez, 2017; Wallen & Romulo, 2017). The *Campaign* collected photos, recipes, and feedback from pledged participants and shared those materials with the broader community through social media, physical postings, newsletters, and the local press. By posting assets that were developed by local chefs and demonstrating that restaurants and other organizations within the community were participating in the initiative, Bedford 2020 sought to challenge the norms around meat reduction through strategic efforts to highlight the level of support and favor the *Campaign* had gained within the community.

Bedford 2020 also used a collective impact model to demonstrate how individual lifestyle changes could meaningfully contribute to global climate and environmental action (Farrow et al., 2017). The *Campaign* actively championed the community members who had taken the pledge and reported their progress to the larger community, both to instill social accountability in the participants and to motivate others to adopt similar behaviors. After the *Campaign*, Bedford 2020 disseminated a series of projected climate impacts to signal how small commitments, when taken together, can create meaningful impacts. For example, the campaign staff deduced the estimated carbon savings from the challenge by adding the number of individuals that participated and concluded that the town's collective carbon footprint as a result of this initiative was reduced by 22,894 kg CO₂eq. The *Campaign* team subsequently provided a number of equivalencies to better illustrate the magnitude of these savings in more accessible terms, stating that this effort was akin to driving 56,113 fewer miles, using no electricity in nearly 3.5 homes for 1 year, or recycling 8 tons of waste.

Objectives

The *Campaign*, a community-based intervention, worked at the individual, social, and community levels to remove social and physical barriers to dietary behavior change in Bedford, New York.

This case study presents quantitative evidence from an independent evaluation of changes in participants' knowledge, attitudes, beliefs, and food choices over time as a result of the *Campaign*. We highlight the potential mechanisms through which participatory engagement in community-based interventions can aid in the promotion of dietary behavior change.

Methods

Setting

The town of Bedford, located in the northeastern region of New York State's Westchester County (Google, n.d.) (see Figure 2), is home to 17,755 residents and an estimated 5,792 households (U.S. Census Bureau, 2018). Among Bedford residents, 81.6% identify as White, with 58.5% of individual aged 25 and older having earned at least a bachelor's degree—27.6% higher than the national average (U.S. Census Bureau, 2018). The median household income among Bedford residents is more than double the national average for the 2013-2017 period at US\$121,797 (U.S. Census Bureau, 2018).

Study Design

In order to more fully understand the individual, social, and community impacts of the 12-week campaign, the research team conducted an independent evaluation to examine the extent to which the effort was successful in initiating and maintaining dietary change. This was accomplished through a series of quantitative surveys administered three times over a nine-month period. The surveys were administered to track quantitative changes in participants' attitudes and beliefs around meat reduction and gauge the frequency at which households participating in the *Campaign* consumed meat.

The first survey was administered prior to the start of the campaign to gather a baseline assessment of pledgers' initial attitudes and behaviors. There were two subsequent post-intervention follow-up surveys: one that was administered immediately after the campaign's conclusion (12-weeks) and another that was administered six months later to assess whether these behavior changes persisted in the medium term. The surveys

were collected anonymously using a link to a Qualtrics platform sent via email. Because some researchers have found the effects of meat reduction campaigns to diminish over time (Amiot, El Hajj Boutros, Sukhanova, & Karelis, 2018), the nine-month span of the study allowed the research team to investigate how these reported shifts in knowledge, attitudes, and dietary patterns evolved after the resources available during the *Campaign* became less visible.

In order to obtain a more detailed account of individuals' experiences and gain further insight into the campaign's effects on the community, follow-up phone interviews were conducted with five key informants who were identified and recommended by the Bedford 2020 Leadership team. The participants' affiliations with the *Campaign* were as follows: one Bedford 2020 board member, two mothers, one chef, and one restaurant owner. Each of these individuals was interviewed by a student research assistant using a semi-structured interview guide. A summary of these qualitative findings, which elaborate on the findings presented here, can be found in Appendix A.

Recruitment Strategy

Household pledges

In January and February 2018, trained community volunteers recruited households to sign the Bedford 2020 Meatless Monday pledge at in-person community forums and local businesses. Representatives from 320 households signed the pledge and provided their email addresses. They were asked to complete a baseline survey about their knowledge of Meatless Monday, any past efforts they have taken to reduce their meat consumption, and basic socio-demographic information. The follow-up surveys were sent to a representative from each household that signed the pledge. Surveys collected information about changes in knowledge, attitudes, and dietary practices that they experienced as a result of their participation in the Meatless Monday challenge. For the 12-week follow-up survey, households that had not completed the baseline survey were also given the option of completing four questions that addressed their baseline knowledge of Meatless Monday.

Study population

Survey responses collected from participants aged 17 years or younger were screened from our analysis, as were the forms submitted by respondents who exited out of the survey prematurely. There were a total of 468 responses across the three surveys, with 171 responses at baseline, 145 at 12 weeks, and 152 at the six-month follow-up. Because the survey was anonymous, we were unable to determine which of the three surveys households had completed and, thus, their responses were not paired for our analysis.

Data analysis

Descriptive analyses were performed to assess the extent to which community members' knowledge, attitudes, and behaviors around meat consumption changed at different points over the 9-month period. Furthermore, sociodemographic information was used to identify differences between each of the three cohorts and assess whether they were representative of the larger sample population. This information was also compared to census tract data to assess the extent to which our sample was representative of the larger Bedford population. Statistical significance was assessed using Stata version 14 (StataCorp LP, College Station, Texas) and Microsoft Excel 2016. More specifically, chi-square tests were run with an alpha level of 0.05 and 0.01 to determine the instances where there were significant between- and within-group differences in respondents' knowledge, attitudes, and behaviors across the three timepoints.

Results

Socio-Demographic Characteristics of Participants

Table 2 outlines the sociodemographic characteristics of participants at each round of data collection. Survey respondents at the three timepoints were similar in their age and their self-reported racial and ethnic composition, with the majority of participants being between 35-54 years old and Caucasian. Across all three surveys, significantly more individuals identified themselves as female as compared to male. The racial and ethnic composition was similar across timepoints. There were no significant differences in educational attainment

across the three samples. Most survey respondents across the three time points were highly educated, with most holding either a bachelor's degree from

a traditional four-year college or a more advanced degree. The majority of the respondents at all three points of data collection had an income level above

Table 2. Participant Socio-demographic Characteristics at Baseline, 12 Weeks, and Six-month Follow-up

Socio-demographic characteristic	Baseline (n=171)	12 weeks (n=145)	6 months (n=152)	Bedford population (n=17,955)
Age				
20–24	2 (1%)	1 (1%)	0 (0%)	994 (6%)
25–34	6 (4%)	1 (1%)	1 (1%)	1,982 (11%)
35–44	25 (15%)	12 (8%)	10 (7%)	2,478 (14%)
45–54	51 (30%)	46 (32%)	31 (20%)	2,975 (17%)
55–64	53 (31%)	48 (33%)	63 (41%)	2,217 (12%)
65+	32 (19%)	36 (25%)	42 (28%)	2,517 (14%)
Prefer not to say	2 (1%)	1 (1%)	2 (1%)	–
Gender				
Male	14 (8%)	23 (16%)	32 (21%)	8,341 (47%)
Female	157 (92%)	120 (83%)	117 (77%)	9,614 (54%)
Race and ethnicity				
American Indian or Alaska Native	0 (0.0%)	2 (1%)	1 (1%)	31 (0%)
Asian	2 (1%)	0 (0%)	0 (0%)	567 (3%)
Black/African American	4 (2%)	0 (0%)	2 (1%)	744 (4%)
Native Hawaiian or Pacific Islander	1 (1%)	2 (1%)	0 (0%)	0 (0%)
White/Caucasian	146 (85%)	130 (90%)	135 (89%)	14,659 (82%)
Other	4 (2%)	1 (0%)	2 (1%)	1,582 (9%)
Prefer not to say	8 (5%)	11 (8%)	7 (5%)	–
Education level				
High school graduate/GED	3 (2%)	1 (1%)	2 (1%)	2,195 (12%)
Some college/trade school	5 (3%)	7 (5%)	6 (4%)	2,326 (13%)
Associate (two-year) degree	9 (5%)	3 (6%)	4 (32.6%)	–
Four-year college degree	64 (37%)	67 (46%)	55 (36%)	7,478 (42%)
Graduate school degree or higher	92 (54%)	67 (46%)	84 (55%)	–
Occupation				
Primary (farming, fishing, mining, etc.)	1 (1%)	1 (1%)	1 (1%)	22 (0%)
Selling, distribution and retailing	8 (5%)	7 (5%)	6 (4%)	850 (5%)
Finance and banking	6 (4%)	4 (3%)	6 (4%)	742 (4%)
Other service industries	14 (8%)	17 (12%)	19 (13%)	4,531 (25%)
Civil Service and local government	8 (5%)	5 (4%)	10 (7%)	233 (1%)
Professions in private practice	19 (11%)	19 (13.1%)	17 (11%)	–
Education	37 (22%)	23 (15.9%)	28 (18%)	919 (5%)
Other	78 (46%)	67 (46%)	60 (40%)	–
Income (USD\$)				
≤\$24,999	3 (2%)	1 (1%)	1 (1%)	539 (9%)
\$25,000–\$49,999	7 (4%)	2 (1%)	2 (1%)	838 (15%)
\$50,000–\$99,999	23 (14%)	15 (10%)	13 (9%)	1,062 (18%)
\$100,000–\$149,999	15 (9%)	15 (10%)	20 (13%)	833 (14%)
\$150,000–\$199,999	19 (11%)	16 (11%)	20 (13%)	619 (11%)
≥\$200,000	53 (31%)	50 (34%)	41 (27%)	1,901 (33%)
Not sure	3 (2%)	2 (1%)	4 (3%)	–
Prefer not to answer	47 (28%)	43 (30%)	47 (31%)	–
Marital status and household structure				
Single, never married	14 (8%)	8 (6%)	6 (4%)	4,367 (24%)
Married	129 (75%)	112 (77%)	115 (76%)	8,309 (46%)
Separated or divorced	15 (9%)	8 (6%)	15 (10%)	1,216 (7%)
Widowed	7 (4%)	9 (6%)	7 (5%)	603 (3%)
Living with partner	2 (1%)	1 (1%)	2 (1%)	172 (1%)
Prefer not to say	3 (2%)	5 (4%)	3 (2%)	–
Children ≤ 18 years	72 (42%)	48 (33%)	48 (32%)	2,180 (38%)

US\$150,000 ($p < 0.01$), which was also true of the samples of participants who participated in the 12-week ($p < 0.01$) and the six-month follow-up surveys ($p < 0.01$). Across all three samples, the majority of respondents reported that they were married ($p < 0.01$), with roughly a third indicating that they had at least one child that was 18 years of age or younger (see Table 2).

Behavioral Surveillance

Individual attitudes, motivations, and intentions to reduce meat consumption

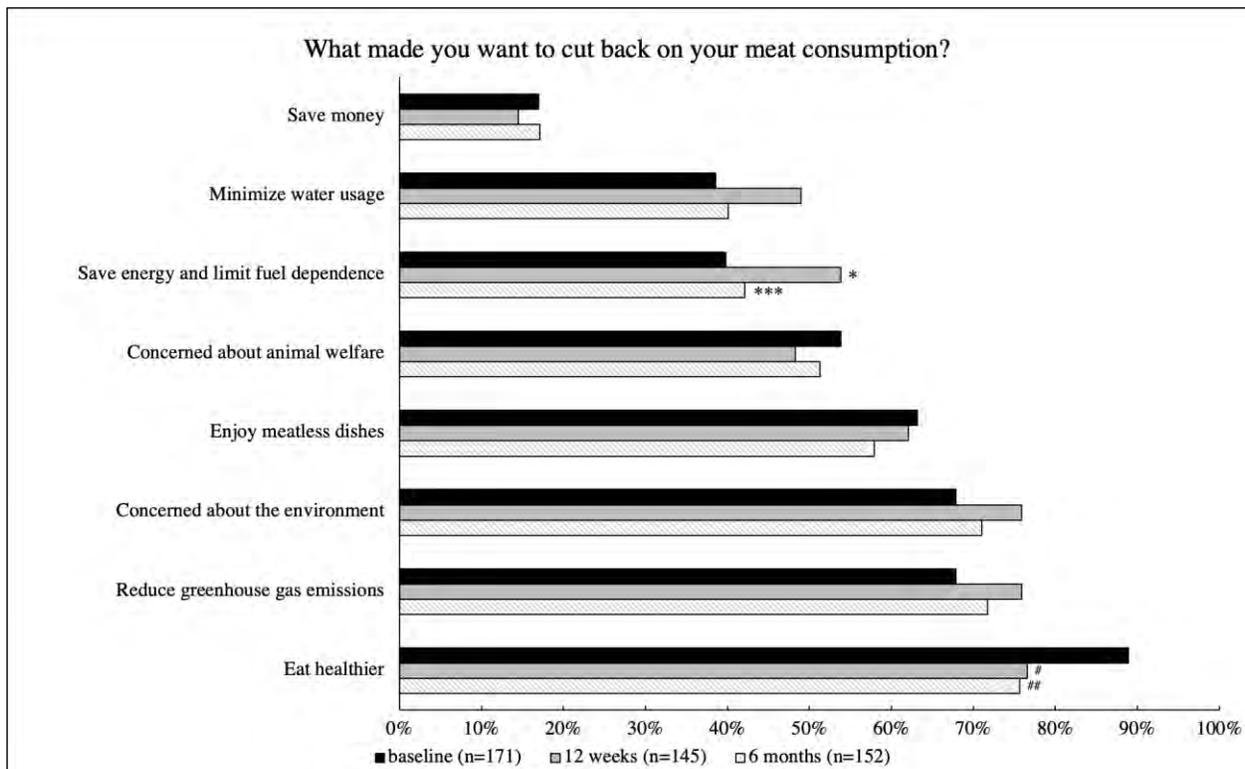
At all three time points, participants identified why they had wanted to take steps to reduce their meat consumption. At baseline, the largest proportion of participants cited wanting to eat healthier as a key motivator for changing their dietary habits (89%). Other notable reasons included a desire to reduce greenhouse gas emissions (68%), general concern about the environment (68%), enjoyment of

meatless dishes (63%), concern over animal welfare (54%), and wanting to limit fuel dependence (40%), minimize water usage (39%), and save money (17%) (see Figure 3).

Across all time points, participants most frequently listed personal health as a motivation for taking steps to actively reduce their meat consumption. However, there was a significant reduction in the proportion of respondents who cited health reasons as a motivation for reducing their consumption of meat, both from baseline to 12 weeks ($p < 0.01$) and from baseline to six months post ($p < 0.01$). At the same time, there were significant increases in the proportion of individuals who reported reducing their intake for the purposes of saving energy and limiting fuel dependence at 12 weeks ($p < 0.05$) and six months post ($p < 0.01$) (see Figure 3).

At both points of follow-up, the majority of respondents suggested that their participation in the campaign had made them more aware of the

Figure 3. Meat Reduction Rationales at Baseline, 12 Weeks, and Six-Month Follow Up



* denotes a significant difference ($p < 0.05$) between baseline and 12 weeks; *** denotes a significant difference ($p < 0.05$) between 12 weeks and 6 months; # denotes a significant difference ($p < 0.01$) between baseline and 12 weeks; ## denotes a significant difference ($p < 0.01$) between baseline and 6 months ($p < 0.01$)

Table 3. Attitudes, Motivations, and Intentions to Reduce Meat Consumption at 12 Weeks and Six-Month Follow Up

Question	Response	12 weeks (n=145)	6 months (n=142)
Did signing the Meatless Monday pledge change the way you think about:	The environmental effects of meat consumption	86%	66%
	Your family's meat consumption	85%	70%
	Your own meat consumption	83%	66%
	Meal planning and food shopping	76%	58%
	How animals are raised for consumption	68%	49%
	Meat's impact on health	66%	49%
	Eating in restaurants	37%	32%
In your experience, what have been the most positive outcomes for you by going meatless at least once a week?	Feeling good about helping the environment	77%	66%
	Feeling healthier	36%	39%
	Learning that I like meatless dishes	19%	21%
	Saving money	12%	15%
	Losing weight	10%	15%
Do you plan to continue reducing your meat consumption at least once a week going forward?	Feeling less hungry	5%	5%
	Yes, it is likely	97%	90%
	No, it is unlikely	3%	7%

social and environmental benefits of reducing meat consumption at the household level. Furthermore, during both follow-up periods, most respondents cited feeling good about the environment as a positive outcome of participating in the campaign, with 77% saying so at 12 weeks and 66% at six months. Importantly, at the 12-week and six-month follow-up points, most respondents (97 and 90%, respectively) indicated that they were likely going to continue reducing their meat consumption going forward (see Table 3).

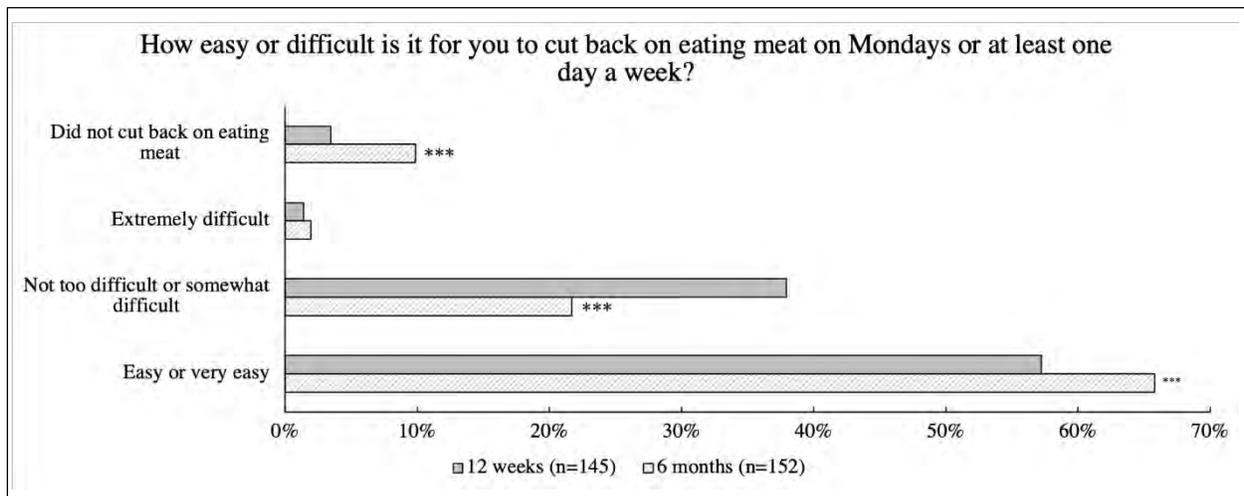
For the two points of follow-up, the research team examined respondents' self-efficacy to reduce their meat consumption at least one day a week. On both occasions, the highest proportion of respondents considered the task easy or very easy, with 57% saying so at 12 weeks and 66% saying so at six months post. Coincident with the significant increase in the proportion of participants who reported the task being easy or very easy at 12 weeks and six months post ($p < 0.05$) were concurrent decreases in the proportions of individuals who described the task as not too difficult or somewhat difficult ($p < 0.05$) (see Figure 4).

Individual meat consumption

Prior to the start of the Bedford 2020 campaign,

roughly 55% of the 171 participants at baseline had heard of Meatless Monday. Of the 55% that were familiar with the campaign, 47% indicated that they were practicing or had practiced it in the past. More generally, 42% of all participants reported that they were actively trying to cut back on their meat consumption, either through Meatless Monday or some other form of meat reduction, with another 37% reporting that they had tried to reduce their meat consumption previously. The remaining 21% indicated that they either do not eat meat (11%) or they have not reduced their consumption but have considered doing so (7%) (see Table 4).

At all three timepoints, participants were asked about the frequencies at which they consumed meat, with responses ranging from "every day" to "once a month or less" or "I do not eat meat." Among the 171 respondents included in the baseline survey, the largest proportion of participants reported eating meat somewhere between three to five days each week (57%), followed by those who reportedly ate meat roughly one to two days each week (18%). At the two points of follow-up, however, between-group comparisons revealed significant reductions in the proportion of participants who consumed meat three to five days each week,

Figure 4. Participants' Self-Efficacy to Reduce Their Meat Consumption at Least One Day a Week At 12 Weeks and Six-Month Follow Up

*** denotes a significant difference ($p < 0.05$) between 12 weeks and 6 months post

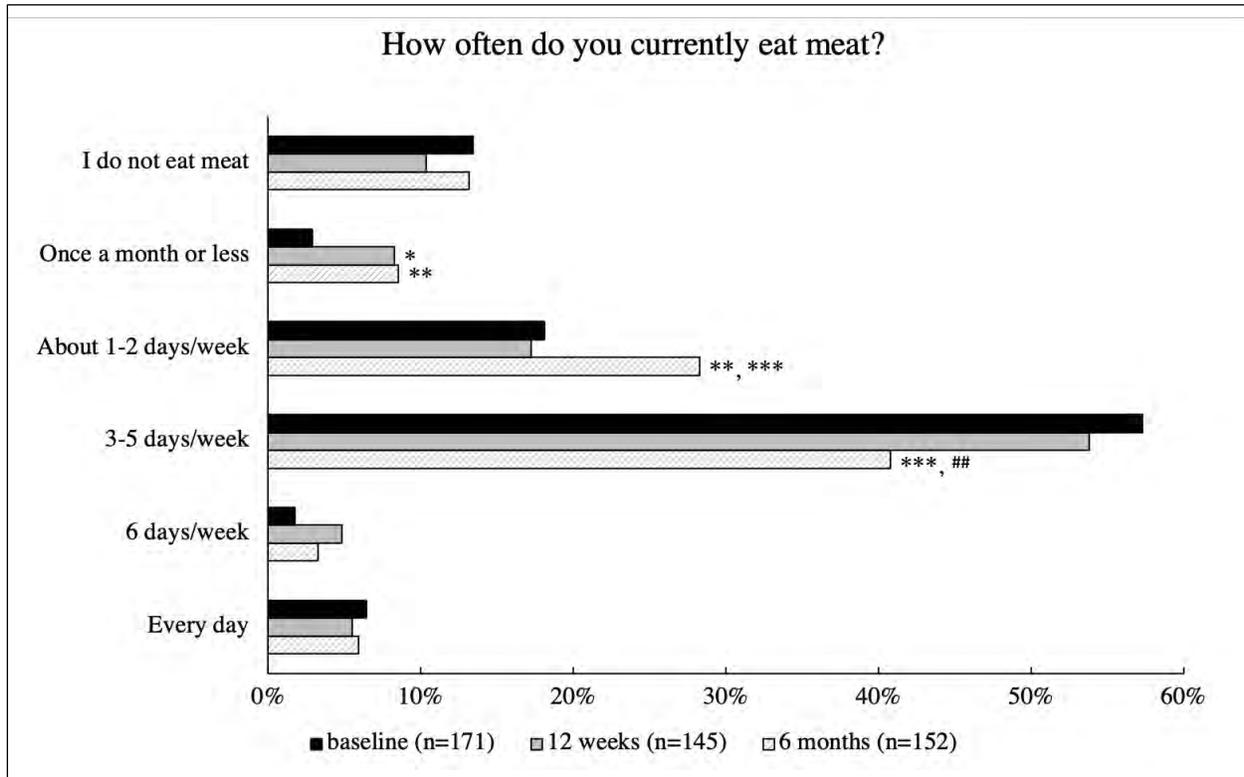
both from baseline to 12 weeks ($p < 0.01$) and from 12 weeks to six months post ($p < 0.05$). Significant increases in the proportions of participants who consumed meat one to two days each week as well as once a month or less were also observed, both

from baseline to 12 weeks ($p < 0.05$) and from baseline to six months post ($p < 0.05$). No significant changes were observed across the three timepoints in those who ate meat every day, six days each week, or not at all (see Figure 5).

Table 4. Meat Consumption and Behavioral Changes Following the Campaign

Question	Response	Baseline (n=171)	12 weeks (n=145)	6 months (n=152)
Before signing the Bedford 2020 pledge, had you ever tried to cut back on the amount of meat you eat?	Yes, I am actively trying to cut back	42%	-	-
	Yes, I have cut back on meat in the past	37%	-	-
	No, but I considered cutting back	7%	-	-
	No, I have not tried cutting back	3%	-	-
	I do not eat meat	11%	-	-
How has participating in the Meatless Monday pledge changed your eating habits?	I've tried more meatless dishes	-	83%	84%
	I eat more fruits, vegetables, whole grains, bean, and nuts	-	63%	55%
	I eat less meat	-	41%	48%
	Meatless Monday has not changed my eating habits	-	16%	22%
Compared to before the Bedford 2020 Meatless Monday Campaign, how has the amount of meat you eat changed?	I eat less meat	-	-	56%
	I eat the same amount of meat (including no meat)	-	-	40%
	I eat more meat	-	-	1%
What did you replace meat with?	Vegetables	-	90%	91%
	Eggs	-	83%	78%
	Grains	-	80%	74%
	Lentils or beans	-	79%	71%
	Nuts	-	73%	72%
	Cheese or other dairy	-	71%	69%
	Tofu, seitan, or tempeh	-	38%	35%
	Meat-like substitutes	-	29%	26%

Figure 5. Meat Consumption Frequency at Baseline, 12 Weeks, and Six-Month Follow Up



* denotes a significant difference ($p < 0.05$) between baseline and 12 weeks; ** denotes a significant difference ($p < 0.05$) between baseline and 6 months post ($p < 0.05$); *** denotes a significant difference ($p < 0.05$) between 12 weeks and 6 months post; ## denotes a significant difference ($p < 0.01$) between baseline and 6 months post ($p < 0.01$)

In order to confirm a reduction in meat consumption over time, a question was added in the six-month follow-up asking if the amount of meat the respondent consumed had changed since the beginning of the campaign. Fifty-six percent of respondents said they were eating either a lot or slightly less meat, with just 1% reporting that they ate more meat (see Table 4).

Across the follow-up surveys, respondents reported that the campaign had changed their eating habits mostly by influencing them to try more meatless dishes (84%), eat more fruits, vegetables, whole grains, legumes, and nuts (59%), and eat smaller portions of meat (45%), with only about a fifth reporting that the campaign had not changed their eating habits at all. At both points of follow-up, respondents indicated that in addition to being significantly more likely to seek out restaurants with more vegetarian menu options ($p < 0.05$), they were far more likely to select non-meat items from

restaurant menus ($p < 0.05$) (see Table 4).

Meat was most commonly replaced with vegetables (91%), followed by eggs (81%), whole grains (77%), lentils or beans (75%), nuts (73%), and cheese and dairy (70%). Interestingly, tofu, seitan, and tempeh (37%) and imitation meats (28%) were the least likely to be consumed as a replacement for meat (see Table 4).

Social and community influence

Respondents' decrease in meat consumption corresponded with similar decreases in other household members' meat consumption behaviors. Of the 152 individuals surveyed after the 12-week campaign, the significant majority (76%; $p < 0.05$) reported that they had discussed their pledge to Meatless Monday with other members of their community. More specifically, within this same cohort, 59% reported that their participation in Meatless Monday led other family members to

commit to eating less meat. A similar pattern emerged at the six-month follow-up. Of the 275 total household members identified by the 152 respondents, 62% were said to eat less meat than before the campaign, with 3% stopping their meat consumption entirely (see Table 5).

Conversely, the most common challenges that respondents experienced while reducing their meat

consumption were the preferences of family and friends. This was particularly true six months after participants took part in the pledge (23%), compared to when they were asked at the 12-week follow-up (17%) (see Table 5).

To understand what resources helped facilitate their success in reducing their meat consumption, participants were asked at the 6-month follow-up

Table 5. Participants' Discussion about the Campaign, Influence on Others' Meat Consumption, and Barriers to Behavior Change

Question	Response	12 weeks (n=145)	6 months (n=142)
Have you discussed your pledge to Meatless Monday with others?	Yes	76%	-
	No	24%	-
Has your participation in the campaign led to any family members committing to not eating meat on Mondays or at least once a week?	Yes	59%	-
	No	41%	-
Has your participation in the Bedford 2020 campaign led any household members to change the amount of meat they eat?	Eats less meat than before	-	62%
	Eats more meat than before	-	0%
	Eats the same amount of meat	-	25%
	Stopped eating meat altogether	-	3%
What challenges did you face while trying to reduce your meat consumption one day a week?	My friends and family prefer meat over meatless meal options	17%	23%
	My family doesn't like how meatless meals taste	8%	14%
	There were not enough appealing meatless meal choices when dining out	11%	11%
	I don't believe I get enough protein without eating meat	12%	9%
	I don't have good recipes for making meatless meals	9%	6%
	I believe a healthy diet includes meat	9%	5%
	It feels like a meal is not complete without meat	9%	5%
	Meatless meals are not filling	8%	5%
	I don't have the knowledge to prepare meatless meals at home	7%	5%
	Friends/family want to eat meat on Monday	5%	4%
	I couldn't find appealing ready-to-serve meatless meals	5%	3%
	I am not a big vegetable eater	3%	3%
	I don't have the cooking skills to prepare meatless meals at home	6%	2%
	Meatless meals are boring	3%	1%
I don't like how meatless meals taste	2%	1%	
Preparing meatless meals is more time consuming than preparing meals with meat	0%	13%	
What resources were helpful?	Bedford 2020 website	-	28%
	Cookbook	-	63%
	News, journals, and/or magazines	-	16%
	Recipe and food blogs	-	40%
	Signs, posters, and notices around the community	-	1%
	Social media	-	16%
	Meatless Monday website	-	16%

where they had gotten resources to aid in their efforts to reduce their meat consumption. The highest proportion cited that they used cookbooks (63%), with many others disclosing that the Bedford 2020 website (28%), as well as other recipe and food blogs (40%) were used (see Table 5).

Discussion

This case study highlights changes in individuals' attitudes, motivations, and intentions; reductions in meat consumption; and empirical evidence in support of the value of social and community factors for the success of the *Campaign* in Bedford, New York.

Attitudes, Motivations, and Intentions to Reduce Meat Consumption

Consistent with earlier studies that have evaluated the influence of ecological considerations on consumers' willingness to adopt more plant-forward diets, participants within our sample reported an increase in the influence of environment- and climate-related factors on their decisions regarding meat consumption over the span of the campaign (de Boer et al., 2017; Stoll-Kleemann & Schmidt, 2016). Interestingly, while health was consistently the most important consideration in community members' decisions to reduce their meat intake over the nine-month period, its relative lead over other competing factors, such as the motivation to reduce greenhouse gases, fell from a 21% difference at baseline to just 4% at the six-month follow up. These findings support the potential effectiveness of community-based interventions that incorporate the co-benefits of meat reduction into their messaging, rather than just health-motivated appeals alone.

Reduction in Meat Consumption

There was a significant reduction in frequency at which meat was consumed. It is noteworthy that this effect did not diminish over time. Over 90% of respondents indicated that they intended to continue reducing their meat consumption at least once a week at the six-month follow up. However, because we did not have a referent group to compare these results against, it is difficult to conclude whether such differences were caused by their

participation in the pledge or other extraneous factors. It is possible, for instance, that influences beyond the scope of our investigation, like the effects of seasonality on the availability of different types of fruits and vegetables, may have contributed to some of the changes observed here.

People who participated in Meatless Monday made changes in how they cooked, how often they ate out at restaurants, and the frequency at which they consumed meat. Consistent with earlier, nationally representative survey data collected by Neff and colleagues (Neff et al., 2018), vegetables and dairy were the two food categories that were most frequently used as substitutes, while imitation meat and tofu products were less popular. Individuals took varying approaches to reducing meat, from reducing the portion size of the meat they ate to substituting meat altogether. Future attempts to replicate this work may therefore wish to prospectively evaluate which approaches community members find most preferable. These findings could inform the design and implementation of resources and assets that can more appropriately support participants in these efforts. Of note, a significant proportion of respondents noted that it was either easy or very easy to reduce meat consumption after participating in the *Campaign*. These findings support the importance of providing skill-building opportunities, as the resulting increase in self-efficacy may play a role in promoting longer-term adherence to meat reduction (Stretcher, McEvoy DeVellis, Becker, & Rosenstock, 1986). Finally, the majority of respondents reported that environmental issues were a strong motivating factor in their decision to continue reducing their meat consumption after the *Campaign*, which provides further evidence for the merits of highlighting the co-benefits associated with meat reduction when designing these types of programs.

Social and Community Influence

Findings presented in this case study supported our assumption that social and community factors can play an important role in initiating and maintaining dietary behavior change. Twelve weeks after the campaign, 76% stated that they talked about the campaign within their family and/or community, and over 59% reported that others in their

household had also committed reducing their meat intake. These findings suggest that these types of initiatives could have socially transmittable effects that may modulate dietary norms at the household and community levels. However, more robust analyses of these social network dynamics are needed to more comprehensively understand these relationships.

The findings presented herein also provide some evidence in support of stakeholder engagement and grassroots volunteerism and their shared role in initiating and maintaining dietary behavior change at the community level. The development of these public-private partnerships between the organizing committee and the various local entities that offered to support the Campaign were instrumental in extending the program's outreach and influence. The robust volunteer program was responsible for soliciting the support of business partners, community members, and local media outlets, which not only allowed the Campaign to reach a broader audience but also provided them with important collaborative opportunities to promote plant-forward eating within their built environment. Therefore, in addition to removing some of the social and physical barriers that could prevent individuals from taking part in the meat reduction initiative, this effort also gave individuals the impression that the Campaign had gained broad favor and support within the community. In fact, a significantly higher proportion of survey respondents reported perceiving that cutting back on meat was easy or very easy at the six-month follow up (66%) compared to immediately post-campaign (57%). This suggests that more interventions involving widespread community engagement may be key to maintaining these kinds of behavior changes in the long run.

Equally important to consider are the challenges participants reported experiencing while trying to reduce their meat consumption. As stated previously, the most salient and persistent barrier that respondents identified were the preferences of their friends and family. In both the 12-week and six-month follow-up periods, the tendency of friends and family to prefer meat over meatless meal options was the most frequently reported challenge, increasing from 17% at 12 weeks to 23%

at six months. Indeed, prior research has found that this positive affinity towards meat consumption, sometimes called 'meat attachment,' can often be a limiting factor for these types of initiatives (Graça, Calheiros, & Oliveira, 2015). The next-most frequently reported challenge was family members' distaste of meatless foods, independent of whether they had a comparative preference for meal options containing meat. Importantly, the proportion of respondents who indicated this factor as a barrier also increased between follow-up periods, from 8% at the 12-week mark to 14% at the six-month mark. Relatively few participants indicated experiencing other issues related to the availability of meatless meal options, or challenges resulting from misconceptions about the nutritional and dietary value of plant-based food options (see Table 5). This may be attributed to the increased availability of meatless meal options provided through the public-private partnerships that were sought out between the campaign and the town's local businesses and eateries. Furthermore, the weekly newsletter, which circulated tips, recipes, and nutritional facts associated with different plant-forward dishes may have also played a role in alleviating some of these anticipated challenges.

Strengths and Limitations

This case study describes the implementation of the *Campaign* in a higher-income community with participants who had been exposed to climate issues prior to the Meatless Monday campaign through the Bedford 2020 Coalition. The Bedford community is unique in that their efforts to reduce their meat consumption were part of a larger, more coordinated effort to encourage environmentally conscious behaviors through the Bedford 2020 Climate Action plan. Their familiarity with the subject area, then, was likely greater than most general audiences. Awareness of Meatless Monday was high at baseline: 55% of pledgers had heard of Meatless Monday before the campaign, which was higher than a nationally representative survey showing 28% consumer awareness (Data Decisions Group, 2017). Furthermore, 79% indicated that they were actively reducing or had cut back on their meat consumption in the past, either through Meatless Monday (26%) or some other means, thus

indicating a high level of interest within the community to engage in meat reduction initiatives and activities. While priming appeared to be an important modulating factor with respect to the respondents' willingness to engage in the pledge, it is difficult to disentangle these effects from the effects of the campaign itself.

On a similar note, it is important, too, to consider the potential for certain response and sampling biases that may have influenced our results. The possibility of self-selection bias, for instance, may have compelled household representatives who were more engaged with the campaign to be overrepresented in our samples. The survey had an average response rate between the three timepoints of 49%, and while we were able to assess how similar these cohorts were to each other, we were unable to make any concrete determinations about how representative each of the samples were of the larger sample population. Furthermore, our results predominantly relied on self-reported data, which could potentially be subject to social desirability bias, compelling respondents to answer survey items in ways that aligned better with the expectations of the research team than their own internal beliefs. Future research may wish to consider other surveying methods that could supplement basic food frequency questionnaires with paired observational data.

Changes were also more accessible for this audience because of the greater availability of plant-based options at local food retail sites due to the broader community-wide aspects of the campaign. In addition, the town of Bedford has higher education levels and higher income levels than the general United States population. As a result, the findings presented in this case study may not be generalizable to populations where such priming has not taken place or to lower income communities. The nationally representative survey conducted in 2018 by Neff and colleagues, for example, after stratifying by income levels above and below US\$40,000 per year, found that cost, for instance, was much less of a motivation for reducing meat intake among those earning more than US\$40,000 per year (2018). Similar results are observed here where the cost-saving potential of reduced meat diets were uniformly the lowest

ranked motivation across all three time points. Secondly, those who participated in the surveys were also higher income, older, and female as compared to the general population of Bedford, suggesting self-selection bias among participants. It is possible that those who participated in the surveys were more likely to report changes in attitudes and behaviors as compared to those who did not participate. Thirdly, there was also no control or comparison group to assess the effects of the *Campaign* on changes in attitudes and behaviors related to reducing meat consumption, which limits the internal validity of the evaluation results presented here. Future studies should build on these findings to conduct more rigorous evaluations to assess the effects of community-based interventions that integrate health and environmental concerns to reduce meat consumption.

Finally, the *Campaign* was short, and the evaluation only included the 320 household that had signed the pledge rather than the entire Bedford community. However, despite these potential barriers to success, the *Campaign* raised awareness about climate and food choices and brought new constituents into the community-wide goals of reducing climate change.

Strengths of the *Campaign* include its simple, clear, and wide-reaching communications. Furthermore, the *Campaign* provided citizens with an actionable step toward alleviating climate change and conserving water and other environmental resources. The organizers demonstrated that a campaign such as this can maintain people's actions beyond the initial implementation. A large part of this effect may likely be the large community engagement and the campaign's visibility in the community, which helped normalize potentially unpopular behaviors. While this campaign may be translated into similar settings with appropriate modification and contextualization, future research is needed to assess whether it can be extended to other communities with different sociodemographic characteristics.

Conclusion

This case study illustrates how one community drew connections between diet and environmental concerns to inspire individual, social, and commu-

nity changes. Our analysis of this municipal sustainability initiative, which assessed changes in residents' attitudes, behaviors, and food choices over a nine-month period, demonstrates the strategic merits and the enduring value of community-based efforts in initiating and maintaining healthier and more sustainable practices of eating at the individual, household, and community levels. More specifically, our results showed a decrease in meat consumption as well as increased awareness of the connection between meat and climate change among participants. Additionally, our findings provide empirical evidence in favor of multilevel approaches to dietary behavior change that can leverage latent community assets, like grassroots volunteerism, public-private partnerships, and residents' social networks, to educate audiences on

how to make more informed food choices and alter the physical and social environments in ways that make those selections more accessible and automatic. This campaign serves as an example and framework for how other communities can engage their citizens beyond policies toward voluntary, achievable actions at the community level that contribute locally to mitigating climate change globally.

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Appendix A. Key Informant Interviews

While the household surveys provided quantitative insights into the effects of the campaign, follow-up phone interviews were completed to support these efforts to obtain more detailed accounts of individuals' experience. These in-depth interviews were conducted with five key informants that were recommended by the Bedford 2020 Leadership team. The participants' affiliations with the *Campaign* were as follows: one Bedford 2020 board member, two mothers, one chef, and one restaurant owner. Each of these individuals were interviewed by a student research assistant using a semistructured interview guide.

Findings from these interviews are summarized below according to themes:

Shifts in Individual-level Attitudes

Key informants noted that the *Campaign* helped make a connection between the environment and what they ate. Although they were somewhat aware of the harms of industrial agriculture practices before the *Campaign*, the dots had not yet been connected between high meat consumption and greenhouse gas emissions, or disproportionate use of natural resources. The *Campaign* also spread awareness of actions that people can take to decrease their climate footprint and provided resources and email reminders that helped them reduce meat.

- According to one participant and volunteer, the impacts of greenhouse gas emissions were discussed frequently throughout Bedford 2020, but it was not until the convergence with the Meatless Monday campaign that she made the connection between climate change and cattle and food production.
- Another volunteer appreciated that the *Campaign* highlighted the multifactorial aspect of food production including the unseen costs. Her three young children loved meat, and though they still consumed meat every week, they were very interested in Meatless Monday. The *Campaign* helped to spark conversations about where their food was coming from and the costs behind it.
- A restaurant operator and participant noted that though his meat consumption did not decrease much, the main takeaway was the shift in his thinking. "The campaign kind of coincided with, for me personally, a new attitude about eating," he said, adding that the environmental impact of meat production, particularly beef, in combination with the health benefits of vegetarian diets encouraged him to eat less meat.

Ease of the Campaign

Key informants elaborated on the ease of the campaign, noting how its simplicity encouraged adherence.

- One participant and volunteer recalled that she and her husband ate meat most days of the week because they could not think of alternatives. According to her, their meat consumption decreased considerably during the *Campaign*, and she credited better education and increased accessibility to meatless options. Participating restaurants in town made it easy to find a delicious meat-free meal. She stated that they now frequent their favorite local restaurant every Monday specifically because of the meatless options they offer on Mondays. Reflecting on her experience, she said going meatless on Mondays turned out to be quite easy, and that they ended up going meatless more than one day a week.

Social and Community Influence

Key informants viewed family and community involvement as an enabling factor for successfully implementing Meatless Monday.

- One stakeholder, whose family ate about three or four meals with meat each week, reported that during the campaign she saw a decline in her family's meat consumption. While it was not always Monday, they made sure to eliminate meat at least one day a week. She commented that her children were aware of Meatless Monday during the campaign and would even excitedly ask, "Is today Meatless Monday?!" Although they were not yet old enough to prepare their own meals, she believed her kids had been largely influenced by their conversations surrounding energy consumption and waste.
- Restaurants also facilitated community engagement in Meatless Monday. One cafe operator stated that they had meatless dishes on their menus before the *Campaign*; however, the Bedford 2020 offered another opportunity to market their meatless dishes and offer new specials on Mondays. The head chef of a local restaurant was approached by Bedford 2020 and asked if his restaurant would participate in Meatless Monday for a couple of months, but he said now it seems like it is there to stay. New dishes introduced as Meatless Monday specials are now permanent menu items, per customer request. The *Campaign* provided the motivation to create new menu items and promote exciting plant-based dishes, and now the servers have the knowledge to inform people about the delicious meatless menu items and the benefits of eating less meat. "We dare to try a lot of new techniques and new ways to approach all these foods," said the head chef. Judging from the returning customers, his creative approach toward Meatless Monday has been a success.
- According to one key informant, anecdotal stories and experiences regarding meat alternatives resonated with people looking for encouragement to reduce meat consumption. Interesting ideas for incorporating vegetables into dishes and positive testimonials about meat substitutes were helpful, especially for those wary about trying new products or replacing foods they like. He found discussions and brainstorming sessions with friends to be impactful and inspiring.

Multilevel Barriers

Participants recalled several common barriers, such as the higher cost of organic produce, difficulty finding nutritious alternatives to meat, and the extra time required to plan and prepare fresh meals with more vegetables.

- One participant mentioned that the preparation time required to produce vegetarian meals was a definite deterrent. "It involves a lot more foresight than just throwing something on the grill." She also noted that buying organic fruits and vegetables can be expensive, especially when buying for a family.
- Several restaurant operators noted that consumers expected meatless entrees to be lower in cost, which was a misconception given the higher price of quality produce, the limited availability of meatless products, and the more intensive labor involved in preparing vegetables, compared to meat. One local chef lamented the difficulty of providing innovative vegetarian meals to customers. "You know it is a challenge because sometimes people just think that it's meatless so it should be less expensive, it's a vegetable. But we put a lot more work into it to make sure the vegetables are delicious."

- Another common barrier was the pressure felt to make lifestyle changes, which can feel overwhelming given the various actions encouraged by the larger Bedford 2020 work, especially to the older population. “People get anxious. They feel like everything is changing, either they feel guilty or they’re not doing enough. It’s just a lot... It’s a gradual change in behavior and deliberately thinking about what we do and how we act in every facet of our lives.”

Summary and Recommendations

Insights from the interviews conducted with key stakeholders confirmed that the value community members placed on the environmental benefits associated with the *Campaign* increased as it progressed. This supports the potential effectiveness of community-based interventions that incorporate health and environmental concerns into their messaging in changing individuals’ attitudes, motivations, and intentions related to reducing their meat consumption. Furthermore, much of the success of this program was attributed to the community and social influences. From the robust volunteer program to the support of business partners, media, and community members, community engagement was key to the success of the campaign. Businesses and restaurants promoted the *Campaign* and “normalized” plant-based choices and acceptability of making meatless food choices on Monday and other days. Social media and online recipes and resources made practicing meat reduction an easier and more common practice due to the convenience. This community-wide initiative provided the sense that others nearby were also doing Meatless Monday; no one was on their own.

Beyond our primary survey findings, key informants identified a number of potential barriers that could limit the ability of community stakeholders to engage in these types of initiatives in the long term. Barriers mentioned by key informants included, for example, difficulty preparing cost-effective, plant-based meals. More education is therefore needed on meatless meals so that people can feel empowered to practice this diet pattern. Participants commented on the high price of organic vegetables, and while organic produce may be ideal for environmental and possibly human health, simply the choice of purchasing conventional produce over meat has many beneficial outcomes (Dangour, Dodhia, Hayter, Allen, Lock, & Uauy, 2009; Dangour, Lock, Hayter, Aikenhead, Allen, & Uauy, 2010; Reganold & Wachter, 2016; Rigby & Cáceres, 2001). One possible reason for difficulty finding fresh plant-based options is that the campaign occurred during the winter months when fresh, local food was less available. Organizers of the campaign have suggested doing it during the summer months when farmers’ markets and local produce stands are open. Participants’ concerns with finding nutritious alternatives to meat could also suggest the need for more information about healthy substitutions aside from processed and refined grain products.

Beyond the scope of the quantitative surveys, key informant interviews further illuminated that the broad focus of the *Campaign* was intrinsic to its success. The *Campaign* serves as an example and framework for how other communities can engage their citizens toward voluntary, achievable actions at the community level that contribute locally to mitigating climate change globally.

Stories as indicators: Lessons learned using the Most Significant Change method to evaluate food systems work in Michigan

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Abstract

Food systems initiatives regularly use stories as a communication tool to showcase and gain attention for their work. Yet few of these efforts use systematic ways to collect and analyze stories. Rooted in our experience documenting the work surrounding the Michigan Good Food Charter, we suggest that a variety of efforts that aim to transform food systems could benefit from applying the

Most Significant Change (MSC) technique, an evaluation tool that uses stories in a more rigorous way to identify emerging outcomes and enhance organizational learning. Particularly with the modifications we introduce, the MSC approach can be adapted to situations where program staff or participants have limited time, resources, or capacity, offering stakeholders a way to build a shared vision of a program and, over time, a clearer sense of the direction that a food systems project has and where it should be headed.

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Introduction

The last decade has seen a precipitous rise of collaborative food systems movements and initiatives across the globe (Filippini, Mazzocchi, & Corsi, 2019; Glennie & Alkon, 2018; Hoey, Colasanti, Pirog, & Fink Shapiro, 2017). Whether food systems initiatives are focused on increasing healthy diets, supporting sustainable agriculture practices, stimulating the local food economy, or promoting greater equity throughout the food system, their complex and rapidly evolving nature makes evaluation difficult. Yet evaluation is imperative for enhancing learning, identifying effective practices, and increasing the impact of initiatives (Levkoe & Blay-Palmer, 2018). Furthermore, evidence of positive impact can demonstrate to local governments the value of supporting food systems (Clark, Marquis, & Raja, 2017; Filippini et al., 2019; Roberts, 2014) and convince the philanthropic community to continue to invest in food systems interventions (W. K. Kellogg Foundation, 2020; Global Alliance for the Future of Food, 2020).

One of the challenges of understanding the impact of food systems work is the interconnected nature of factors required to effect change alongside the multiple, interlinked outcomes that can emerge. For example, the goal of increasing food security requires strategic interventions on multiple levels—from contextually-sensitive household-level programs to national and even global policy change—as well as actions that are interconnected, linked to environmental sustainability, human health, food access, and livelihood (Pinstrup-Andersen & Watson, 2011). From the standpoint of indicators and evaluation, the array of goals, interventions required, and metrics needed to capture and attribute change can quickly become overwhelming (Ericksen et al., 2012).

In these cases, evaluations cannot rely on standard models typically used to assess more straightforward, linear problem-solving efforts. When complex initiatives are assessed using more traditional approaches of evaluation, they are often forced to identify predetermined indicators and prescriptive criteria to monitor, failing to capture unexpected, emerging impacts (Broughton & Hampshire, 1997). A flexible and adaptive approach is needed that reflects the evolving nature

of systems-level change, as the scope of the problem may shift alongside the intervention (Patton, 1994, 2010). Michael Quinn Patton has termed this type of assessment “developmental evaluation,” an approach that looks at complex initiatives “in terms of relationships” rather than breaking them down into “discrete components,” as traditional evaluation tends to do (Patton, 2016b, p. 8). Rather than monitoring fidelity to a defined set of tasks or testing if an intervention “works” in order to solve a clearly delineated problem, developmental evaluation is useful for interventions where the actors are essentially creating the path as they walk it, learning about the effects of their actions as they go, and regularly adjusting their strategy.

Patton notes that just about any mix of methods can be used to carry out a developmental evaluation, as long as it is flexible and leads to rapid feedback about the effects of ongoing adaptations (Patton, 2016a, p. vi). One method useful in this process of depicting and reflecting on emerging outcomes is the Most Significant Change (MSC) method. The remainder of this paper describes the origin of MSC and how it is typically implemented; why we think that MSC is a good fit for interdisciplinary, collaborative efforts, especially those focused on food systems; how we used, modified, and interpreted findings from MSC in a food systems initiative in Michigan; the limitations of the original model; and the benefits and limitations of the modifications we introduced. Our intention is to expose practitioners and evaluators to a method which we believe will enhance efforts to document, learn from, and continuously improve efforts to transform food systems.

The MSC Method

The MSC method was developed by Rick Davies in 1996, based on a rural development initiative he was asked to evaluate in Bangladesh. As occurs with many complex change initiatives, he was confronted with a program that was operating in different configurations in more than 700 villages, each with their own unique context. While program managers had a broad goal for the overall program, they were not entirely sure what the actual outcomes would be, leaving Davies with an operation much too complex to summarize with a

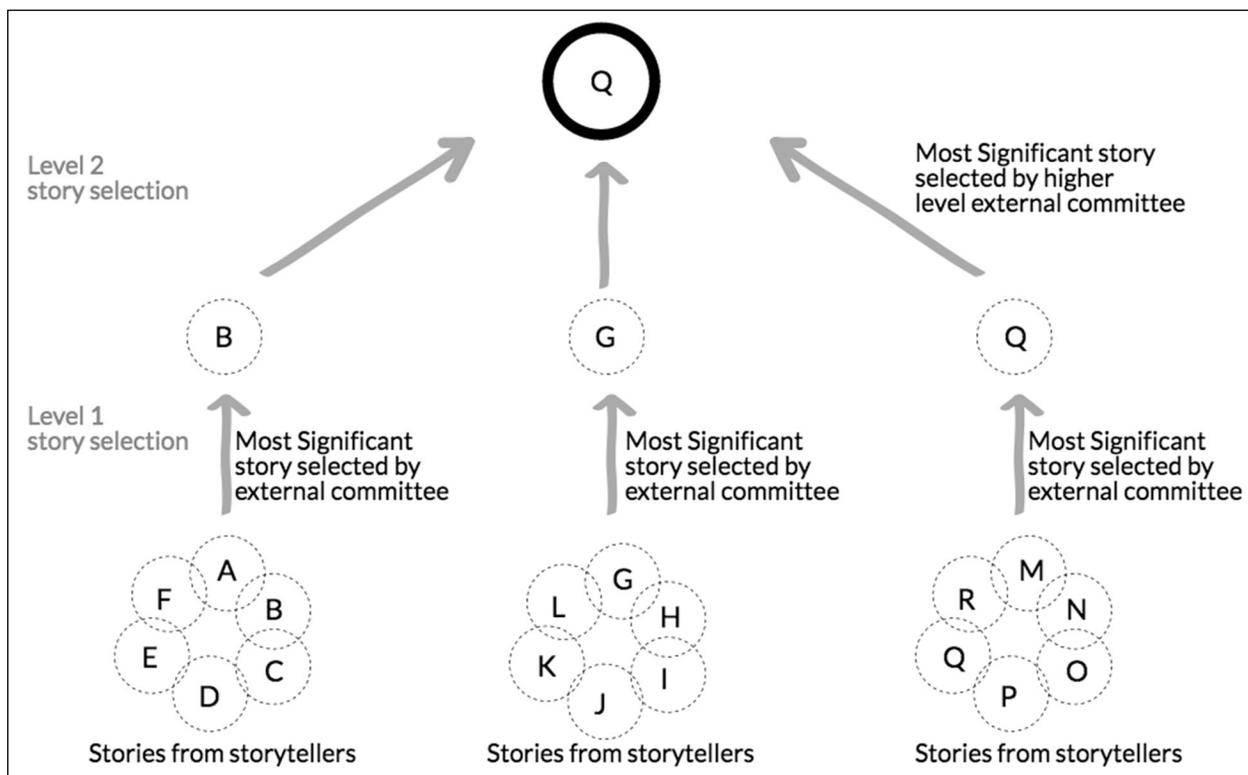
traditional linear, pre-determined evaluation approach. Out of this experience, he developed the MSC method, focused on the collection and collaborative analysis of stories gathered from program participants or field staff (Davies & Dart, 2005). The aim is to identify emerging outcomes while also offering program staff and other stakeholders a way to build a shared vision of the program and, over time, a clearer sense of the direction that the project has and where it should be headed, or as Jess Dart and Davies put it, to “move towards success and away from failure” (2003, p. 151).

Most evaluators use MSC as a formative evaluation method—to track changes that are emerging during implementation (including unexpected outcomes), to contribute to learning, to identify potential problems, and to help a program make adjustments (Costantino & Greene, 2003; McClintock, 2004; Willetts & Crawford, 2007). MSC has also been used for summative evaluation, as a way to identify some of the impacts of a program (Limato, Ahmed, Magdalena, Nasir, & Kotvojs,

2018; Ramacciotti, 2017). The important caveat that MSC evaluators give—emphasized in our final section—is that the approach is not a stand-alone evaluation method; it is not appropriate for capturing certain types of changes and it must be triangulated with other data to offer a more complete picture of a program’s progress and impacts (Davies & Dart, 2005). It cannot, for instance, be used to determine cost effectiveness, nor could it determine the extent of particular impacts, unless additional methods are used to measure specific indicators across the entire population affected by an initiative. MSC is most useful where: (1) it is not possible to predict in any detail or with any certainty what the outcomes will be, (2) outcomes will vary widely across program participants, (3) there may not yet be agreements between stakeholders on what outcomes are the most important, and (4) the interventions are expected to be highly participatory, including monitoring and evaluating the results (Davies et al., 2005).

As Figure 1 illustrates, the process of analyzing stories, in the original approach developed by

Figure 1. The Typical Process of Collecting and Identifying the “Most Significant” Stories



Source: Adapted from Dart and Davies (2003, p. 4).

Davies and Dart (2005), usually occurs in several rounds, involving dialogue between people involved in all levels of a program.

Typically, a program starts by soliciting a call for “significant stories” from program participants and/or field staff. Stories can be shared in writing, orally through interviews, or in small group discussions. While the definition of “significant” can be open-ended, stories can be requested around certain “domains” of change (e.g., changes in food security) that are relevant to the program, and should have a common timeframe and geographic scope. All stories shared should include an explanation of the change as well as reasons why the storyteller chose to focus on that story, or why it seemed significant to them.

Committees of staff or selected stakeholders at each site across a program then select one story as “most significant” and discuss why they believe that story represents the most significant change out of all the stories they reviewed. These discussions can occur, for example, among a group of storytellers or among a group of field staff reviewing written stories. The dialogue that occurs at this point is critical to the method, as it helps participants hear how others interpreted stories, revealing the values that different actors bring to the table. Such articulation also encourages double-loop learning—a re-examination of an organization’s underlying values, assumptions and goals (Argyris & Schon 1974)—which is critical for the process of helping to reveal adjustments the program may want to make to keep moving actions towards desired change (Davies & Dart, 2005).

After each site’s committee has selected their “most” significant story, they pass the story up to the next level of a program, where another committee of staff and/or stakeholders assemble to discuss and select from a smaller number of “most” significant stories, and so on. The number of rounds of selection can vary based on the scale of the program. Throughout this process:

Every time stories are selected, the criteria used to select them are recorded and fed back to all interested stakeholders, so that each subsequent round of story collection and selection is informed by feedback from

previous rounds. The organization is effectively recording and adjusting the direction of its attention—and the criteria it uses for valuing the events it sees there. (Davies & Dart, 2005, p. 10)

After going through this process once, programs often repeat each of these steps at a later point in time, gathering another round of stories. The frequency with which actors carry out an MSC process varies based on the timeline and scope of a program, as often as every month in the early stages of an intervention or as infrequent as every year or two. After each full round of MSC, evaluators can use the collected stories as a reporting mechanism to illustrate emerging outcomes. The most valuable outcome, however, is often a reflection on the insights that emerged during the dialogue process, which can help stakeholders make programmatic adjustments.

Today, the MSC technique is used to evaluate programs around the world, from health promotion programs in Indonesia (Limato et al., 2018) to ICT (Information Communication Technology) training in Australian schools of education (Heck & Sweeney, 2013) to food security projects in West Africa (Somda et al., 2017), usually in the form of oral stories documented in writing, but also through participatory video (Asadullah & Muniz, 2015; Lunch, 2007). MSC appears to be used less often in North America, but there are examples of its application to evaluate asthma programs in Albuquerque public schools (Peterson, 2015), to examine perceptions of sustainability among college students at Penn State (Ramacciotti, 2017), and to assess the challenges at a domestic violence shelter in Canada (Rogers, 2013). With the exception of an evaluation of several refugee farming programs in the US (Gusev, 2015), our team has come across few examples of food systems initiatives in North America using MSC, which we believe is a missed opportunity.

MSC in Food Systems Initiatives

One reason we argue that MSC is a natural fit for evaluating and improving a variety of food systems initiatives is because so many are already using stories to help communicate their impact and for

purposes of general reflection. From our experience working in the US context, food systems initiatives are already collecting and featuring stories through their newsletters, websites, and social media platforms, and incorporating storytelling as a central activity during events, meetings, and summits. For example, California-based Roots of Change hosts a podcast about the future of food and farming (Dimock, 2021), the Minnesota Food Charter prominently features stories on their website about “Food Charter Champions” (Minnesota Food Charter, 2020), and Vermont Farm to Plate regularly publishes stories of change, such as “A story of respect and resilience” (Claro, 2018). The Food Dignity Project also has used digital “triple-rigorous storytelling” involving “ethical, epistemological and emotional standards of rigor” to document the work of partnering with community-based organizations through participatory case study research (Porter, 2018, p. 38).

The common use of stories in food systems initiatives is not surprising since stories are powerful tools of influence. Commonly used by politicians and marketers to change people’s minds, stories have the potential to convey information in a way that is more memorable and easier to relate to than the same information presented as facts or statistics (McClintock, 2004). For example, a nonprofit may communicate the impact of their work by focusing on how their efforts have changed the life of one family, just as a politician may single out the story of one individual to make a case for a particular policy change. However common it is for stories to be used to influence hearts and minds, these types of individual experiences are anecdotes. Evaluation theorists agree that “the problem with anecdotes is that their ‘truth’ may not generalize” for the purposes of program decision-making or determining an intervention’s broad impact (Royse, Thyer, & Padgett, 2015, p. 33). While a story may be true for the person who had the experience, to leverage stories effectively as a form of evaluative evidence more rigor is needed in how stories are aggregated and analyzed.

A variety of systematic approaches exist that use storytelling as a tool for qualitative data collection (Polet et al., 2015). Among these narrative forms of evaluation, MSC is more explicitly

participatory and value-based, aligning more naturally with the nature and goal of many food systems initiatives. The exploratory and “indicator-free” nature of the MSC approach (Sigsgaard, 2002) increases the chances of uncovering unintended outcomes. This mirrors the emergent nature of many food systems initiatives, where it may not be possible to come up with predetermined indicators to measure. The MSC participatory data collection and analysis also supports the equity and justice orientation of many food systems initiatives (Burke & Spiller, 2015). Asking storytellers and case selection committees to articulate “why” they perceive certain stories as most significant centers the evaluation on their values and interpretations, as opposed to those of the evaluators, while the MSC focus on dialogue can move stakeholders to consensus about project aims and strategies in ways that more top-down administered methods may not.

Despite the added value MSC could offer food systems programs, one of the most frequently cited challenges of implementing “full” MSC, as described above, is the significant investment of time required by all stakeholders in the process (INTRAC, 2017; Willetts & Crawford, 2007). Especially for initiatives working with low-income populations, the time and energy needed to contribute stories and engage in participatory analysis—especially if held over several, ongoing rounds—is heightened when MSC must be combined with other methods that solicit information from the same participants. Furthermore, for under-resourced nonprofit organizations or local governments, time-consuming evaluations like MSC, where staff may be asked to collect stories and participate in the analysis, must be carefully weighed against the time needed to devote to program implementation (Ebrahim, 2005). As a way to expand the opportunity for more people to participate and to lower the burden on program staff, our team considered how we might adapt MSC to our own evaluation of a complex food systems initiative in Michigan, The Michigan Good Food Charter.

MSC in the Michigan Context

The Michigan Good Food Charter initiative is a

statewide effort to promote, implement, and track progress toward its goals (Figure 2). The Charter, launched in 2010 through a multi-stakeholder dialogue, is centered around the vision of a food system that grows the local food economy, increases equitable food access, and enhances health.

The Good Food Charter Project is structured around a Collective Impact framework (Kania & Kramer, 2011), and is coordinated by staff at the Center for Regional Food Systems (CRFS) at Michigan State University. Since 2015, our team, based at the University of Michigan, has been working as the external evaluators of the initiative. Because of the diverse stakeholders involved, the wide-ranging goals, the necessity to adapt strategies over time, and the unpredictable nature of the outcomes, we chose to use a developmental evaluation (Patton, 2010) as our overall evaluation framework. The MSC method is one of a mix of other quantitative and qualitative methods we have used to document project activities and to offer CRFS staff ongoing feedback.

As we used MSC on six different occasions, we developed three types of modifications to adapt to different settings, using it with groups of as few as six and as many as sixty. As we describe below, in adapting the original approach to MSC we aimed to glean its core benefits while trying to integrate the method into existing events and program activities seamlessly. With such adaptations, we believe MSC can be used in situations with limited time, money, or capacity. We describe our process in each of these modifications below, as well as how we analyzed the stories we collected.

Analysis of Existing Stories

The first way that we utilized MSC was to conduct a systematic analysis of 96 existing stories our evaluation partner had already

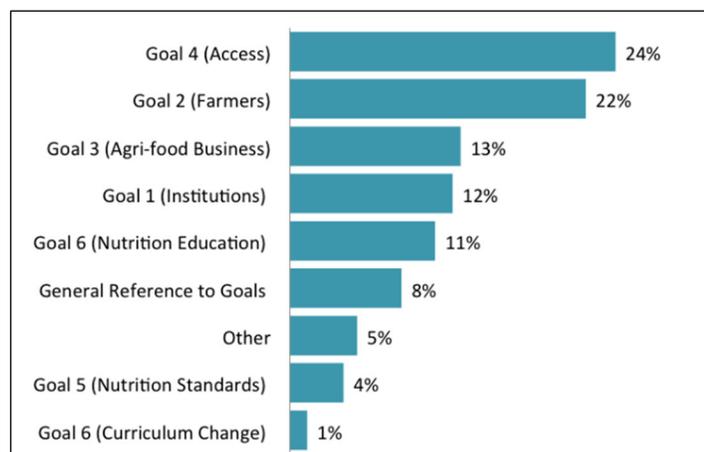
Figure 2. Michigan Good Food Charter Goals

- Goal 1 → increasing locally grown food in Michigan institutions
- Goal 2 → financially supporting Michigan farmers and farm workers
- Goal 3 → generating new agrifood businesses in Michigan
- Goal 4 → increasing access to more affordable, fresh, and healthy food
- Goal 5 → improving the nutrition of Michigan school meals
- Goal 6 → incorporating food and agriculture education into the curriculum of Michigan schools

collected. Unlike the traditional MSC approach that requires soliciting new stories from stakeholders, we realized that written stories had already been featured on the CRFS website and newsletters, offering a rich database for evaluation. Rather than a way to objectively study the impact of CRFS or the Charter, however, we saw this as an opportunity to study the CRFS' underlying values and preferences, based on the types of success stories staff were actively selecting to promote (and what types of stories they were consciously or unconsciously leaving out). Utilizing the written narratives as “existing data” reduced survey and interview fatigue, lowering the burden on program stakeholders who are already pulled in many directions. Unlike most MSC processes that involves a selection process and narrowing down of initially collected stories, all existing stories in our partner's archives were included in this analysis.

Using the goals of the MI Good Food Charter as our framework for analysis, we helped our partners to see that some aspects of the Charter were more heavily represented than others (Figure 3).

Figure 3. An Analysis of How Existing Stories Related to Goals of the Michigan Good Food Charter



This paved the way for exploring whether this reflected unintentional prioritization on the part of staff or whether this reflected different levels of activity around different goals. Analyzing the location of the stories also allowed us to delineate geographic gaps of regions in the state where they tended to concentrate less (Figure 4).

The MSC Focus Group

A second simple way in which we adapted MSC was to facilitate a focus group conversation with lead CRFS staff, at the end of the first project year. During the hour-long, six-person focus meeting, our evaluation team asked each person to describe the “most significant change” they had observed over the first year as it related to their work on the Charter. The CRFS team then discussed each of the changes that their colleagues had raised, settling on a single key change that they all agreed best represented the type of change they hoped that their future work on the project would continue to generate. Conducted after the first and second years of

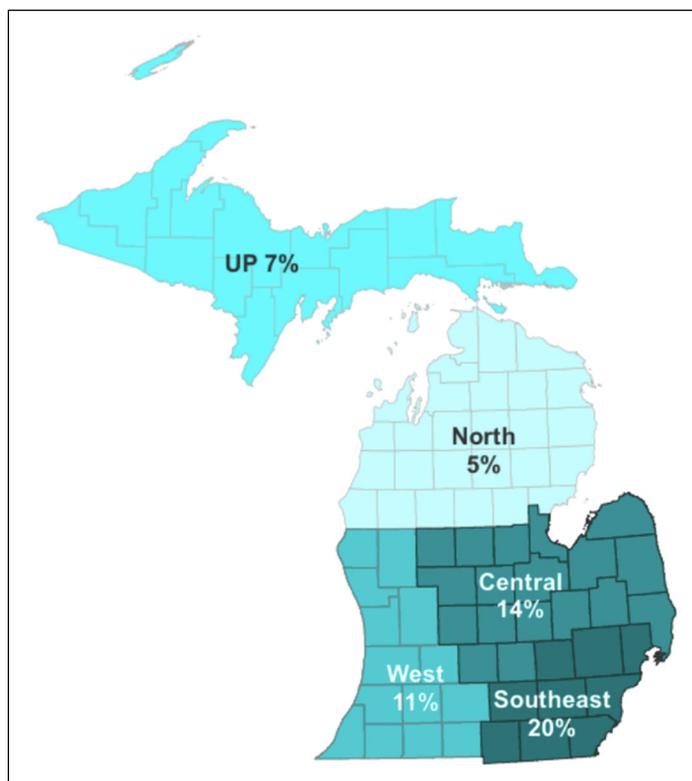
the program, the exercise was intended to help staff build upon early successes and update their project plan, if necessary. As MSC generally does, their conversation helped to make explicit the values that were guiding staff perceptions about the aim of their complex program, increasing the coherence of their collective efforts and clarifying their theory of change. It also allowed us as the evaluation team to identify the key changes that we should emphasize in our first annual evaluation report and the changing priorities that we should begin to observe as the project moved forward. We did not hold MSC sessions with staff-specific groups in subsequent years, opting instead to gather stories from a wider group of stakeholders (see following section), but we could have continued to use it as a regular exercise to provide feedback for each annual report and project planning cycle.

The MSC Storytelling Workshop

A third and more extensive MSC modification piloted by our team was a “storytelling workshop” we hosted with various groups to integrate a shorter version of the MSC process into existing CRFS meetings, summits, and other gatherings. Our team used this MSC adaptation four times: once with a group of approximately 12 people on the MI Good Food Charter Steering Committee, twice during statewide Good Food Summits as breakout sessions that participants could voluntarily attend, which drew between 40 and 60 people, and once with 15 people as part of a regular statewide network meeting of local food councils.

This latter exercise was particularly instructive. Prior to the MSC session, the local food council network coordinators were hesitant to orient discussions and group activities towards “policy” too directly, for fear of alienating potential network members based on partisan politics. For this same reason, many of the local food councils had chosen to refer to their individual councils as “local food” councils as opposed to “food policy” councils. However, all the stories that the group chose to “lift up”

Figure 4. A Spatial Analysis of Good Food Stories in Michigan (UP=Upper Peninsula)



during the MSC session were about local policy change which they or their partners had helped enact in their counties or cities, which sent a powerful message to the network conveners about the underlying values of the group and the future direction of the network, which today is more firmly focused on building the capacity of local food councils to carry out policy advocacy.

Like the traditional MSC technique, this third, modified approach to a “storytelling workshop” still retains the core qualities of being participatory, dialogic, and based on perceptions of the most significant changes. One of the biggest differences is that the exercise can be completed within the span of one hour, a typical length for a conference breakout or workshop session which can be easily integrated into regular meetings. There are five steps to this modified MSC approach:

1. The facilitator divides participants into small groups of four to six people. If sufficient evaluation staff (or, in our case, student volunteers) are available, each group is also assigned a facilitator to keep track of time, record the conversation, and manage the process. These roles can also be assigned to group participants.
2. Participants are given a one-page worksheet and asked to reflect individually and write a “5-minute essay” in response to the following question: “Over the last [time period], what do you think was the most significant change in [domain]?” The “domain” category is left deliberately broad, so as not to limit the types of stories the participant reflects upon. In our case, we ask people to reflect on changes they had seen in their community over the last year that reflect the goals of the Michigan Good Food Charter. The worksheet asks participants to write about what happened, why it is important, and the key lesson that emerged from the story that other communities could learn from.
3. After the “5-minute essay,” the written stories from each small group are then

shared with another small group (table 1 stories go to table 3, table 2 stories go to table 4, and so forth), ensuring that stories are not passed to the group physically next to the storytellers, as it can be distracting for participants to hear their story being discussed by a neighboring group.

4. Each group member reads one story aloud to their group. As in the traditional MSC approach, the group then discusses the qualities of each story and comes to an agreement on which of the stories represents the “most significant change” and why. The dialogue that takes place in each small group is central to the richness of the method. In our experience, it is helpful for a moderator to encourage every group member to speak and to draw out “why” a particular change is significant to each person.
5. After the small group discussions, the workshop facilitator then calls upon one representative from each group to share with the large group the single story they have chosen to “lift up” as most significant and explain why their group selected that story.

When we used this approach in the statewide Good Food Summits, we collected 40 to 60 stories each time. We analyzed the stories based on the goals of the Michigan Good Food Charter, tracked other unexpected changes that were unrelated to the Charter goals, and mapped the locations of the stories geographically, since Michigan Good Food Summits draw participants from across the state. Because we were interested in the scope of Charter and other food systems-related changes that were observed, we also coded stories based on a “results ladder” (Figure 5), as described by Kibel (1999). This involved categorizing stories based on whether participants were (1) observing successful efforts to gather the **inputs** necessary to start an initiative (e.g., submitting a grant, securing funding or staff); (2) describing activities or implementation **processes** (e.g., trainings or meetings held);

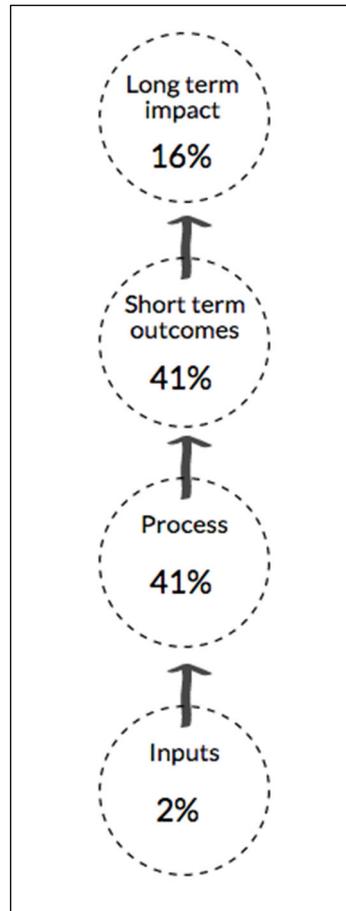
(3) observing short-term **outcomes** (e.g., greater awareness or skills acquired); and/or (4) observing long-term **impacts** (e.g., on health or jobs).

This analysis reflected back to CRFS that participants were most observant of Michigan Good Food Charter work that focused on carrying out activities that emphasized the process of taking action or achieving some initial short-term outcomes. The MSC analysis revealed that the longer-term economic, health, and environmental impact of the Charter was not yet apparent to many participants. In part, this finding indicates that long-term project impacts take time and may not have materialized yet. Additionally, activities with which people are involved and short-term outcomes are easier to observe and recall. This is similar to the tendency of organizations to measure outputs—number of meetings held, how many people participated, etc.—because they are easier to measure than the impacts of those meetings (Whitworth & Wells, 2007). Alternatively, in Davies and Dart’s (2005) experience, participants tend to value stories of impact most highly, suggesting that if more long-term impact stories were salient, participants might have focused on these. Ultimately, what we found does not necessarily mean that the goals of the Michigan Good Food Charter were not being met, but suggest further exploration is needed using other methods to consider the extent to which progress is being made toward longer-term impacts.

Limitations and Further Adaptations

There are several critiques of the traditional MSC approach, most of which also apply to our own modified approaches. First, the method can be biased towards those who are particularly good at telling (or writing) stories, especially because of

Figure 5. “Results Ladder” Story Analysis



issues with language or literacy (INTRAC, 2017). Additionally, as a result of the shortened length of the storytelling process in our modifications, some stories may lose meaningful detail. Davies and Dart (2005) warn that this can happen with shorter stories, but also explain that the desirable length of stories varies depending on the needs and culture of the organization, so that even short, to-the-point stories can be useful as long as they offer enough detail to be validated and to allow for meaningful deliberation. One suggestion to avoid the potential bias towards strong writers or natural storytellers and to counteract the loss of depth in shorter stories is for staff members to interview people who have stories to tell and to follow-up with storytellers who produced a shortened version in order to elicit more detail and depth. Gathering more information also helps as a form of validation, a particularly useful practice with stories that rise to the top as “most significant” (INTRAC, 2017).

A second criticism of MSC is that, depending on the design, the approach tends to elicit positive stories of change (INTRAC, 2017). The first time we used the workshop approach in a statewide food summit, we also found that the “why” explanation offered by individuals and groups tended to lift up positive stories. Stories that had multiple positive benefits were especially valued, such as those with simultaneous impacts on farmer livelihoods and food access in low-income communities. Initiatives that had broader, usually statewide, impact were also selected over stories of change that took place on a local level. While evaluators should be aware of this potential positive bias, a focus on stories of successful change may still be appropriate if a project is using an “asset-based” model focused on identifying and building upon a community’s existing capacity and

assets (Kretzmann & McKnight, 1996). Alternatively, one change we began to implement, which Dart and Davies suggested (2003), is to intentionally ask storytellers to share either (or both) positive or negative stories or stories of “lessons learned” in order to elicit a more well-rounded picture of change. In a similar vein, the story collection process could focus more intentionally on seeking out stories from known critics of the program (Willetts & Crawford, 2007; Dart & Davies, 2003).

A third point to remember about MSC, as was noted earlier, is that the developers of the approach never intended for it to be used in isolation from other methods or as a systematic way to determine wider trends (Davies & Dart, 2005). In the Michigan context, our evaluation team has used MSC alongside surveys, interviews, participant observation, document review and other methods. Triangulating the MSC with other approaches like this is an additional way to ensure that an evaluation is capturing unintended—perhaps negative—impacts and problems which are emerging in a project. Any unexpected changes and outcomes MSC uncovers can also become the basis for a survey, or a more systematic assessment, to determine if particular MSC stories were representative of larger trends, or solely occurring in a singular case.

Finally, another lesson we have learned in using MSC is the importance of maintaining respect for storytellers. This is a consideration in the MSC literature that has not, to our knowledge, received adequate attention. As a participant in one of our MSC sessions put it, “I think it’s important to respect people’s space in storytelling and also be aware that sharing invokes/requires vulnerability. Additionally, many people/cultures have been violated/bastardized/pimped by those ‘harvesting’ [stories].” As this participant was conveying, facilitators should be sensitive to the potential emotional toll of telling stories and to the desire of storytellers to own their stories. This concern is also a reminder that effectively using MSC and ensuring the integrity of stories requires building trusting and respectful relationships between those telling and gathering stories, as well as transparency about the collection and use of stories (Willetts & Crawford, 2007). Whether and how to use stories,

and how to elicit them from whom, should be a collective decision of all stakeholders involved. In our case, one modification we made to increase people’s comfort in our “storytelling workshops” was to ask participants to indicate on their essay if they wanted to remain anonymous. Passing stories to others in a large group, rather than having individuals read their own stories, also increases comfort in anonymity.

Conclusion

From Vermont to Minnesota to Michigan, there is substantial evidence that multistakeholder food systems initiatives are already using stories in a variety of strategic ways (Fink Shapiro et al., 2015). Rooted in our experience evaluating the work surrounding the Michigan Good Food Charter, we suggest that the MSC technique offers a way to collect and analyze stories in a more systematic way, turning storytelling into an effective evaluation tool.

In our own experience, our evaluation clients have shared how participating in the MSC sessions has given them perspective and clarity about their work. Other participants have expressed appreciation for hearing about the variety of food systems changes other stakeholders perceive, while learning a new technique they may use in their own work. One participant described MSC as a “great and a new way to look at gathering and measuring data within a community.” The MSC has helped focus our attention, as evaluators, on the types of changes Charter stakeholders value most. At the same time, we continue to pay attention to triangulated methods, which help to elucidate long-term impacts or other challenges that are not otherwise apparent in MSC data.

Under ideal conditions, community-based organizations and individuals striving to transform food systems would have the funding and time to develop detailed stories about their work, using strategies like “triple-rigorous storytelling” (Porter, 2018, p. 38). Implementing the full version of the traditional MSC approach as intended by Davies and Dart (2005) is thus ideal, as it allows for a richness of discovery and ongoing discussion among diverse stakeholders engaging in collective change making—a level of deliberation that may

not be attainable with the modified versions we have implemented. However, considering time, capacity, and resource constraints, we believe that

our adaptations are valuable, offering a systematic way to collect and analyze the stories that many food systems initiatives are already using. 

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How health-conscious urban gardeners aim to increase vegetable consumption in their community while simultaneously supporting Black entrepreneurship

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Abstract

While the food justice movement was initially associated with increasing availability of fresh produce in low-income communities of color through institutions such as farmers markets, scholars have critiqued this as imposing a right way of eating. Food justice scholarship has moved away from a focus on healthy eating toward a focus on community economic development, as food enterprises can stimulate job creation. This paper investigates the dual goals of the food justice movement through a case study in San Diego. While food justice has moved beyond promoting a love of produce and is increasingly oriented toward good jobs, for the urban gardeners in this study, the movement is still a lot about vegetables. They see food as medicine, and note the health benefits of moving toward a plant-based diet. Yet, they are reluctant to push this way of eating on others, as they do not want to

come across as elitist. Instead, they spread awareness that plant-based diets are an African tradition that should not just be associated with rich white folks. Rather than leading with nutrition, they lead with tradition, taste, and buying Black. To encourage consumption of vegetables, they aim to increase the supply of prepared food options in the community, and to market dishes as delicious rather than healthy, all the while supporting Black food entrepreneurs. When selling produce direct to the consumer through farmers markets does not achieve their vision of promoting health or supporting livelihoods, they re-imagine a strategy of promoting food justice through a neighborhood food supply chain.

Keywords

Food Justice, Health, Livelihood, Community Garden, Urban Agriculture, Farmers Market

Introduction and Literature Review

As a scholarly concept, food justice intends to shed light on the racial injustices that mark our current

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model of food production, distribution, and consumption. At its core, it aims to bring attention to how the food system has been shaped by institutional racism—from unequal distribution of land, to lack of labor protections, to supermarket redlining. After critiques that food justice focused too much on urban landscapes, leaving out farm labor (Minkoff-Zern, 2014), recent scholarship has incorporated grocery retail and restaurant workers into the movement (Myers & Sbicca, 2015; Sbicca, 2015, 2017; Sbicca & Myers, 2017). Food justice is thus concerned with worker justice as well as equitable access to nutritious and culturally appropriate foods among communities of color, including Native American food deserts as well as inner city food apartheid (Smith, 2019). While food justice has expanded to examine wage labor in the food system, this paper pertains to food justice as it relates to addressing food apartheid in Black neighborhoods.

In previously redlined neighborhoods in U.S. cities, inhabited mostly by people of color, food options are sparse. With fewer grocery stores per capita and an abundance of liquor stores and fast food restaurants, it is difficult to find nutritious food. Indeed, “What are often assumed to be either ‘natural’ or unintentional patterns in urban development across space and time emerge as the products of powerful socio-spatial forces” (Lindemann, 2019, p. 869). Institutionally racist policies designed these urban landscapes, and to counteract them food justice organizations have developed community gardens and farmers markets to bring more fresh produce into otherwise barren areas to improve the local foodscape.

Alkon, Cadji, and Moore (2019) assert that “Since the early 2000s, a group of activists working under the banner of food justice have used food as a lens through which to create grassroots economic development and increase the health of low-income communities of color” (p. 794). It is clear, then, that these are two key goals of the food justice movement: to stimulate community-based economic development on the one hand, and increase the health of low-income consumers on the other. But these two goals can be at odds, as the drive to increase income might necessitate selling to wealthier consumers outside of the

neighborhood, thereby taking healthy food grown within the community away from those who need it most. This paper will explore that tension and investigate how a food justice organization in Southeastern San Diego reconciles these two competing goals.

Food Justice as Access to Healthy Food

Food justice is considered a branch of the environmental justice movement. Rather than confronting disproportionate exposure to environmental toxins such as landfills and polluting industries, it addresses disproportionate access to fresh food (Alkon & Norgaard, 2009). Healthy food is an environmental good that should be equally distributed, and unhealthy foods are environmental burdens that no group should bear disproportionately. According to Alkon (2012), “food justice includes not only providing equal access to healthy food but also addressing structural inequalities in the food system and in the wider distribution of environmental benefits” (p. 12),

Food justice seeks to address diet-related illnesses among communities of color. Food justice activists focus on the injustice of disproportionate rates of diabetes in relation to the inaccessibility of fresh foods in the same way that environmental justice activists are concerned with the injustice of disproportionate rates of asthma in relation to proximity to polluting facilities (Alkon & Norgaard, 2009). The injustice that food justice seeks to remedy is health-related: “people of color in low-income communities having higher rates of obesity and diabetes” (Guthman, 2014, p. 1153). Thus, increasing consumption of fresh fruits and vegetables in low-income communities of color in order to combat diet-related illnesses is a key goal of the food justice movement.

Food justice is thought to be the intersection of the environmental justice movement and the alternative food movement (Guthman, 2014). Food justice came about in response to the alternative food movement, which is predominantly white, middle-class, and exclusionary (Alkon, 2012). Food justice activists working in low-income communities of color draw on many of the same tools as the alternative food movement (Alkon et al., 2019). The same institutions connect growers

to consumers, such as farmers markets, farm stands, community supported agriculture (CSA) harvest boxes, and health food stores. Other tools, such as community gardens and urban farms, improve the capacity of these neighborhoods to grow their own food. According to Alkon et al. (2019), the food justice movement has worked diligently to increase healthy food access in these places as activists “seek to address inequities in access to healthy food” (p. 794).

Food justice is a step in the right direction, compared to the alternative food movement, because it uncovers the institutional racism that has undergirded the food system and makes fresh produce more accessible to underserved communities. It is said to bring race, class, and culture back in, as the produce sold at farmers markets is more affordable and culturally appropriate than what is otherwise available through alternative food channels. “While these strategies are similar to marketing strategies employed by the local food movement,” notes Smith, “they are re-imagined to provide for and support marginalized communities” (2019, p. 828). For example, a farmers market in a Black community would celebrate Black culture and offer traditional foods such as collard greens, okra, and black-eyed peas (Alkon, 2012).

Insofar as the goal is to bring healthy food into underserved areas, especially urban communities of color, to increase access to fresh fruits and vegetables and combat diet-related illnesses, these efforts are applauded for bringing fresh produce into spaces that are not exclusively white and affluent. However, these efforts are also critiqued for trying to convince others to eat healthier. Guthman refers to this as the “missionary impulse” (2011b, p. 268), or the civilizing mission to bring “good food” to others (2011b, p. 278). These institutions intend to bring healthy food to poor communities of color, and in doing so place a moral marker on eating fresh produce as an indicator of goodness. In the “moralist branch” of the food justice movement, “eating more kale, for example, can mark one’s morality or sense of cultural distinction” (Bradley & Herrera, 2016, p. 101). Food choices are seen as signs of “heightened ethicality” (Guthman, 2011a, p. 141). As Bradley and Herrera state, “it is harmful to conflate dietary advice and morality,” as “non-

compliance with nutritional advice is seen as evidence of immorality” (2016, p. 102).

When initiatives to bring fresh produce to low-income communities of color merely replicate the institutions of the alternative food movement, they do not necessarily receive the support of the communities they are trying to serve, because they are viewed as unwanted missionary projects. When University Extension staff developed a CSA for a nearby Native American tribe, there was a lack of participation because recipients felt that healthy eating was framed as a white behavior, in part due to the heavy presence of kale in weekly shares (Slocum & Cadieux, 2015, p. 41). Through her undergraduate students’ field studies with food justice organizations, Guthman found that “even some of the more race-conscious alternatives lack resonance in communities of color” (2011b, p. 265). Her students noted that project participants were indifferent or even hostile. A participant who did not opt in to buying below-market price fresh produce brought to their neighborhood in a mobile pantry noted the reason why as: “Because they don’t sell no food! All they got is birdseed. Who are they to tell me how to eat?” (2011b, p. 273).

This missionary impulse also comes into play when food justice organizations develop workshops to teach people how to eat healthy. “Even though this food justice movement is far more race- and class-conscious than the mainstream alternative food movement,” explains Guthman, “much of its on-the-ground work is more or less the same: educating people” (2011a, p. 154). Educating others about how to eat healthy assumes that there is a universal consensus on what kind of food and what way of eating is good (Alkon & Agyeman, 2011). Guthman (2014) considers this to be universalizing the experiences of the dominant group and establishing it as the cultural norm. Slocum and Cadieux (2015) also advocate against the “targeting of nonwhite, poor, and female fat bodies for improvement through behavioral change” (p. 33). When “seemingly universal ideals do not resonate,” explains Guthman (2011b, p. 268), “it is assumed that those for whom they do not resonate must be educated about these ideals.”

Yet some African Americans perceive “healthy” food to be outside of Black culinary

tradition (Rodman, Palmer, Zachary, Hopkins, & Surkan, 2014). They believe that eating healthy will result in a loss of their heritage; they associate it with whites and do not want to conform to the dominant culture (Rodman et al., 2014). Based on the field notes of her students interning with food justice organizations, Guthman concludes that “the associations of the food, the modes of educating people to its qualities, and the ways of delivering it lack appeal to the people such programs are designed to entice” (2011b, p. 275). All in all, low-income urban Black communities do not necessarily want fresh produce straight from the ground; they do not necessarily value it the way that project leaders do.

Food Justice as Community Economic Development

While the food justice movement is critiqued for its emphasis on educating poor communities of color about eating healthy, another approach to the movement asserts that it is not just about food, but also community economic development. Food justice is not merely about spreading a love of produce; rather, the movement has been able to harness the cultural shift around increased consumption of local organic food to create jobs and income for underserved communities. Broad (2016) and Sbicca (2018) argue that food justice is not about food in and of itself anymore; it is about using food to advance social equity.

Food justice organizations should not just teach low-income communities of color “the right way to eat”; they should encourage “long-term community empowerment in historically oppressed neighborhoods,” explains Broad (2016, p. 198). Similarly, Bradley and Galt assert that “In contrast to promoting exclusionary dietary recommendations, food justice can and should promote self-determination” (2014, p. 174), meaning job creation and local economic development.

These food justice initiatives establish training centers to cultivate business skills and work toward equitable livelihoods for communities of color through income-generating operations (Cadieux & Slocum, 2015; Gottlieb & Joshi, 2013). In one of the first books on food justice, Gottlieb and Joshi note that “community-based food enterprises can be a tool for economic development” (2010, p.

125). “One of the explicit goals of many of these programs is to create opportunities for people of color to work in the natural food industry,” explain Alkon et al. (2019, p. 794).

Thus, food justice is not just about increasing the availability of fresh fruits and vegetables, it is also about economic development through market exchange. Yet, this emphasis on market-based change has been critiqued. Alkon (2012) notes that “The food justice approach is centrally about jobs and communities, and is inherently linked to the economic development and revival of communities and the creation of sustainable livelihoods” (p. 227). However, she also views it as “ironic that activists pursuing just sustainability would choose economic exchange as their strategy for reform” (p. 13) and admits that the admirable work of food justice organizations is constrained by their adoption of market-based strategies. Agyeman and McEntee (2014) question how food justice can be both anti-racist and pro-market at the same time since “structural and institutional racisms are embedded in the market itself” (p. 216). They are critical of reforms that “perpetuate the idea that FJ and profit are compatible” (p. 218) and reject “the commoditization of food for profit” (p. 213).

Part of this critique of the food justice movement as market-based is related to absolving the state of its responsibilities to provide basic welfare. Alkon and Guthman (2017) argue that food justice organizations’ strategy of alleviating food insecurity through the development and support of local food entrepreneurs is a poor substitute for direct assistance. McClintock (2014) also notes how the burden of food production and provisioning in low-income areas has largely shifted from the state to nonprofits and community-based organizations. According to Alkon (2012), “it simultaneously embodies a ‘roll-back’ of state responsibilities ... and a complementary ‘roll-out’ of market and civil society attempts to fill the state’s responsibilities” (p. 13).

While the food justice movement is critiqued for being market-based and entrepreneurial, other scholars have found the entrepreneurial spirit of the movement to be rooted in an ethos of Black entrepreneurship. Lindemann (2019) found a “uniquely Black class consciousness among Black

entrepreneurs” (p. 869). These entrepreneurs emerged out of a need to build amenities in their marginalized communities. She thus situates “entrepreneurialism as a way to fill an economic vacuum in otherwise economically and spatially marginalized neighborhoods” (p. 869). In her study, community residents spoke about entrepreneurialism as economic engagement for community benefit; it is an entrepreneurship based on community empowerment, to bolster Black economies (Lindemann, 2019, p. 870).

Indeed, Black food entrepreneurs build on “long-standing traditions of forming small-scale, culturally-rooted food provisioning businesses in order to provide sustenance to their own communities” (Alkon et al., 2019, p. 794). According to Lindemann (2019), Black entrepreneurship “is necessary in the face of a state and economy that have neglected, oppressed, and excluded Black communities.” As McClintock (2014) asserts, “Existing critiques of urban agriculture’s neoliberal nature can be counterproductive, amounting to throwing out the baby with the bathwater while failing to address the pressing needs on the ground” (p. 20). Even though they are market-based, income-generating food justice initiatives support community development. However, because they are market-based, they may not support the initial objective of the movement.

Tension between Health and Economic Development: Healthy Food Sold to Those Outside the Community

While increasing access to fresh produce in low-income communities of color is certainly one of the goals of the food justice movement, and fostering income for residents through food-based businesses is another, it remains uncertain whether these goals are compatible or contradictory. Does working towards one undermine the other? According to some scholarship, there is tension between the community economic development approach and the combating health disparities through access to fresh produce approach, since consumers from outside the community have the capacity to pay more.

Fresh produce sold to the community can sometimes be more expensive than residents are willing to pay (Broad, 2016). Even though food

justice projects tend to offer produce to their communities at subsidized costs, it remains more expensive than what could be purchased at a grocery store (Alkon & Agyeman, 2011). One food justice enterprise found that their customers could get produce cheaper at the 99¢ store; for US\$15, the cost of a CSA share, they could get 20% more produce at the 99¢ store (Bradley & Galt, 2014). Despite efforts to subsidize the cost of buying fresh local produce direct from producers, it often remains out of reach, putting food justice activists in the position of trying to convince low-income people to spend more money on food than they otherwise would (Alkon & Agyeman, 2011). Thus, the availability of fresh produce in poor neighborhoods does not automatically lead to increased consumption. As a result, food justice initiatives have been critiqued for serving mostly people outside the community.

For example, the West Oakland farmers market mostly serves middle-class African American shoppers who live outside the neighborhood in more affluent parts of the city (Alkon, 2012), marking the “absence of low-income African Americans in whose interest the farmers market began” (p. 109). In addition, the Mandela Foods Cooperative in West Oakland provided an important source of income for its worker-owners, yet tended to draw a predominantly white customer base (Alkon, 2012, p. 108). As a result of local residents not valuing the fresh produce sold by them, the Bay Area-based food justice project Dig Deep developed relationships with high-end restaurants to negotiate high prices for their produce (Bradley & Galt, 2014).

In these examples, the initiatives promote the food justice objective of community development while not necessarily increasing consumption of healthy food among residents. Although some might critique these endeavors for serving consumers outside the community that lacks access to fresh produce, others might applaud them for supporting the livelihoods of young people of color. Regarding Dig Deep selling their produce at a higher price to trendy restaurants in other parts of the city, Bradley and Galt say that “Condemning such engagements with high-end markets... would be too dismissive,” because the food justice goal of

community development is still supported: “decent jobs are fundamental components of larger scale structural changes central to the food justice vision” (2014, p. 179).

In order to stimulate job growth and economic development, marginalized and underserved community members must be able to make a return on the food they sell. On the other hand, in order for fresh produce to be more accessible to marginalized and underserved community members, it must be affordable. Markowitz (2010) calls this the “twin goal” of the food justice movement. It must simultaneously generate return for the vendor while also making produce affordable for low-income shoppers. However, the strategy of establishing farmers markets in low-income communities is complicated by the fact that the small farmers are themselves economically struggling (Markowitz, 2008). For Cadieux & Slocum (2015), “those most marginalized by the current food system” should “take a leadership role in providing food for their own communities” (p. 5). Yet, those who are most marginalized deserve to receive fair economic return for providing food, and often that does not mean selling produce to others in their community who cannot afford to spend as much as consumers in more affluent parts of the city.

Methods

This paper addresses the tension between the health and community development goals of the food justice movement by exploring how urban community gardeners reconcile contradictory logics. According to Slocum and Cadieux (2015), “Part of the process of doing food justice is to determine the points where efforts toward the ideal get stuck, and what conditions enable them to keep going” (p. 30). Broad (2016) also points to how food justice is fraught with tension and “contrasting priorities” (p. 80). Rather than overly romanticizing complicated efforts, it is important to confront and unpack inconsistencies.

During 2014-2016, I volunteered with a food justice organization in San Diego. In addition to consulting on grant applications and taking minutes at community conversations, I tended a plot at

the community garden. While I was there, a few occurrences stood out to me, that I perceived to be contradictory. One involved a community gardener who used his plot to grow sweet potatoes. He transformed the fresh produce into sweet potato pies and sold the baked good at a trendy farmers market in an affluent part of town. I became intrigued by this tension between generating revenue for Black farmers and vendors, and increasing the supply of fresh fruits and vegetables in a neighborhood suffering from food apartheid.

Is the overarching goal of the movement to get the produce grown in the neighborhood to people in the neighborhood who are at risk of suffering chronic health issues, or is the overarching goal to create jobs and generate income for the people who grow the food? What about economic development initiatives that stimulate income without a corresponding increase in consumption of fresh produce among the residents of the neighborhood that the program initially sought to assist? Is income to food entrepreneurs enough in and of itself, or does selling food outside the area defeat the purpose? This research project sought to explore that dilemma. A few years after moving out of the area to take a job as Assistant Professor, I returned to investigate this tension further through an additional month of field research in July 2019.

Village Produce¹ is a food justice organization in the southeastern corner of the city of San Diego. This area of the city is historically Black. It was previously redlined and currently characterized as a food swamp, due to the lack of grocery stores and overabundance of liquor stores and fast food restaurants (Joassart-Marcelli, 2018). Village Produce is run by Wanda, who is a long-time community organizer in the neighborhood. Food justice organizations have been critiqued for being run by people from outside the community (Bradley & Herrera, 2016; Broad, 2016; Cadieux & Slocum, 2015; Lindemann, 2019; Pendergrast, Smith, Liebert, & Benzer Kerr, 2019), but that is not the case with Village Produce. Wanda was active in the area, working toward community wellness, long before she established Village Produce’s food justice agenda. Bradley and Herrera (2016, p. 102)

¹ The name of the organization and all respondent names are pseudonyms.

note that leadership positions within the food justice movement have been colonized by well-educated white professionals, and Bradley and Galt (2014, p. 177) call for meaningful representation of and leadership by people of color in the movement.

This paper explores the perspectives of Black gardeners and food justice advocates in South-eastern San Diego (SESD). During one month of participant observation, I conducted audio-recorded loosely structured interviews with 20 urban gardeners. These participants were recruited through Village Produce at the weekly farmers market and during volunteer days at the community garden.² I coded interview transcripts inductively, allowing the themes to emerge from the data. The findings presented below draw on a core group of Black gardeners who tend plots at the community garden.³ While I was interested in exploring health-livelihood tensions broadly, the specific themes of plant-based diet, African culinary traditions, not pushing healthy food on others, marketing taste not health, Black entrepreneurship, and being nonjudgmental came from the respondents themselves.

Findings

Food As Medicine: Plant-Based Diet

According to Randall, food justice means “adequate sensibility to healthy foods. Especially when we look at the health disparities.” So eating healthy foods that are good for one’s health and that combat diet-related illnesses is an essential component of food justice for these respondents: food justice is about health, and it is about food. Talking to community gardeners, it became clear that they see the people in their community dying of chronic conditions as a huge problem that could be preventable with better nutrition. Randall is concerned about the strokes and high blood pressure that are

prevalent in his community and attributes these conditions in part to unhealthy diet. “A lot of us, in our younger days, we weren’t eating correctly,” he explains, but now he is committed to eating not just fresh produce, but raw organic produce. As Randall explains, “If I don’t get organic into my body now, that’s gonna be more pills I gotta buy later.”

These health-conscious gardeners see food as medicine. The antidote, from their point of view, is eating more vegetables and less meat. One of the themes that came up again and again is plant-based diet. These gardeners are concerned with eating healthy, and eating healthy to them means eating a plant-based diet. Many of them are vegan, and even those who eat meat are dedicated to minimizing the amount of meat they eat and maximizing the amount of fresh fruits and vegetables.

Daryl has been vegan for 40 years. He was vegan before there was even a word for it. 1977 was the turning point for him, when he started moving away from a meat-based diet toward a plant-based diet. He started eliminating things from his diet, and his system responded well. He does not even eat much bread or wheat; he eats a lot of raw foods. Star is also vegan. As I interviewed her she was eating a grilled Portobello mushroom and seaweed sandwich with avocado and tomato on wheat bread. She grew up on a “slave diet,” she explains, eating “pork, hamhawk, chitlins, bones: things that are high in fat and cholesterol, that are not good for you, that clog your arteries and give you all types of diseases.” But she has “totally pulled away from that” and is “now focusing on health.” “In order to keep yourself healthy, you have to be vegan,” she continues, and “find products that are organic.”

For several gardeners, their diets have changed as a result of major health complications. Cleo admits to eating poorly in her youth, but is vegan now because she thinks it is better for her health.

² The garden is partially an allotment garden, where community members rent raised beds for \$5 per month, and partially an urban farm, where the garden manager leads volunteers to plant, water, and harvest produce to sell at the farmers market. In addition to tending their own plots, the community gardeners featured in this article also help Village Produce tend to the urban farm during community volunteer days, and are otherwise active in community events and vision-building conversations held by the food justice organization.

³ All of the respondents quoted in the findings section are African American. Their ages range from early 30s to late 60s.

At only 33, she has already suffered and overcome a serious health scare. She attributes her recovery to her change in diet: “Then I re-evaluated the things that I was putting into my body, and when I began my plant-based lifestyle, slowly it started to go away. Now I know the difference of how my body functions and feels having a plant-based diet.”

Gardeners like Rhonda, Gladys, and Kelly are not currently vegan, but still value plant-based diets. Rhonda admits to challenges she has faced in her attempts to go vegan. Growing up, they had big pits in their back yard where they would roast whole animals. As an adult, she has tried to get away from that “ridiculousness.” She has been vegan during periods of her life, but has never been able to stick with it because “chicken is always calling my name.” Yet, she is still pursuing the goal of eating a plant-based diet. Her dream is to eat only what she grows. According to Rhonda, “Some people have to walk into the wall,” for them to realize they need to make a change in the way they eat; and “People like me have to walk into the wall a couple times before they learn to go around it.” She has struggled with giving up meat, even though she knows she feels better without it.

About whether or not she is vegan, Kelly replied that she is “not there yet ... in a dream I would be.” Growing up, she was raised on 60% canned vegetables, and 40% fresh, yet “slowly but surely,” she is moving away from canned goods and eating more fresh produce. Andre is not vegan, but he does try to minimize meat and maximize vegetables: “I’ll do a small meat portion of fish or chicken and 4 or 5 vegetables, because I know at 55 years old, that’s what my body needs. Eating vegetables is not a guarantee not to get cancer, diabetes, high blood pressure, stroke, but it helps the odds.” This reaffirms that health is a driving force for most of the Black urban community gardeners in this study.

African Culinary Tradition: Greens

While eating a plant-based diet is important for the health of gardeners, they are also motivated by cultural tradition. Of special importance is collard greens. It is not just about eating fresh produce, but fresh produce that is culturally significant. For

Andre, his garden plot is very important to him because it allows him to grow collard greens for his mom. “We eat collard greens once a week in my family,” he exclaims. “Collard greens, that’s the southern tradition,” explains Daryl, “that’s really big, you get your braggin’ rights on how you prepare it.” He does not even cook collard greens, he eats them raw by chopping them up very finely and putting oil on to soften them up. Randall used to prepare collard greens with meat, but not anymore. “Back in the day I would use ham hock, pork, and all that seasoning, but I don’t cook like that anymore.”

“Greens are very important in Black culture,” Star explains. “You take them and you fry them or you sauté them; some people boil them but that’s really not the best way because you kill the nutrients.” However, the greens that Star is talking about are not collard greens, but callaloo greens. In her plot, she is growing the African callaloo plant, which looks just like amaranth. The leaves are very popular in Jamaican and African cuisine, she asserts. And so the Black culture that she is referencing is not the soul food tradition of the Southern United States that others are nostalgic about, but the Black culture of Africa and its diaspora in the Caribbean.

Yet even though these gardeners are personally committed to eating more fresh produce and less meat because they think it is good for their health, and they see it as part of their culinary tradition, they are hesitant to push this way of eating on other people in their community because they realize that there is a negative connotation attached to healthy eating.

Plant-Based Diet Not Just for Rich White Folks

While the gardeners in this study value a certain notion of healthy eating, they are careful not to be too dogmatic when spreading awareness. Others in the community, including their family and friends, are reluctant to give up meat and eat more plant-based because they associate veganism as a rich white person thing.

Plant-based diets “get a bad rap because it is associated with people who have money, so people who are poor, especially urban Black folks, they look at it and think ‘that’s something for rich

people,” explains Cleo, “I get that a lot: ‘Veganism? That’s rich white people stuff.’ People are like, ‘you don’t even eat chicken anymore?! You’re Black, you’re supposed to eat chicken.’” For the people she is surrounded by, they associate Black culture with eating meat. She wants to spread awareness that not all Black cultures eat meat, and that there are plant-based diets in Africa. “It’s a lack of understanding that tons of people eat plant-based diets across different cultures. People over here are like ‘Black people don’t eat plant-based’ and I’m like where have you been, there are tons of Black people who eat raw vegan food.”

When people say that being vegan, or eating a plant-based diet is a white people thing, Cleo’s response is always, “Oh, I didn’t realize that living healthier, living longer is only for privileged white folk.” “When you convince somebody that what can be life changing and life altering and positive for them is negative, then you’ve colonized them,” she continues. This association between eating healthy foods and affluent whiteness is a “stigma that is holding us back from learning to do something that can elevate us in so many ways.”

According to Cleo, there is a misunderstanding of what parts are tradition. “People talking about the tradition of all-together food pots with everything stuffed in there, like ham hocks and all these different chitlins, people are like ‘that’s culture,’ and then you realize: is it? Part of it is rooted in culture prior to colonization, but a lot of it is what we did on the slave plantation because we had nothing else. We had no other options, so we ate this junk.” Cleo believes it is time to separate those two things: slow pot cooking is a tradition of west Africa which should be held on to, but “stuff like chitlins that have no nutritional value for us, that are bad for us” was the “have-to” necessity.

Star is also passionate about how the so-called traditional African American diet is a colonized diet. She notes that many people in their community were raised on a “slave diet,” which consists of “a lot of meats, a lot of potatoes, a lot of pork, but it wasn’t a lot of vegetables.” The only vegetables that are traditional are eaten on holidays, like green beans and collard greens, but even then they are “stuffed with pork,” she laments.

Rhonda also mentions how “a lot of our dietary history was from slavery,” consisting of “scraps,” of whatever was left over from the animal. “Of course, we make a dollar out of 15 cents: you give us intestines, we make chitlins; that is just mode of survival, what you have to do.” She goes on to explain how people think that chronic health conditions are hereditary but it is not, “it’s really your diet; it’s not something that is in your family, it’s just the culture that’s carried on. . . . When you come from a background where you weren’t given the best choices, when you were given literally the scraps that were left, then you have to outgrow that legacy; you have to do away with that legacy and break that chain.”

Not Pushing Healthy Food on Others

Outgrowing the legacy is complicated by the aversion of others to being told what to eat. While Daryl has been vegan since the 1970s, he is reluctant to preach about the benefits of veganism to others. He overheard a conversation once that has stuck with him. One of the stockers at a grocery store said to another: “‘You know who the worst ones are, these new vegetarians. They tryin’ to convert everybody.’ And I heard that. Even though they weren’t talking to me, I needed to hear that.” Because of this incident, he does not go around telling people about his diet. “If you don’t say anything, I won’t say anything. It’s not about forcing people to change.”

Star, another vegan, also takes a cautious approach. “You can’t just tell people they are wrong. Because some people don’t realize they’ve been living their whole life deficient from a lot of vitamins and minerals because they don’t eat vegetables. They barely eat fruit. People are literally walking around with a lifetime of deficiency that is only going to catch up to them. It’s hard to tell people ‘you’re not doing things right.’ You have to have a certain way of doing it. And that takes a very sensitive process.”

When Cleo tells people to go vegan, they pull back. “Especially for the Black community, you have to give it to them a little bit at a time, and let them process, let them choose what they want to do, not make them feel like they have to change completely and go right into eating no meat, no

dairy,” because then it will seem unattainable and out of reach.

Walter explains how certain villages in Africa eat vegan and organic, they just do not call it that. Plant-based diets have existed in other cultures, but rather than Black people associating their own African roots with plant-based diets, they label them as a “wealthy white person thing.” And this is a huge hindrance to the movement, continues Walter, because then it seems elitist. “White people ... they gloat in that,” he explains, “That’s what Whole Foods and Jimbos is about. It’s an ‘I’m over here and you’re down there’ kind of thing.”

Gladys, who is not vegan, does feel judgment from food-conscious people she knows from outside the garden. “When people say ‘why aren’t you vegan,’ I do feel like they’re making a judgment call. For them, it is not enough to give up meat and dairy. Once you are eating fruits and vegetables, then it is not enough unless they are also organic.” She feels that this is an unattainable ideal. It is “not enough to be a plant-based consumer; it’s like, ‘that’s not organic?! That means there’s chemicals on that!’ Even if you’re eating a salad, it’s full of chemicals.”

For people she knows, especially those who are low-income, even if they try to eat healthier, if they feel that judgment that their non-organic salad is not good enough, then they’ll give up on eating healthy altogether, because if they are going to be criticized for not being healthy enough, then why even take the baby steps in the first place. Their reaction is: “‘Forget it then, I’m just gonna do me. I cannot afford a \$5 head of lettuce,’ so they’ll forgo salad altogether and go back to the rotisserie chicken.”

Market Taste not Health: From Raw Produce to Prepared Food

Because of this resistance to being told that the food one eats is not healthy enough, in order to get people in their community to eat more vegetables, respondents noted that you have to lead with flavor. Health is a motivating factor for most of the gardeners, yet rather than leading with nutrition education, this food justice organization seeks to spread awareness and appreciation that vegetables can actually taste good. According to them, the key

is to lead with taste, not health. It is not about preaching to people that healthy food is what they *should* be eating, it is about opening their eyes and palates to dishes prepared with more vegetables and less meat.

Randall notes that it is hard to get customers to buy produce from the garden’s farmers market stand when they can get it cheaper across the street at Food4Less. Community members will not spend more to get local organic produce at the farmers market, says Randall, “until you get them to realize it is healthier for them.” But, “you can’t come at that angle,” he clarifies, regarding marketing the food grown at the garden as healthier.

Wanda, the director of Village Produce, has friends that “hate when people tell them what is good for them, what is healthy.” They get mad, and say ‘stop forcing healthy down my throat.’ “We can’t shove that down their throat,” explains Wanda, “We can’t call things healthy, can’t push a healthy agenda. At least not to my neighbors.” Their “Gut reaction, when you say healthy food,” she continues, is that they “don’t want you to tell them what to do, what to eat, how to live.”

Instead, her angle is to make food delicious first, then tell people that 80% of it is raw. But do not tell them it is raw from the start. “You have to lead with the deliciousness,” explains Wanda, “Taste, that’s how you market food to people.” Randall also wants to teach his community that, depending on how you prepare them, vegetable dishes can taste good. “It’s about changing habits, trying new things.” If people who do not think they like vegetables taste them prepared a different way, they might become more accustomed to eating it.

Star takes a similar approach with her vegan catering company. She wants to repair the relationship between Black people and vegetables, but to do so, “you just gotta make it fun.” And you have to give them choice and agency. “You gotta tell people: ‘eat what you want, but taste this.’” Her strategy is to take foods that people already love and turn them into vegan versions of the same dish. “It’s all about getting people to taste it, because once people taste something, as long as it’s good, it doesn’t matter to them. So that’s the trick that I use. It smells good so they can’t help but go

ahead and try it.” Making healthy food delicious is her approach, “Because people think healthy means nasty and bland. And it doesn’t. You can still eat delicious things, but they can be good for you.”

“Even if you think people should be eating less meat, it’s about the way you approach them,” explains Gladys, like “Hey, have you ever tried this patty? Oh, this is great. I’ll tell you what’s it made of: I made it with only beets, blah blah. Oh, this is so great.” According to her, it is important to offer people yummy things and focus on the positive, rather than make people feel bad for eating ‘bad’ food. “Let’s find a way to share ideas in a nonjudgmental way about what we can do with our diets.”

“A lot of the diet that we partake in as a culture is really slave food, so to provide that alternative is important,” explains Rhonda. Rather than telling people what they should not be eating, offer them what they should. “We spend a lot of time talking about what is wrong, instead of providing what is right.” She and her husband run a catering business, and their objective is to provide an alternative to the typical southern food diet that people will actually want to eat. They cook alternative foods that are culturally relevant but not as detrimental to your health, “so instead of mac ‘n cheese, it’s cauliflower and cheese.”

It can be seen, then, that rather than marketing fresh fruits and vegetables straight from the garden, Village Produce and its community gardeners who want to increase vegetable consumption in the Black community in SESD, think that the best way to do it is to offer prepared food options that taste good. Thus, this food justice organization is moving away from just selling raw produce direct from producer, to selling prepared food options. As it stands, selling fresh produce straight from the garden to neighborhood residents at farmers markets is not working, so they are developing other models to get neighbors to eat more vegetables while simultaneously stimulating economic growth and supporting the livelihoods of Black food entrepreneurs.

When I asked gardeners about whether they were interested in selling the produce they grow directly to consumers through the farmers market

model, they were reluctant. About becoming a farmer, Calvin says, “It’s not quite as easy as people think it is. If I can’t give it away, I’m not gonna try to sell it.” Calvin is a prolific gardener, yet his neighbors do not have a taste for the surplus vegetables he produces. Since he has so much difficulty giving it away, he is hesitant to dedicate the time and energy into setting up a market stand.

Rhonda, who is a teacher, talked about a student of hers who was interested in food justice and urban agriculture, but struggled to succeed. “She wasn’t making it as a farmer,” explained Rhonda, so she had to go outside of the community to sell produce because people weren’t buying her produce in SESD. “Poor Black people aren’t going to pay extra to buy vegetables from farmers markets down here because they don’t even buy vegetables in the grocery store,” says Star matter-of-factly. “It doesn’t matter how much produce we have available” at the farmers market, laments market manager Wanda, “they don’t buy it.”

Rather than give up on the vision of spreading vegetables through their community, they have modified the vision to become more realistic. If people are not going to buy fresh produce directly from farmers, then offer them prepared food options instead. Offer them healthy versions of dishes they are already comfortable with. Rather than composting the abundance of produce that does not sell at the farmers market, whatever is left over could be cooked up and sold. “Showing people how you take it from A to B to C is important,” says Rhonda. So simultaneously selling fresh produce directly to consumers, but also selling fresh produce to prepared food entrepreneurs who cook the produce and sell the ready-to-eat food to customers is her vision. Ideally, this is visually happening right in front of them, she continues, so they can reflect on where the ingredients are coming from: set up a table with fresh produce, then have another booth that cooks it on the spot. This not only creates more income-generating opportunities in the area, but it also facilitates the spread of healthy food.

Kelly has a similar vision, which she refers to as a flow chart. She envisions farmers market growers supplying food entrepreneurs with produce for them to prepare cooked food options. If

ten people grow food, and ten people start restaurants, then they can be mutually beneficial to each other. Cooks need fresh herbs in their meals, she explains, and they would rather buy it fresh than to go Food4Less, so they can source it locally. “One just funnels right into the other,” she gleefully exclaims.

Wanda calls this vision the ‘neighborhood food supply chain.’ It intends to offer healthier local food options, all the while creating income for people who grow, prepare, and sell food. An indicator of success would be an increased supply of produce in SESD, whether it is raw produce or prepared food. “We would like to work with and encourage people to be entrepreneurs in the food system. We see food as a career path,” explains Wanda. In order to make food entrepreneurship a viable career path, it is important to spread awareness within the community about the importance of buying Black.

Black Entrepreneurship: Get By but Give Back

According to Rhonda, entrepreneurship is “absolutely” part of food justice. She thinks it can be both about health and about entrepreneurship. Food justice means “eating healthy and supporting each other,” according to Kelly. “We need to support Black business,” she further asserts, “we need to educate our community on why it is important to shop here.” Randall tells me that “some of the biggest talks I’ve had with people have been about supporting Black businesses.” People at church look at him as if he is crazy when he says they need to support the people of the Black community when making purchases.

“Southeastern San Diego is a mixed economy,” explains Wanda, “not everybody is poor, some people have purchasing power.” To create a neighborhood food supply chain, she wants people who live in the neighborhood to use their purchasing power to buy from people in the neighborhood. When passersby at the farmers market complain that 99c store food is cheaper, the response should be, “it is going to cost a little bit more but it is benefiting Ms. so sand so, and you know her children.” Wanda is adamant about getting people to spend their food dollars in the neighborhood instead of going outside the neighborhood to food

shop: “People buy food every day; they’ve got to use their purchasing power for something.” “One thing we do know, we all have to eat,” says Randall, explaining that people do have purchasing power, and that money should go to entrepreneurs within the Black community.

There was a tremendous amount of respect in the urban gardening community for Black entrepreneurs—for people trying to make their food businesses work. They want people to put themselves out there to grow, cook, and otherwise create healthy food options to offer in the local marketplace, and for others to consciously use their purchasing power to buy from these local Black artisan entrepreneurs. Yet, when local purchasing power falls short, inevitably these Black food entrepreneurs will need to seek customers outside of SESD.

Respondents did not fault small Black businesses for selling their products in other parts of the city. Jamal, the former community gardener who sold his sweet potato pies at a popular farmers market in a trendy part of town and inspired my research question, recently opened up a soul food restaurant in another trendy neighborhood. His enterprise is located in a wealthy white community that previously established racial covenants barring non-whites from moving there (Joassart-Marcelli, 2018). The same zoning laws that greenlined and created exclusionary affluence there had redlined and created concentrated disadvantage in SESD. When I asked community gardeners how they felt about Jamal expanding his business, and whether he would still be considered under the umbrella of food justice, they defended him. Walter was initially on the fence, saying that his business was borderline food justice because while Black food entrepreneurs should be applauded, it would be better if he had set up his business in SESD. Then Cleo jumped in and said, “I feel like at the end of the day, you can’t even try to judge that, because when everything is taken away from you, and you’re given nothing, you have to think about your community, yes, but you also have to think about your extended family, your immediate family, and yourself.”

Even if it does not perfectly fit their vision of food justice through a neighborhood food supply

chain, they support Black food entrepreneur efforts to make a living for themselves. Cleo acknowledges that opening a business in SESD might not make enough business to stay afloat: “So if you go somewhere where people are actually going to keep your business running, you are doing that for you and your family.” Yet, once that business is up and running, it is important to give back to the community: “If you can go there, make a storefront there, and make enough money to know that your business is sustainable, if you do that, you have to make sure to come back.”

Walter ultimately agrees with Cleo and defends Jamal because “he’s here and there.” Even when he was selling his product at the other farmers market, he was here selling at this farmers market too. And that, according to Walter, and also Randall and Daryl, is evidence that he supports the community: by taking the time to sell his product in a poorer area that does not have as many food options when he could be maximizing revenue by only selling in affluent areas.

With regard to Jamal selling produce grown at the garden to people outside the community through his sweet potato pie stand at the popular farmers market in midtown, Randall says, “I understand it because that’s how he makes his living.” Even though he seemingly violated the food justice principle of using land and resources from within a low-income neighborhood of color to grow healthy, affordable, culturally appropriate food for the people of the neighborhood, fellow community gardeners did not see it that way. They defended him for trying to make a living, and justified selling to people outside the community as necessary to fully support one’s livelihood; yet what really makes a difference, according to respondents, is also supporting their community by selling products within SESD.

Daryl defends Jamal also because he continued to sell at the SESD farmers market even though he was simultaneously selling at the popular farmers market. “My thing is this: he was growing food in the garden and using our venues to sell, but if you are in the business of selling, then you are going to find other venues. I don’t see any injustice.” Plus, he continues, when Jamal was at the garden, if somebody were to walk by and ask for some pro-

duce, he would not hesitate to say “let me hook you up” and give it to them.

Besides selling product within SESD in addition to outside, other elements of giving back include providing jobs for people from the community and charging community members less than those from outside. “If you are going to start a business and it’s not gonna be inside the community,” explains Cleo, “the least you can do is hire folk who look like us, because if you are not offering the jobs to us, you are not giving back.” Kelly’s take is it’s acceptable to sell products to people outside the community, in wealthier areas, as long as you charge them more. She thinks that it is important for people in SESD to use their money to buy from each other, yet she also thinks it is okay to sell outside the community as long as you charge people in SESD less for the same good.

Rhonda has students who are enthusiastic about starting healthy food businesses. I asked how she would get her students who want to sell their product in wealthier areas to also sell in SESD, and she responded: “You do both. We have a farmers market in this town every day of the week. Just because you go to Little Italy on Saturday doesn’t mean you can’t come to Southeast on Tuesday. You allow Little Italy to sustain you until Southeast builds up, until people get that education, until people understand the importance of it. You don’t give up here. But you know that you have to eat, and your family has to eat. So you do go to Little Italy, you do go to Ocean Beach. You do all those places, but you still come back home.”

Star, also a food entrepreneur who runs her own vegan catering business, similarly asserts that there is a delicate balance between being able to support oneself and also provide for the community. She is trying to promote herself to companies that cater lunches for their employees, so she is open to pursuing business outside the community, but she would never do so completely. “I’m open to work with anybody but I mostly work in the community because that is where the need is.” She is critical of people from the community who, in order to establish themselves, only cater to wealthy clientele in other areas: “To me that is somebody who is not as conscious to the lack in the community and doing things purely for a financial gain.”

She has to make a living for herself, but she is also motivated by the need to spread healthy food to her neighbors. “My business is for my community and it’s also for profit,” she explains, “But I don’t handle my customers like I’m trying to squeeze every dime out of them, because I know these people, I know we’re all in the same pot. We’re all on the same level, trying to establish ourselves, being hundreds of years behind in the game.”

There is a delicate balancing act when creating a local supply chain that simultaneously offers healthy food options in the community and facilitates Black entrepreneurship. Black entrepreneurs need to charge for their services, but not too much; and Black consumers need to be educated to spend a little more, to utilize their purchasing power to support Black business.

A Nonjudgmental Approach to Food Justice: Every Angle at Once

Rhonda practices an anti-extremist, baby steps approach to changing one’s relationship with food. “It’s a lot that we have to go through,” says Rhonda, “It’s not as simple as here’s some kale. You have to go through a whole undoing.” They have been conditioned to eat a certain way because that is what is available to them, and that is how they grew up eating. So unlearning what is cultural and what is tradition and then re-learning a new way of eating takes time. It is a gradual process and will not happen overnight: “There are levels to this. You have to start somewhere. You have to crawl before you walk.”

I asked Rhonda to suppose that someone from the community eats Church’s Chicken every day and does not otherwise get fresh fruits and vegetables in their diet; is it a win for the food justice movement if they go to Food4Less and starts eating salad, albeit a pre-packaged salad, not a salad made from the tomatoes and basil sold at the farmers market where we were standing. She said it was definitely a win: “Any time that you are showing progress, that you are going away from the Church’s Chicken, then that’s a start. Then we get you from over there [at the Food4Less] and we get you across the street here [at the farmers market], and that’s another win, and then we get you to growing your own, and that’s another.” Any step in

the right direction is a win, according to Rhonda, even if residents are not preparing meals from scratch from produce they grew themselves. Eating vegetables from a big box grocery store is better than not eating any vegetables at all. “It’s progress. That’s what I see as a win, because that extreme stuff is not sustainable.”

Rhonda practices a nonjudgmental approach to food justice, because “people don’t know what they don’t know. You don’t necessarily know that you need justice if it seems normal to you that you have a Jack in the Box on every corner.” Although Village Produce gardeners are critical of the food swamp layout of their neighborhood, inundated with fast food restaurants and liquor stores, they do not judge their neighbors for eating at Jack in the Box; in fact, director and market manager Wanda regularly shows up at the farmers market with a Jack in the Box cup to keep herself hydrated. She asks passersby if they sell fried okra there and says in a relatable way, “I gotta check that out.” For these food justice advocates, it is not about intimidating others with their foodie ethic, but meeting others where they are.

For Wanda, meeting others where they are could be as easy as if every fast food establishment were to put one vegetable on their menu: “You can put broccoli on anything. You can put broccoli on french fries with cheese.” That would make progress in the right direction; it would increase the accessibility of vegetables in the area, even if vegetables are being accessed through a fast food restaurant rather than a farmers market or Black food enterprise. The approach to food justice in SESD is to come at it from every angle: get residents to eat more vegetables even if they are not grown locally and do not support Black food entrepreneurs, and simultaneously support Black food entrepreneurs even if the food is not sold locally and instead taps into a wealthier consumer base.

The dual goals of the movement might not be resolvable through the singular method of selling produce straight from the garden through a farmers market, but the same organization can work towards both goals simultaneously through different means. A variety of tactics can stimulate demand for vegetables: marketing taste not health, dispelling myths that a Black diet is a meat-based

diet, offering prepared dishes rather than raw produce, and spreading awareness of the importance of supporting Black businesses. Meanwhile, another set of tactics can stimulate livelihood security for Black food entrepreneurs at different stages of the food chain through tapping into larger markets while still offering their goods to the community.

In this two-pronged approach, one end can generate revenue that supports Black food entrepreneurs even if food is not consumed within the community; at the other end, if those with processed meat-based diets start to integrate more vegetables—even if it is prepared food, not raw produce, and even if they get it from a supermarket not a farmers market—it is better than nothing. A prevailing discourse among these health-conscious community gardeners is that you have to meet people where they are and allow them to move at their own pace. As long as people are taking small steps to improve their relationship with fresh produce, it is progress. As long as Black livelihoods are being supported, even if they sell outside the community, it is progress. They are working towards both goals at once, but not necessarily in the same transaction. It is not about prioritizing one goal over another; it is about touching all angles at once.

Conclusion

There are two key goals of the food justice movement in Southeastern San Diego: to increase the availability of nutritious food options in the neighborhood that improve health, and to support the livelihoods of people from the community through Black food entrepreneurship. This paper set out to explore how food justice advocates reconcile the tension between improving the health of community members and supporting the livelihoods of Black entrepreneurs trying to establish themselves.

These health-conscious community leaders recognize the constraints holding people back from buying, preparing, and eating more vegetables. Rather than relying solely on the strategy of selling fresh produce straight from the garden to low-income community members, they are working towards developing a neighborhood food supply chain, wherein urban gardeners supply Black food entrepreneurs with raw produce to create nutritious, culturally appropriate meals. Traditional

dishes are re-made with less meat and more vegetables, in an effort to simultaneously support the health and livelihood of community members.

Yet, towards the goal of improving health, it is a win if community members start eating more vegetables, even if they are not purchased from Black food vendors. And, towards the goal of supporting livelihoods, it is a win if Black food entrepreneurs make a living for themselves, even if that necessitates selling outside of the community. Any step toward improving Black livelihoods through food entrepreneurship, even if they cater to affluent customers in historically white neighborhoods, and any step toward promoting health through spreading vegetables, even if it is fried okra from Jack in the Box, is a step in the right direction. These urban gardeners promote a nonjudgmental, anti-elitist food ethic that aims to meet people where they are rather than intimidating them by insisting that meals should be prepared by oneself from scratch with seasonal produce straight from the garden.

The food justice movement has been critiqued for being educational and entrepreneurial, yet these are key to urban community gardeners in SESD's food ethos. Only, rather than aspiring to educate the surrounding community about nutrition, they seek to spread awareness that vegetables taste good and that plant-based diets are part of their African heritage. The educational component is not that vegetables are good for you, but rather that vegetables are Black. Their vision of food justice is market-based—connecting growers to prepared food vendors to consumers through a neighborhood supply chain—but this entrepreneurial spirit is rooted in Black entrepreneurship and making consumer-based change not just through buying local, but buying Black.

The alternative food movement has long been considered white and exclusionary. Food justice is oriented toward racial and economic justice, yet “even those more race-conscious projects tend to get coded as white” (Guthman, 2011b, p. 275). The association between local organic produce and whiteness is so strong that even when efforts are made to distribute affordable, culturally appropriate food in low-income communities of color, it is perceived by the community as a “missionary

impulse” to spread white cultural norms. The gardeners in SESD are aware of this connotation, so rather than trying to increase vegetable consumption through a discourse of “health,” they aim to spread awareness that eating a plant-based diet is part of their African heritage: that eating more vegetables and less meat is not eating “white.”

In breaking this association between healthy food and whiteness, and between Black culture and meat, gardeners know it has to be done in a delicate way. They do not want to come across as too preachy or off-putting. This demonstrates the “importance of a less messianic approach to food politics” (Guthman, 2011b, p. 264). The nonjudgmental food ethic of gardeners in SESD knows that changing eating habits is a gradual process that takes time, and steps. Realistically, neighborhood residents are not going to drop fast food and prepare all their meals from scratch from produce sold at the farmers market overnight. So, to meet residents where they are, Village Produce is transitioning from a farmers market model to a neighborhood food supply chain that offers more prepared food options.

These findings support the arguments made by Bradley and Galt (2014) in their work on food justice in the Bay Area. An important critique of food justice, they assert, is that it “often follows the mainstream food movement’s lead, promoting certain ways of eating, usually centered around fresh and organic produce, in ways that are exclusionary” (2014, p. 174). Food justice activists in SESD are mindful of this, and work to spread healthier food options without the elitist component. Dig Deep, the organization that Bradley and Galt have studied, also attempts to counteract the valuation of certain foods as good and moral. “Dig Deep avoids imposing values about food on its crew members” (p. 178), who mostly subsist on fast food and soda, because “Eating cannot and should not be reduced to a simple binary of acceptable and unacceptable” (p. 182). According to Bradley and Galt, food

justice practitioners should be more open, flexible, and anti-essentialist when it comes to food.

Not only do the food justice activists in their case study practice a nonjudgmental food ethic, but they also tap into high-end markets to bring revenue into their community: “Dig Deep is not waiting for a corporation or government to bring these jobs, but is instead trying to grow them itself, in part by accumulating capital from sales in high-end markets” (Bradley & Galt, 2014, p. 179). Bradley and Galt refer to this as the organization’s “double logic” and “selective engagement with foodie logics” (p. 177). However, while food justice activists at Dig Deep partially and strategically engage with “foodie logics” that “stress the connection between diet and health” in order to generate revenue (p. 178), Village Produce’s director and community gardeners are genuinely driven by the connection between diet and health. They wholeheartedly believe in food as medicine and are distraught that meat-based diets are wrecking the health of their loved ones. While Dig Deep is oriented toward job creation and economic development first and foremost, Village Produce attempts to combine the two by increasing vegetable consumption in the area while also promoting Black food entrepreneurs.

Increasing consumption of vegetables and increasing economic development in the area can happen simultaneously by using this multipronged approach that moves beyond the direct purchase of fresh fruits and vegetables model. Part of this strategy is supporting Black food businesses, and part of it is sneaking more vegetables into people’s diets. Eventually, these two will hopefully marry harmoniously, with residents using their purchasing power, however limited, to buy vegetable-forward soul food from Black food vendors. In the meantime, however, any step toward increasing vegetable consumption and toward supporting Black livelihoods is progress toward achieving racial justice in a historically Black neighborhood. 

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Farmer social connectedness and market access: A case study of personal networks among emerging farmers

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Abstract

Market access in the local food system of the American Midwest is largely predicated on key social and economic relationships. This study examines the personal networks of emerging farmers enrolled in an incubator farm training program. Drawing from social network and qualitative analysis the study findings yield insights into the relationship between social networks, market access, and financial sustainability among

emerging farmers. Some farmers have highly dense support networks with many strong familial ties. Others have smaller support networks characterized by weaker and more sparse ties. Highly individualized farmer characteristics and aspirations are shown to greatly influence the building and maintaining of networks. Advice networks are demonstrated to affect market access, decision-making, and indicators for entrepreneurial success. Smaller advice networks of non-English speaking farmers demonstrate limited market access and access to information. This distinction is highlighted in the discussion of policy and agricultural development programs targeted toward emerging farmers.

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Social Network Analysis, Incubator Farms, Local Food System, Entrepreneurship, Immigrant Farmers, Emerging Farmers, Agricultural Development

Introduction

Alternative food markets such as farmers markets and community-supported agriculture programs are increasing in number and scope across the United States, in part from a growing consumer awareness and demand for local food (Brown & Miller, 2008; Hinrichs, 2000). Farmer decisions regarding which markets to sell their products often are driven by a number of economic, environmental, and demographic factors (Mishra, El-Osta, & Shaik, 2010; Montri, Chung, & Behe, 2021; Peterson, Barkley, Chacón-Cascante, & Kastens, 2012). However, there are undoubtedly other cultural and social factors that farmers must consider, such as whom the farmer can ask for advice about selling their products. Interpersonal factors, sometimes represented in social networks, combine to influence farmer decision-making. These decisions are especially important to a farm's long-term success when the farm is small and is just starting (Calo & De Master, 2016; Mailfert, 2007). This case study examines the structure and impacts of emerging farmers' social networks.

The proliferation of the local food movement in the American Midwest has been documented with great scrutiny (Bell, 2004; Hinrichs, 2003). The role of social connections in ensuring economic success among farmers has also been widely examined (Schiebel, 2005; Witt, 2004). What is more rarely studied is the relationship between specific social structures and the market access of farmers (Ashby et al., 2009; Mailfert, 2007). This case study focuses on market access by examining aspects of social connections and entrepreneurial success among emerging farmers. To do this, researchers studied farmer participants in a community organization that is classified as an incubator farm, meaning a nonprofit group that provides land, inputs, and training for individuals and families that wish to farm, but do not have the immediate ability to do so without assistance (Ewert, 2012; Niewolny & Lillard, 2010). Incubator

farm programs have gained prominence in the United States by providing training and assistance to young and beginning farmers (Ahearn, 2013; Katchova & Ahearn, 2016). These programs are appealing because successful agricultural entrepreneurs often start out with minimal income and smaller-scale operations before becoming full-time financially viable farm operators (McGehee, 2007).

Emerging farmers face many barriers to success, as they often have limited access to land, credit, labor, technology, and capital (Ahearn, 2013; Ashby et al., 2009). Due to these challenges, local food and agriculture markets are often difficult for nascent farm enterprises to access (Flora, McIsaac, Gasteyer, & Kroma, 2001; Thilmany McFadden et al., 2016). To overcome these challenges, farmers must hone their skills beyond just agricultural cultivation, they must cultivate a series of social relationships and establish a support system to achieve success (Hassanein, 1997; Poulsen, 2017; Schiebel, 2005). This case study, focusing on an incubator farm program in Michigan, is useful for considering the implications of the design and delivery of training programs and the implications of increasing market access for emerging farmers.

Literature Review

Social relationships can sometimes be seen as a form of capital, meaning a social resource with exchange-value inherent to its existence and application (Coleman, 1990; Portes, 1998). This social resource is anchored in the idea that benefits accrue to an individual as a result of the relationships in their social networks (Putnam, Leonardi, & Nanetti, 1994). The aggregate of these social relationships can be analyzed by focusing on the resulting structure of their network (Marsden, 2002; Wasserman & Faust, 1994). Social connections, or ties, can be made of different forms of relations, in terms of strength, typology, distance, and duration (Centola & Macy, 2007; Lin, Ensel, & Vaughn, 1981). Analysis can focus on a single actor (Giannella & Fischer, 2016), a collective group (Marsden, 1990), or across multiple groups (Feld, 1981; Lorrain & White, 1971). This leads to analysis of network actors and ties with respect to scrutinizing uniqueness, strength, and redundancy (Granovetter, 1973; Granovetter, 1974; Marsden,

1990), or analysis of the precise structure of an entire network (Burt, 1995; Herz, Peters, & Truschkat, 2014).

Scholarship focusing on social network analysis and entrepreneurship includes a rich body of work upon which to draw (Aldrich, 2005; Kuratko, 2016; Thornton, 1999). Targeted network characteristics have been demonstrated to both aid and hinder entrepreneurial success across several contexts (Smith-Doerr & Powell, 2005; Swedberg, 2003). As an exemplar, possessing diverse ties in a business network has been demonstrated to increase access to information and provide new opportunities that aid entrepreneurs when they first start (Burt, 1993; Callon, 1998). Conversely, an entrepreneur's network with sparse connections and redundant relations has been demonstrated to constrain eventual success (Aldrich, 2005; Smith-Doerr & Powell, 2005). Another example showed that the nature of specific ties in a network are key when embedding an entrepreneurial venture in the market; these embedded ties are critical when trust and fine-grained information is needed (Uzzi, 1997). Other scholarship has presented a number of relationships between networks and entrepreneurial success. Among these relationships is the overall size of the network (Witt, 2004), the prevalence of strictly professional business relationships (Uzzi, 1997), and the overall diversity of actors and ties within a network (White, Boorman, & Breiger, 1976). Using these network studies, scholars and practitioners have actively pursued strategies to improve network positions as a means of increasing the success of entrepreneurial enterprises (Kodithuwakku & Rosa, 2002; Weber & Kratzer, 2013). Given the diverse and comprehensive body of work dedicated to examining the role of social networks in the success or failure of nascent entrepreneurs (Government of Canada & Policy Research Initiative, 2005; Witt, 2004), it stands to reason that the analytical approach represents a highly relevant and useful framework for examining emerging farmers in an incubator farm setting.

Social network analysis in agriculture has mostly been deployed in the examination of technology adoption (Bandiera & Rasul, 2006; Spielman, Davis, Negash, & Ayele, 2011). Much of this work is predicated on the importance of

farmer-to-farmer networks, as well as the foundational principles of the *Diffusion of Innovations* (Rogers, 2003). While the theory has come under scrutiny in recent times (Stephenson, 2003), the consistent relevance to farmer-to-farmer information exchange networks serves to demonstrate the importance of close connections with farmer success, both commercially and productively (Christensen & O'Sullivan, 2015; Hayden, Rucker, Phillips, Heins, Smith, & Delate, 2018). Other scholars have demonstrated the limited efficacy of the farmer-to-farmer adoption model, with many positing that the cultural and ecological context is key in determining farmer adoption strategies (Knowler & Bradshaw, 2007; Prokopy, Floress, Klotthor-Weinkauf, & Baumgart-Getz, 2008). A thorough examination of an explicit type of network(s) is key in establishing the relevance of any case study focusing on farmers, agriculture, and market access.

Social networks have been shown to be key to entrepreneurial success by providing resource access, critical information, and risk management strategies for start-up farms (Hassanein, 1997; Mailfert, 2007). Over the longer term, networks have been demonstrated to be of paramount importance in accessing markets, providing social support, facilitating collaboration, and ensuring governmental support programs for vulnerable and entrepreneurial farms (Andreatta & Wickliffe, 2002; Ashby et al., 2009; Christensen & O'Sullivan, 2015; Hightower, Niewolny, & Brennan, 2013). For example, one study demonstrated how women farmers in Pennsylvania were often excluded from the wider food system due to limited networks. The study stressed the importance of political agency among the farmers as a way in which to break down the exclusionary barriers that they face (Trauger, 2005). Other case studies arrive at similar conclusions, suggesting that networks were demonstrative of a gender disparity (Hassanein, 1997; McGregor & Tweed, 2002). Other studies focusing on beginning farmers have noted the importance of social connections within immigrant communities in endowing market access (Hightower et al., 2013; Ostrom, Cha, & Flores, 2010). Disparities in beginning farmer access to education, land, water, and capital have also been observed when examin-

ing the social networks of immigrant farmers (Ostrom et al., 2010). One Midwest study indicated that small enterprises in local markets were heavily reliant upon key network actors and boundary spanners to ensure start-up success. The study identified that unmanaged nascent local food system entities, such as small farms, largely followed the trend of forming network ties through homophily and closeness affinity (Krebs & Holley, 2006).

Boundary spanners are network actors which have a specific configuration of network ties that connect two relatively distant network groups. This actor is therefore often a key figure in providing access to the wider network among one, two, or more groups of network actors. They are often alternatively referred to as network hubs (Burt & Merluzzi, 2014) or network weavers (Krebs & Holley, 2006). Homophily is the concept of similar network actors commonly forming connections between one another due to the affinity of the sameness. Closeness affinity is prefaced on the idea that actors have a more favorable opinion of other actors who are located relatively near to them in their network. These foundational social network principles inform the examination of farmers' networks in this study.

Finally, many scholars have identified positive social interactions and interpersonal affinity to be key for farm success. The studies highlight the importance of building trust, social learning, and cooperative action through the creation of strong social bonds (DeLind, 2006; Hayden et al., 2018; Hightower et al., 2013; Jarosz, 2000). These contemporary examples serve to further demonstrate the nature of social connectedness as embedded within the American local food system (Christensen & O'Sullivan, 2015; DeLind, 2006; Hinrichs, 2000).

Applied Research Methods

Many of the case study participants entered the incubator farm program with substantial agricultural experience. To acknowledge the variety of farming capabilities among the program, this study will use the term 'emerging' in place of 'beginning' farmers. A case study approach in this study was pursued by focusing on a targeted incubator farm

setting, Lansing Roots, located in Lansing, Michigan. The Lansing Roots incubator program is training farmers and providing them with resources to begin their own farm business (Greater Lansing Food Bank, n.d.). Due to the stated goal of the program being to introduce new farmers into the local economy through active market strategies, the study was able to apply entrepreneurial network scholarship to this unique agricultural and sociological context. The program is "designed to help limited resource and/or historically under-served individuals from the greater Lansing area begin successful market gardening and farming enterprises through an incubator farm setting" (Greater Lansing Food Bank, n.d.).

The 11 farmers in the incubator program are defined as the case study sample. Although there were more than 11 farmers, the incubator program allotted 11 roughly equal sized plots for cultivation. Each plot was managed by an individual, couple, or family, and thus, sometimes more than one person is responsible for a single plot. Most plots had a single decision-maker. However, some plots had multiple decision-makers involved in the production, management, and selling decisions. For analytical clarity, the primary decision-maker and representative for each plot was determined to be the respondent farmer. Semistructured interviews utilized a self-reflection interview method to inquire about farmer perceptions and relations (Gist & Mitchell, 1992). Interviews were conducted with individual farmers during the summer and fall of 2015. Eight interviews were conducted in English and three were conducted in Nepali with the help of a paid professional interpreter. The interviews were transcribed and coded thematically for analysis. A concurrent triangulation design for the utilization of both qualitative and quantitative methods ensured simultaneous data collection and analysis of interviews, ego-network analysis, and researcher field notations (Creswell, 2003; Creswell, Plano Clark, Gutmann, & Hanson, 2003). The initial analysis examined farmer antecedents, meaning basic demographic information, stated aspirations, and initial access to resources. The final network analysis emphasized long-term outcome indicators derived from previous scholarship. The indicators included financial gains, skill develop-

ment, quality of life, plans for the future, and personal efficacy as a successful market farmer (Ashby et al., 2009; Mailfert, 2007).

Network questions initially populated each farmer's personal networks' roster on a paper interview guide with the use of a free-recall method (Wasserman & Faust, 1994). A free-recall method is an interview technique that allows respondents to name as many individuals as they feel are relevant to the question (Wasserman & Faust, 1994). Network rosters then populated name interrelator matrixes to complete the personal networks of each farmer. This case study focuses on both the advice and support personal networks of farmers as unique ego-networks. An ego-network consists of a focal actor (also referred to as a focal node or ego) and the set of actors (also referred to as a node or alter) that are directly tied with the focal actor (Marsden, 2002). The advice question was, "*Who do you discuss or seek advice from when marketing and selling your products?*" The support question was, "*Who do you celebrate selling and farming milestones with?*" The interview also included a hypothetical network question, "*Who do you think it is important to know for local farms to sell their products?*" These questions were purposefully selected due to previous study findings that specifically highlight the importance of ego-networks in entrepreneurial and start-up farm success (Ashby et al., 2009; Mailfert, 2007).

The interview protocol queried characteristics of network ties and alters. Among these characteristics are demographic information, the nature of ties, and the known alter connections. Tie strength is classified into four categories: family, friend, professional associate, and acquaintance. The strength of ties was analyzed quantitatively with a four representing a family tie, three a friend, two a professional associate, and one as an acquaintance. The analysis of the networks consisted of three main network categories of start-up and entrepreneurial success: (1) Networking activities; (2) Network structures; and (3) Network services (Government of Canada & Policy Research Initiative, 2005; Witt, 2004).

Egocentric networks were selected for analysis to examine each farmer's network independently to fit into the case study approach. The selected

measures included size (the total number of alters within a network), density (a value between zero and one, which measures the number of ties within a network as the numerator and the number of potential ties in a given network as the denominator), alter degree (the number of ties in which an alter possesses) (Marsden, 2002), diversity (the measure of the types of ties that an ego has access to) (Wasserman & Faust, 1994), and tie strength (Government of Canada & Policy Research Initiative, 2005; Witt, 2004). The strength of ties is measured both in the literal immediate and relative network-wide strength. Another way of interpreting tie strength is to consider the wider network context in which a particular alter is situated. This has been demonstrated in a wide range of network studies focusing on economic, employment, and entrepreneurial dynamics (Aldrich & Zimmer, 1986). Under this conceptualization of tie strength, a weak tie is an asset because it represents an alter that is not redundantly related to the other ties within the ego's network. A strong tie is then an alter who is well connected with many redundant ties to alters that are already directly connected with the ego. The strength of weak ties theory indicates that these weaker ties provide access to new information and offer unique types of benefits that the ego would otherwise not be able to access (Granovetter, 1973; 1974). The final network examination took place in examining the benefits, costs, and other externalities that these networks provide. This allows for scrutiny of access to new information, the costs, and the benefits of personal networks.

Findings

Farmer Information

The 11 farmers and their families who were enrolled in the incubator program represented a diverse group (see Table 1). The genders of participating farmers were nearly equal, and their ages ranged from 22 to 70 years old. Farmers had varying levels of experience at the incubator farm, ranging from one to three years. However, this is not reflective of the farmers' total experience, with many farmers having been involved in agriculture since childhood. Farmer household incomes varied and every

Table 1. Respondent Farmer Characteristics

	Average	Range	Total		
Respondent Age (years)	43.7	22–70	–		
Household Size (people)	5.5	2–13	60		
Gender	Female		Male		
	45.5% (5)		54.5% (6)		
Race (self-identified)	Nepali	Black	White	Latino	Asian
	27.3% (3)	27.3% (3)	27.3% (3)	9.1% (1)	9.1% (1)
	American	Bhutanese	Burmese	Somali	
	54.5% (6)	27.3% (3)	9.1% (1)	9.1% (1)	
	<US\$20,000	US\$20,000–US\$50,000		US\$50,001–US\$100,000	
Annual Income	45.5% (5)	45.5% (5)		9.1% (1)	
Year in Incubator Program	1st year		2nd year		3rd year
	36.4% (4)		36.4% (4)		27.3% (3)

Note: Cell values display percentages unless otherwise noted. The number of responses is in parentheses. N=11.

household maintained income eligibility in the program. Household sizes ranged from two to 13. All farmers had at least one member of their household who provided income from non-farm sources. One farmer indicated they had full-time employment off the farm. Labor for farm plots was often provided by family members or close friends. Only two farmers were the sole laborers on their plots, and many indicated that it became a family event with their children to work on the farm. Farmers represented a variety of self-identified races and nationalities; with Lansing’s substantial refugee population being reflected among participants. As one farmer stated of their children working on the farm, “*They love coming out here.*”

Farmers focused on growing mostly vegetable products, although some cultivated ornamental and medicinal plants. Farmers reported that the incubator program was able to primarily support them in four ways. The first was providing the land on which to farm. The second was providing access to equipment (e.g., tractor) and inputs (e.g., compost). The third was providing technical assistance and regular educational opportunities to help farmers develop their production skills. Finally, the fourth

indicated form of assistance was providing an outlet for the farmers to sell their products through one of two avenues. The occasional farmer produce stand or farmers market appearance was facilitated and staffed by Lansing Roots employees or volunteers. This was not the predominant form of selling assistance provided. The primary market opportunity provided by Roots was a very successful community supported agriculture (CSA) program. A CSA is a farm subscription service where community consumers make their payment at the beginning of a growing season in exchange for a set proportion of the farm’s product (Brown & Miller, 2008; Jarosz, 2011). The Roots CSA sold and delivered produce boxes every week to customers. The CSA provided an excellent outlet for the products the farmers had labored to grow. It also served as an exemplar in demonstrating to farmers how to forge successful market linkages with community members, local businesses, and nonprofit organizations that were all successfully enrolled in CSA membership.

Aspirations and Barriers

Entrepreneurial success, goal setting, and aspira-

tions of success have been demonstrated to be closely related to one another (Jenssen, 1999). Farmers' motivations for joining the program and their plans for farming in the future varied between and within incubator program cohorts. The original motivation for farmers to enroll in the program ranged from wanting a hobby to launching a profitable vegetable production enterprise. These initial motivations for enrolling in the program played a large part in shaping farmer future aspirations. All of the American farmers discussed the valorous relationship between vegetable cultivation and the environment. They were heavily motivated to practice sustainable and agroecological farming practices. There is evidence that suggests that sustainable practices and gender are closely interrelated in the contemporary American farm landscape (Sachs, 1995; Sachs, Barbercheck, Brasier, Kiernan, & Terman, 2016; Trauger, 2004). This was echoed by respondent farmers with all of the women expressing a desire to grow ethically sourced food. One female farmer said, *"I see the local food movement as a necessary response to food insecurity and quality of food that [is] accessible to many people, low income, middle class, all populations, all groups of people. ... It's sort of returning back to the original way of living and being, actually consuming food that was grown in close proximity to where you live. ... It makes economic sense, it makes health sense, it makes political sense, I mean it just makes sense from all standpoints."*

Some farmers' identified aspirations to successfully or partially achieve self-sufficiency through their farm represented the successful obtainment of practicing an ethical form of farming. Among these farmers, a number referenced the idea of farming as physically and mentally restorative and an act of self-care. This ethic of moral farming idealism within alternative agriculture has been previously demonstrated to be a major motivating factor for many emerging farmers (Bell, 2004; Beus & Dunlap, 1990; Jarosz, 2011; O'Hara & Stagl, 2001; Wells & Gradwell, 2001). Many farmers prioritized these moral ideals ahead of economic considerations. This meant that some farmers had limited, or even no engagement in local markets. However, the market aspirations and priorities among the farmers was shown to change over time and coincide with farmers'

gradual introduction into local markets. This phenomenon has been expressly observed among emerging farmers as they increasingly become involved in the local food system through direct farmer-to-consumer market avenues (DeLind, 1999). One respondent stated, *"We started with the mentality of, okay what do we want to grow for ourselves and that is why we are doing this primarily is just to learn how to grow our own food and then turned into, okay well what can we grow to contribute to the CSA, what can we grow hopefully maybe someday for a profit. ... I think my aspiration for farming ... were to just grow as much food as I could that I could store to have clean food and to have food all year round that was food that I knew where it came from."*

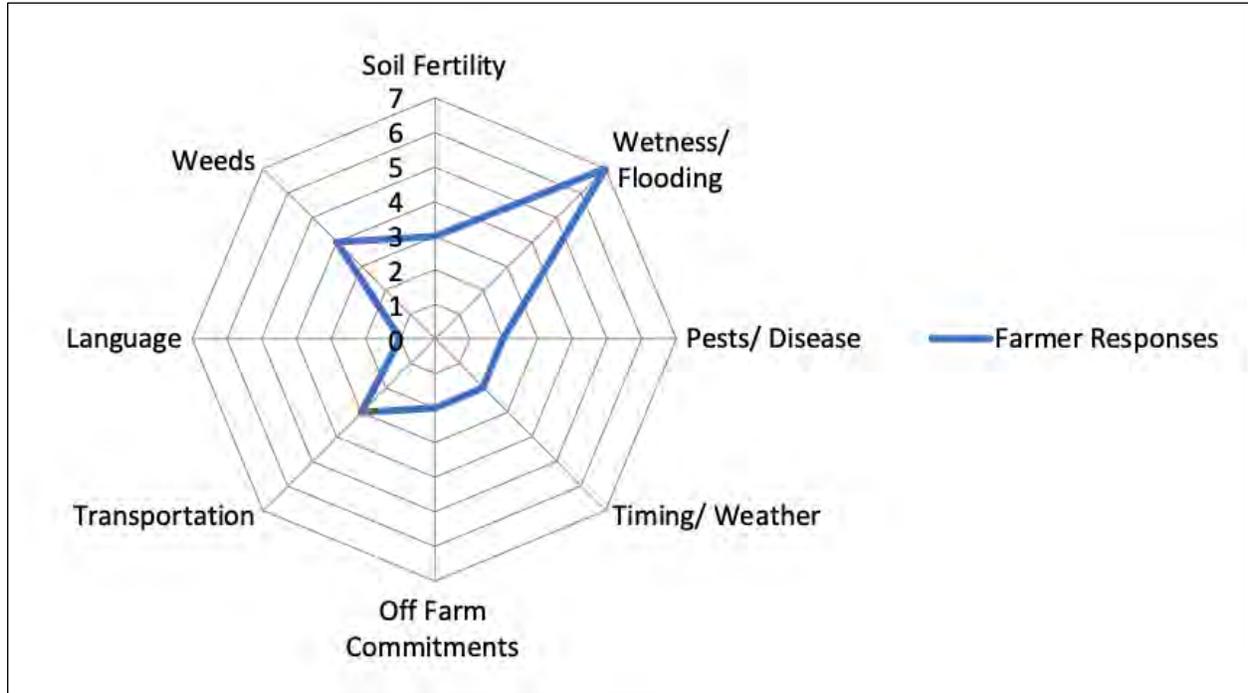
With the evolution of farmer aspirations and market efficacy, constraints on market access were identified as a major barrier to farmer success. The barriers that farmers faced were broadly classified into two categories: barriers to production (Figure 1) and barriers to market access (Figure 2). The farmers who discussed overcoming these barriers then demonstrated aspirations that were reflective of longer timetables. Conversely, farmers that did not discuss overcoming their production and market barriers demonstrated farming goals in more of a short-term context. All barriers were self-reported by farmers when answering open-ended questions.

The primary identified barrier to farm production was wetness and flooding. Part of this finding is simply a reflection of the weather during data collection. There was significant rainfall during the data collection period (i.e., June and July 2015) and many farm plots were not equipped to prevent water from collecting in its low points. Marginal clay soils were also identified by farmers as a driver of wet conditions on the plots. Exact locations of marginal soil were not demonstrated but standing water accumulation was observed in three to four low-lying points across the incubator fields. All of the farmers who had an impacted plot of land specified flooding as their primary production barrier. Other production barriers included pests and/or disease, weeds, off-farm commitments, language barriers, poor timing of planting and/or harvesting, and bad weather. The availability of labor was a common cause of many of the

production barriers. Many farmers had limited availability to work on the farm due to other em-

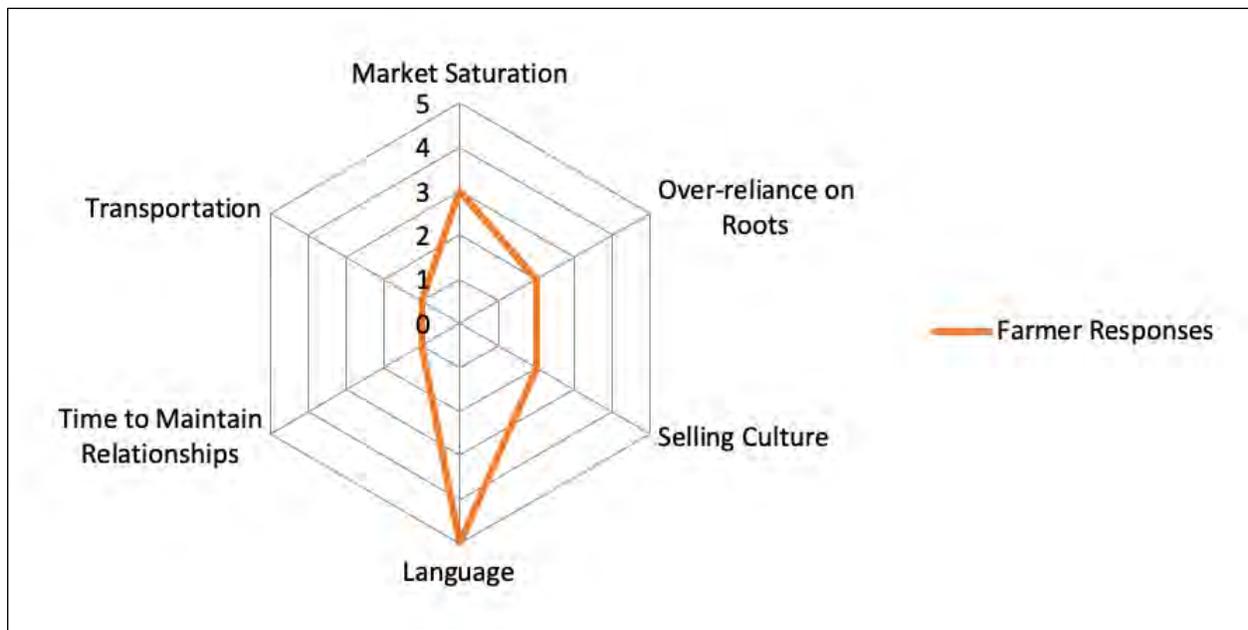
ployment or volunteer commitments. Other farmers lived too far from the farms' rural location and

Figure 1. Farmer-Identified Production Barriers



Source: Scott (2016).

Figure 2. Farmer-Identified Selling Barriers



Source: Scott (2016).

did not have access to a vehicle regularly. As a result of the distance, many farmers car-pooled to the incubator location to work on their farm. Sharing transportation occasionally puts constraints on times when the farmers were available to work. This meant that some time-sensitive tasks, like working to drain the fields after an extended rainfall, were not completed quickly enough.

The farmers also faced significant barriers to selling their products. In many cases, the selling barriers seemed to be proxy for the limitations for long-term success of the individual farms. While language was only explicitly indicated as a production barrier by one respondent, language was identified by many farmers as the primary selling barrier. Language as an obstacle for selling products was perhaps best exemplified by one respondent: “*Due to [the] language problem, I don’t know if I would be able to do it [sell products] because I don’t know who wants what and I don’t even know the names [of vegetables]. I can grow what they [the incubator program staff] provide me. I can do farming and I can grow plants but I don’t know if I will be able to sell them.*” The language barrier was exclusively mentioned among immigrant farmers.

In addition to the language constraint, we can see demonstrated in Figure 2 that multiple farmers also indicated market saturation, the lack of a selling culture, and an over-reliance on the project staff as barriers to selling their products. The self-awareness demonstrated by the farmers in identifying these barriers is simultaneously encouraging and discouraging for the establishment of future autonomous entrepreneurial farms. The reflexivity demonstrated by farmers to acknowledge areas in which they need to improve to achieve financial autonomy is encouraging. However, as one farmer stated, “*Ultimately, Roots is great, they do a lot of it [marketing and selling products], to the point that you don’t have to hardly do anything to market it yourself. You just have to grow it and talk to [Roots staff]. Which is a plus and a minus. In terms of not necessarily understanding how to go about it on your own.*” This respondent highlights the crux of the problem for the long-term entrepreneurial success of farmers once they graduate from the incubator program. While most farmers would not have been able to sell any products without the support of the program, many farmers

chose not to pursue other selling avenues outside of the CSA. It is unclear whether other selling avenues even existed at all for farmers, or if farmers had any desire to pursue CSA alternatives, alternative market channels rather than CSA (like restaurant sales or farmers markets), or other CSA organizations.

Specific to entrepreneurial ambitions, three farmers indicated that simply selling all of their products constituted success in the program. Immigrant farmers noted that selling their products was not consistent with their cultural values as it relates to sharing food within their community, where food is freely shared between households without any expectation of reciprocation. The barriers to both selling and cultivating played unique roles in shaping self-identified farmer success. The definitions of success included achieving food self-sufficiency, achieving farm profitably, transitioning to farming as a career, making time for recreation, and farming to learn about cultivation. These ambitions speak to the reality that many farmers do not think that entrepreneurial success is obtainable, and perhaps more significantly, many farmers possess no or very little desire to achieve entrepreneurial success through farming.

Networking Activities

Farmers built and maintained networks through interacting with other farmers, attending conferences, and seeking the council of Roots staff. One farmer indicated time as a constraint in forming interpersonal farm interactions, leading to a barrier to selling farm products. Farmers spent between 0 and 15 hours a week networking. Networking strategies included attending conferences, potluck dinners, and farmers markets to meet local food system actors. Most indicated that a maximum of two hours a week were dedicated specifically to networking. While the time spent networking and the specific strategies did not seem to have an impact on the size of networks, there was an indication that networking activities did have an impact on advice network composition. If a farmer identified a strategy for networking, regardless of time, their advice networks extended beyond the incubator program staff. Conversely, if no strategy was identified, advice networks did not extend

beyond the incubator program staff. It is unclear whether the act of networking, or the reflexivity demonstrated by having a networking strategy, was causally related to the size of the farmers' advice networks.

Advice Networks

Advice networks mapped who respondents indicated they reach out to when marketing and selling their products. Farmer advice networks ranged in size from 2 to 16 individuals.

Quantitative advice network characteristics can be seen below in Table 2. In total, the average advice network density was 0.74. The average size was 4.73 people. Tie strength for all 3 measures (ego, total, and alter) was slightly above 2 (2.23, 2.18, and 2.09), indicating that professional associations dominated the advice networks. The average alter degree was 2.10, meaning that the average advice network alter knew a little more than 2 other members of the network. The effective size of networks ranged from 1 to 9.44 with an average of 2.63, representing networks with a small amount of diversity (1) and networks with a high amount of diversity (9.44).

From the examination of farmer advice networks, two classifications of networks emerge with one group having a density of 1 and another group with a density of less than 1. Network

density is a statistic that identifies the amount in which network alters know the other alters within the network (Giannella & Fischer, 2016; Marsden, 2002). In the formula seen below D represents density, N represents the number of nodes within a network, λ represents ties within a network, and $N(N-1)/2$ represents all of the possible ties within a network.

$$D = \frac{\lambda}{N(N-1)/2} \quad (1)$$

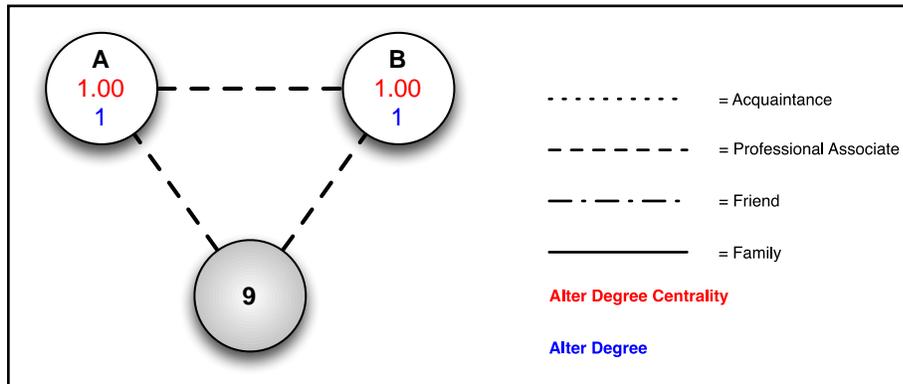
The density of one means that the networks have an effective size of 1.00, the highest possible value for the statistic. Effective size is a statistic that represents the diversity of information sources within a given network. The measure indicates the amount of redundancy among the alters in a network (Burt, 1995). The statistic is calculated by subtracting the average alter degree from the total number of alters (network size) (Borgatti, Everett, & Johnson, 2013).

All 5 advice networks with a density of 1 exclusively consisted of the incubator program staff. Figure 3 provides the sociogram representation of this most common advice network. These networks, therefore, shared a commonality in the strength of the relationship (professional association), the length of time the alter has known the farmer (the amount of time the farmer has been

Table 2. Advice Network Statistics

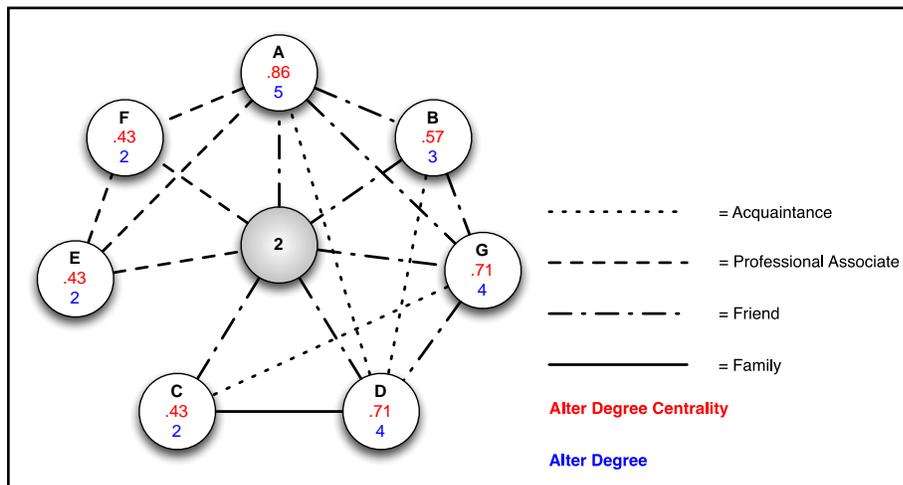
Farmer	Density	Size	Ego average tie strength (E-ATS)	Total network average tie strength (T-ATS)	Alter average tie strength (A-ATS)	Average alter density (AAD)	Effective size
1	0.17	4	2.25	2.20	2.00	0.50	3.50
2	0.52	7	2.71	2.44	2.27	3.14	3.86
3	1.00	2	2.00	2.00	2.00	1.00	1.00
4	1.00	2	2.00	2.00	2.00	1.00	1.00
5	0.43	16	2.22	2.04	2.02	6.56	9.44
6	0.89	8	2.22	2.03	2.00	5.37	2.63
7	1.00	2	2.00	2.00	2.00	1.00	1.00
8	0.17	4	2.50	2.40	2.00	0.50	3.50
9	1.00	2	2.00	2.00	2.00	1.00	1.00
10	1.00	3	2.33	2.50	2.67	2.00	1.00
11	1.00	2	2.50	2.33	2.00	1.00	1.00
Average	0.74	4.73	2.23	2.18	2.09	2.10	2.63

Figure 3. High Density Farmer Advice Network (the Most Common Advice Network Structure)



Source: Scott (2016).

Figure 4. Diverse Farmer Advice Network (Made Up of All Four Types of Ties)



Source: Scott (2016).

involved in the incubator program), and are racially and nationally homogenous (white Americans). All of these farmers with limited networks were immigrants. In contrast, 5 farmer advice networks demonstrated a lower density and more variation in overall size, alter types, and tie characteristics. These networks ranged in size from 4 to 16 with densities between 0.17 and 0.89. The average tie strength was higher among these networks in all three classifications (ego, alter, and total tie strength). Average alter degree ranged from 0.50 to 6.56 and network effective size ranged from 2.63 to 9.44. The classification of these two types of advice networks can be summarized by saying that the

non-immigrant farmer advice networks were less dense, larger, consisted of stronger ties, were more diverse (in all alter characteristics besides gender), and had less tie redundancy (due to higher effective sizes) than the comparable immigrant advice networks that consisted exclusively of incubator program staff members.

Comparing all 11 farmers, the differences between the farmers with more expansive advice networks and farmers with more limited advice networks provide a stark contrast that enables comparative analysis between them. Farmers with a more limited network were younger (average age of 37.8 compared to 51.2), involved in the program for longer (2.2 years compared to 1.7 years), had larger household sizes (average of 7.6 compared to 3.7), and

were mostly minority females. In contrast, the more expansive networks were mostly comprised of white older male farmers with less time in the incubator program and smaller households. An exemplar of a more diverse advice network can be seen below in Figure 4.

Farmers were asked what the hypothetical ideal advice network would look like. The ideal advice network characteristics of possible alters consisted of predominantly professional associations. These roles included a local chamber of commerce representative, restaurateurs, community members, farmers market managers, wholesalers, farmers, customers, and members of food cooperatives.

Farmers indicated that the ideal advice network would include many social and economic connections with the wider local food economy outside of the farm.

Support Networks

Support networks mapped who respondents indicated they celebrate marketing and selling milestones with. Farmer support networks were found to be more diverse in their composition and larger than the advice networks. The average density was similar to advice networks with a value of 0.75, as shown in Table 3.

Support network size ranged from 3 to 32 with an average of 13.36. Tie strength for all measures (ego, total, and alter) is greater than that of the advice networks (3.27, 3.19, and 3.02). The higher tie strength is reflective of increased familial and friendly interpersonal relationships. Average alter degree of 10.25 demonstrates the interconnectedness of support alters. An effective size of 3.20 is higher than that of the advice networks but not nearly to the amount that is commensurate with the increase in overall network size. This indicates a relatively high amount of redundancy within the support networks. These trends can be observed in Table 3. An exemplar support network can be seen in Figure 5.

Social support is considered as a key element

of entrepreneurial success (Swedberg, 2000; Witt, 2004). Support networks measured the number of individuals that a farmer listed as people they celebrate farming milestones with. Support networks demonstrated a high amount of homophily, meaning alters were found to be more racially homogeneous and more reflective of the farmer respondent's racial make-up. Many networks were very large, as seen in Figure 5. Larger networks belonged primarily to immigrant farmers while farmers that have engaged in the local food economy before their involvement indicated smaller networks. Immigrant farmer support networks were mostly made up of family ties. Non-immigrant farmers were more likely to indicate professional and friendly ties within their support network.

Network Costs and Benefits

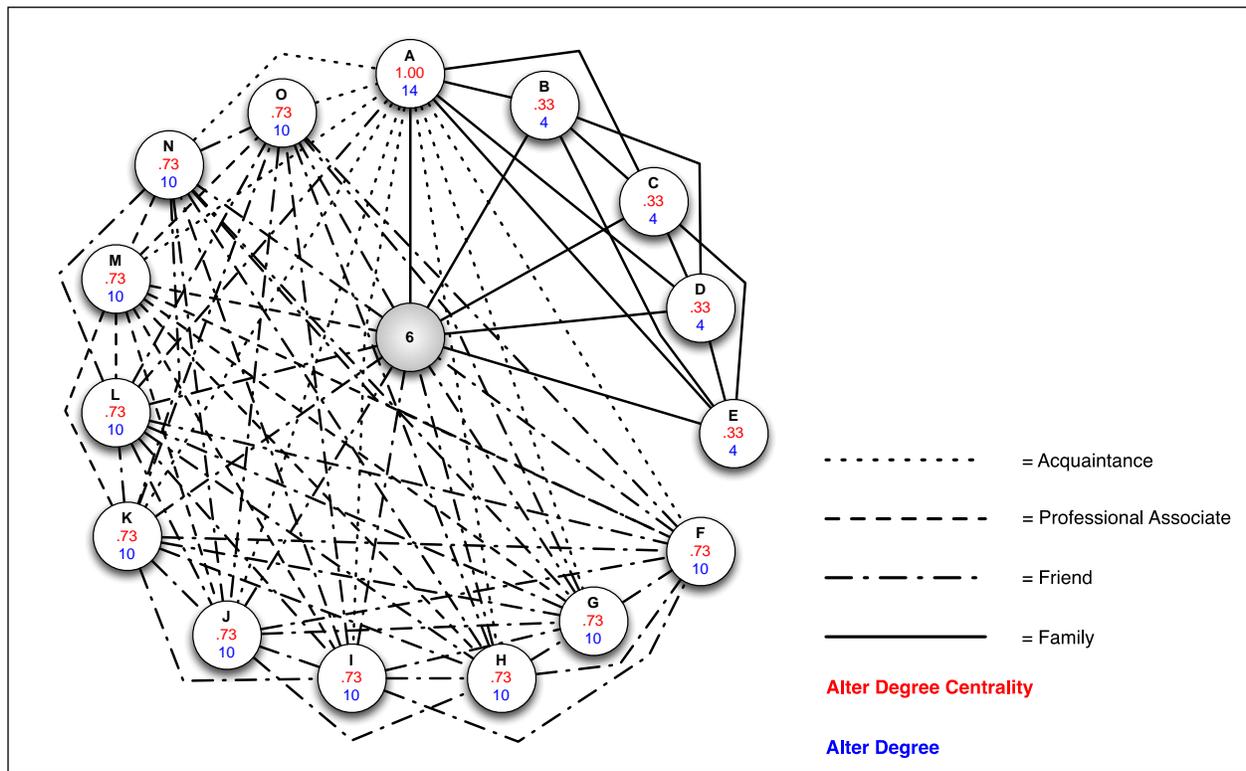
Both networks demonstrate a distinct set of costs and benefits. Support networks offered respondents with enhanced emotional and physical endurance. Many farmers rely on members of their support network to help them on the farm during particularly busy times. No farmer indicated a substantial cost that is derived from support networks. However, some immigrant farmers discussed a form of altruism as their role in this network, meaning that they felt culturally obligated to share the food they produced across their support

Table 3. Support Network Statistics

Farmer	Density	Size	Ego average tie strength (E-ATS)	Total network average tie strength (T-ATS)	Alter average tie strength (A-ATS)	Average alter density (AAD)	Effective size
1	0.30	5	2.60	2.13	1.33	2.20	3.80
2	0.52	19	3.63	3.88	3.54	9.47	9.53
3	1	21	3.05	3.00	3.00	20.00	1.00
4	1	26	4.00	4.00	4.00	25.00	1.00
5	0.60	5	3.00	2.82	2.67	2.40	2.60
6	0.62	15	3.27	2.74	2.84	8.67	6.33
7	0.60	5	3.40	3.55	3.17	2.40	2.60
8	0.71	8	3.25	3.36	3.45	5.00	3.00
9	1	8	3.50	3.19	3.11	7.00	1.00
10	1	3	2.33	2.50	2.67	2.00	1.00
11	0.92	32	3.91	3.94	3.94	28.62	3.38
Average	0.75	13.36	3.27	3.19	3.02	10.25	3.20

Figure 5. Farmer's Support Network

Displayed is an extensive support network structure with a large number of ties relative to other farmer support networks.



Source: Scott (2016).

network. This was not discussed as a negative practice by farmers, but the food provided was not reciprocated financially.

Advice networks were largely bereft of financial costs to farmers. One farmer did mention the 20% that the incubator program takes from market sales as a potential cost. Although, the fee was widely considered by the farmers to be a necessary cost to ensure the program's financial sustainability. Most farmers indicated that the main cost of building and maintaining their advice network was time and effort. The primary benefit derived from the advice networks was enhanced farming and marketing knowledge. This benefit did directly address the farming and selling barriers that farmers had previously identified.

As one farmer stated, "The main benefits for me this year is my skill that I learn. And the second is the money that I make and the third is the food I am enjoying." With this short statement, the farmer discusses the three main benefits that the advice networks

provided: food for consumption, money from product sales, and enhanced farming skills. Farmers sold between 50% and 100% of the products they cultivated, with an average of 77.42%. All but one farmer indicated they consume or give-away between 5% and 40%, with an average of 22.58% of products being consumed or gifted by the farmer and their household. The incubator program affords access to the advice networks that farmers need to begin a successful entrepreneurial business. One farmer stated about the skills they obtain from the incubator program staff and other advice network members, "How to farm, how to not [farm], what works, what doesn't. How to find information. ... Pricing, what the market [is], yeah all that stuff. Presentation, legal issues, I mean there is certainly a lot of food safety issues. I mean just generally, general information about the industry [local food system] standards."

These direct network benefits lead to enhanced market access by farmers and situate their nascent farms within the local food economy. Improved

self-efficacy after engaging with advice network member(s) was observed. One farmer stated, “*I mean, we were not farmers when we started [the incubator program]. Now I’ll say, yeah I’m a farmer.*” However, this enhanced sense of farming ability and identity did not automatically translate into farmers’ indicating plans to make the farm financially viable in the long-term. Only two farmers indicated plans to continue farming with the vision of establishing an autonomous farm business.

Farmer ambitions for a long-term entrepreneurial farm operation demonstrated a similar dichotomous theme to that of the advice network composition. Immigrant farmers indicated barriers to establishing more diverse and enriching advice networks, as discussed earlier, due to substantial language barriers. “*If I spoke English I would do better than this. I would talk to them [customers and advice-givers] but these days I cannot understand so I [don’t] know the names of the vegetables that I plant now.*” This farmer provides one example of how the language barrier creates an asymmetrical perception of success between immigrant and non-immigrant emerging farmers. While immigrant farmers demonstrated low levels of entrepreneurial self-efficacy, many non-immigrant farmers indicated that they felt they could, if they wanted to, pursue a financially successful farm. When asked about the ability of other emerging farmers, respondents indicated they believed that others had sufficient market access, seemed happy, and are or will be able to successfully sell all of their products. Despite many farmers’ negative perceptions of their own ability to practice market-oriented agriculture, it is important to note that they considered the other emerging farmers to be successful.

Discussion

Despite being in the program longer, the younger minority female farmers had more limited advice networks compared to other farmers. This disparity was evident in the density and effective size of their advice networks. The average increase in density for the network that extends beyond the incubator staff was 0.40. The more expansive networks had an average of 5 more alters, mostly professional ties. The increase in network size and the decrease in network density for the more

expansive advice networks led to an increase in effective size (on average 3.41 larger). This is a sign that there is less redundancy, and therefore more diversity in the type of advice they receive. The novelty of the advice is consistent with the strength of weak ties theory, which posits that it is advantageous for the network ego to have social ties with more socially distinct alters (Granovetter, 1973). The theory is exemplified within this case study because the more expansive networks have less redundancy of advice and exhibit more advantageous indicators of market access. This improved market access then coincides with greater entrepreneurial efficacy among farmers.

Advice networks within this case study observed gender, linguistic, and nationality disparities. Other studies have additionally documented gender disparities in market access among women entrepreneurs (Greene, Brush, & Gatewood, 2007; Schwartz, 1976). A lack of economically enriching social ties has been documented as one of the major barriers to success for entrepreneurial women across many economic sectors (Fairlie & Robb, 2009; Minniti, 2009). When an entrepreneur’s social connections do not include individuals who either have access to capital, or do not have relationships with others that have access to capital, their access to start-up capital is constrained and their long-term success often suffers (Fairlie & Robb, 2009; Kodithuwakku & Rosa, 2002). Women farmers face a unique set of challenges and opportunities when they decide to become farmers (Chiappe & Flora, 1998; Liepins, 1998). Often the act of farming is an expression of gendered relationships between the farmer and the land in which they cultivate (Brasier, Sachs, Kiernan, Trauger, & Barbercheck, 2014; Sachs, 1995; Trauger, 2004). Women farmers have been demonstrated to have social networks that are more reflective of socioeconomic and environmental justice, as opposed to profit maximization (Sachs et al., 2016; Trauger, 2005). Women and their social connections have been found to be the backbone of CSAs and local food movements in the United States (Allen & Sachs, 2007; Wells & Gradwell, 2001).

Given that time and effort is an identified cost of advice networks, it is therefore an area in which policy and programs can aid in saving farmers time

as they strive to efficiently labor on their farms and cultivate social networks. Examples of these types of initiative programs, which can help reduce gender disparities in sustainable agriculture, are evident in the Pennsylvania Women's Agricultural Network which has achieved a good deal of success. The network "supports women in agriculture by providing positive learning environments, networking, and empowering opportunities" (The Pennsylvania State University, n.d.). These kinds of initiative programs are good examples of bringing together elements of human and social capital to enhance emerging farmers' networks (Trauger, 2005).

The advice network disparity in many ways mirrors an overall American societal socioeconomic inequity that is faced by minorities in the food system (Alkon & Agyeman, 2011; Flora, Emery, Thompson, Prado-Meza, & Flora, 2012; Morland & Wing, 2007). Network disparities also mirror wider inequities that lead to the socioeconomic isolation and increased health vulnerability among immigrant and refugee populations (Fennelly, 2004; Morris, Popper, Rodwell, Brodine, & Brouwer, 2009). Immigrant farmers were shown to have more limited advice networks when compared to non-immigrant farmers. This distinction held true for both immigrant farmers that spoke English and for the immigrant farmers that did not speak English. While the reasons for the constraints among the non-English speaking farmers were explicitly stated, the reason for limited advice networks among English-speaking immigrant farmers was less obvious. Language as a barrier was the mechanism that limited refugee farmers from expanding their advice networks beyond the incubator program staff. This was consistent with the wider selling barriers identified by farmers as they most commonly stated language as the primary barrier. Similarly, two other identified selling barriers, an over-reliance on Roots program staff to market products and an aversion to a selling culture, offer insights into why English-speaking immigrants also have limited advice networks. These selling barriers are consistent with previous scholarship focusing on incubator farm programs and immigrant and refugee populations (Hightower et al., 2013; Ostrom et al., 2010; Panopoulos, 2013).

Language as a barrier did not appear to adversely influence the production of farm crops. Instead, the primary production challenges faced by farmers had more to do with the environment and natural conditions. Throughout the interview time periods, there were concerns about flooding and poor drainage. This speaks to the effectiveness of the interpersonal programming that facilitated largely successful crop production by emerging farmers and also highlights the environmental challenges that many farmers face.

In addition to praising the incubator program for increasing their cultivation skills, farmers also indicated the program's market outlets as a highly desirable program outcome. The primary identified advice network benefits could also be seen as synonymous with the perceived incubator program benefits for farmers. The benefits broadly fall into three classifications:

(1) **Healthy and affordable food for consumption among farmer households.** Many farmers indicate that the food which they produced played an important role in their household's food security status. Other farmers discussed the products as being supplementary in their seasonal diets and helped them to achieve a healthier lifestyle. Immigrant and non-immigrant farmers alike indicated that they use the produce as gifts to friends, family, and community members as a way to spread goodwill and healthy food.

(2) **Many of the farmers indicated that their farming skills had been greatly improved through their involvement in the program.** Proudful accounts about new planting techniques, the use of new farm tools, and other farming skills were common throughout the interviews. Many farmers discussed the personal satisfaction they and their households received by being involved in agriculture. This satisfaction also tied into intergenerational agricultural heritage when farmers indicated they felt it was a way to connect with their elder family members or involve their children with the farm. Refugees discussed their participation as a way to maintain their cultural ties with agriculture and the environment in a way that was previously not possible.

(3) **Many farmers discussed the incubator program as economically empowering.** Lower-income farmers highlighted the usefulness of the money and market opportunities that they receive from CSA and farm stand sales. Farmers of all income levels reacted positively when queried about sales, citing the funds as useful in increasing supplementary income for their households. It is here that the incubator program encounters a double-edged sword in their marketing endeavors.

While the CSA and other market opportunities make it possible for farmers to financially benefit from their labor, some farmers, both immigrant and non-immigrant, indicated that they were not engaged in advice networks and market relations because the program staff (the CSA program) did it for them. This dynamic is further complicated when examining the role that the established program market avenues play among immigrant and refugee farmers. All of the farmers indicated that they were engaged in the CSA. Some immigrant farmers discussed being reluctant to sell their products within their community because they had a tradition of freely giving food amongst their friends, family, and community members. The most common and most heavily emphasized barrier for market access was language. The effects of this barrier manifest itself within immigrant farmer advice networks. The lack of key non-program professional associations that provide advice about market opportunities means that the long-term entrepreneurial efficacy of immigrant farmers is, ultimately, very low. The program's CSA offers farmers immediate short-term benefits: money from sales and the experience of participating in the market opportunity. Farmers are able to advance their skills in growing, processing, and packaging their products for sale. The program's CSA provides a critical return on investment for the time and effort that farmers put into their plot. At the same time, farmers are not gaining experience in recruiting and retaining CSA members or finding their own market opportunities. The Lansing Roots mission is to help reduce the barriers that farmers face in becoming successful farm enterprises (Greater Lansing Food Bank, n.d.). This study provides mixed evidence regarding the

fulfillment of this mission in that the program endows farmers with a wealth of production knowledge and yet there appears to be missing elements of the incubator program curriculum that enhance farmer skills when accessing local markets. This limitation is not unique to Lansing Roots, with many incubator farms experiencing difficulties due to language and cultural differences in balancing fiscal rewards with the facilitation of farmer networks for sustainable market access (Panopoulos, 2013). Language and cultural barriers are often cited as the primary barrier to economic self-sufficiency among refugee populations (Halpern, 2008). Limited access to advice networks by the farmers in this study demonstrates the need for incubator programs to facilitate the creation and maintenance of networking opportunities and to integrate them into their programming.

Other scholars have noted the hegemonic paradigm of privileged exclusiveness (whiteness) against minorities in the local food systems of the contemporary American Midwest (Calo, 2020; Flora et al., 2012). It is recommended that increased critical social science research be conducted with a focus on minority and refugee farmers as nascent entrepreneurs. It is also recommended that increased attention be focused on providing refugee populations with language services to assist them in forging the types of social and economic relationships that will enable them to have successful autonomous and profitable farm ventures in the future. Successful programs such as the Refugee Agricultural Partnership Program (U.S. Department of Health & Human Services, 2012) can be looked to as an example of programs with such a focus. It is additionally recommended to expand such programs to assist incubator farms in effectively achieving their aims regarding refugee farmers and successful agricultural entrepreneurship. Other incubator programs have had success in advancing immigrant and refugee farmers market capabilities by pursuing farmer-to-farmer education, mentoring, and demonstration farming (Ostrom et al., 2010; Rhodes & Joseph, 2004).

While network redundancy is not a positive sign within advice networks, the same cannot be said regarding entrepreneurial support networks (Dubini & Aldrich, 1991), especially among

emerging farmers (Mailfert, 2007). The benefits derived from larger support networks represent a form of social enhancement that embolden any potential farmer to engage with the incubator program. In contrast with advice networks, immigrant and refugee farmers exhibited larger, denser, and more strongly related (mostly familial in nature) support networks. These networks are likely formed because of a shared language or cultural closeness within their community and they provide a reason for optimism as the farmers move forward and strive to find a niche within the local Mid-Michigan food system. This provides reason for optimism because many immigrant communities foster entrepreneurship and business development due to their close-knit social networks providing an 'ethnic enclave' economy (Wilson & Martin, 1982; Wilson & Portes, 1980). While immigrant entrepreneurs often have limited access to outside networks (Li, 2004), they often obtain access to markets and sources of credit from their own insular immigrant networks due to linguistic and cultural similarities (Sanders & Nee, 1996). Because of this, for many immigrant entrepreneurs, family relationships prove to be important in determining their eventual business success (Sanders & Nee, 1996; Waldinger, Aldrich, & Ward, 1990). Of relevance to this study, abundant family ties have been demonstrated to be highly advantageous for immigrant farmers (Bloom & Riemer, 1949), with immigrant farmers often experiencing success in farming and selling within their own immigrant communities (Brown, 2011; Hightower et al., 2013). Often immigrants and refugees are drawn to farming because they may have come from agricultural backgrounds (Macy, 2019). Incubator farm programs have been demonstrated to be effective in providing benefits to nascent immigrant farmers (Laverentz & Krotz, 2012). However, despite the prominence of these programs, there is a lack of research that examines their impact on immigrant farmers (Hightower et al., 2013; Ostrom et al., 2010). This research parallels some of the findings from these studies, such as recommending that language services be emphasized to enhance market access, as well as echoes these calls for more research (Hightower et al., 2013; Ostrom et al., 2010).

While support networks present evidence to support the long-term entrepreneurial efficacy of immigrant farmers, advice networks indicate that, for many farmers, their ability to continue as successful market farmers after they depart from the incubator farm setting is ultimately unlikely. Limited advice networks were also demonstrated among women and immigrant farmers. Limited advice networks were networks that were limited to only staff members of the incubator farm program, implying that the farmer did not seek out advice regarding selling or marketing their products from anyone outside of the program. A number of farmers did not speak English and, while this was identified as the primary selling barrier among farmers, a number of farmers who spoke English also indicated a constrained advice network. Further research is needed to explore the reasons why disparities exist between farmers' advice networks, how these disparities can be addressed in an incubator farm program curriculum, and what, if any, the consequences are of these disparities on the eventual long-term entrepreneurial success of farmers.

Conclusion

This study is highly relevant today, given the expansion of farmer training programs and farmer support programs, an increasing refugee population, and an increasing population of emerging farmers. This case study has implications for the design and delivery of training programs and for increasing market access for emerging farmers. A clear delineation is found within this case study between farmers with diverse advice networks and farmers with more limited networks. The advice network disparity resulted in disadvantageous long-term entrepreneurial indicators for women, non-English speaking, and minority farmers. Support networks were decidedly larger and consisted of stronger ties, both in their nature (familial) and in their structure (highly dense), among immigrant farmers. The most prominent barrier to farmers market access and expanding advice networks beyond the incubator program staff was a language barrier. This resulted in farmers having a degree of economic dependency on the program to sell their crops, which underscores the importance of access

to markets. On the other hand, the incubator program's established CSA was highly effective in engaging emerging farmers in cultivation for market sales through building farmer knowledge of planning, planting, harvesting, packing, and marketing for direct customer sales. This engagement included enhancing farmer knowledge about packaging, pricing, outreach, presentation, and other market proficiencies.

The most recent National Farm Training Incubator Farm Training Initiative's regional report highlights multiple major goals and challenges to incubator farms in the Midwest region (Tufts University, 2016). The report explicitly stated that the goals for incubator farms were to increase access to program materials (land, funding, staffing) and to increase collaborations (for funding and training) throughout the region. Specific challenges to the Midwest region were supporting limited resource farmers and managing competition with local growers. This study is especially in conversation with the challenges relating to supporting limited resource farmers. It is clear is that more research is needed to examine the role that social connectedness plays in the long-term success of

emerging farmers as nascent entrepreneurs. The language barriers facing refugee farmers, in particular, merit closer examination for enhanced programming and engaged policy-making. This research also highlights the usefulness of utilizing mixed-method network analysis to examine market access among farmers and the effective application of this method within an incubator farm setting. Emerging farmers possess a tremendous amount of potential to bring about positive changes in local food systems and contribute to the vibrancy of communities. It is hoped that this case study and similar efforts will contribute toward supporting emerging farmers with evidence-based policy-making and inclusive agricultural development. 

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A system dynamics approach to examining household food insecurity

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Abstract

Household food security is influenced by the socio-political environment, resource access, and experiential factors, but the systemic interactions of these drivers are rarely considered in the same study. In collaboration with stakeholders, we built a system dynamics model to examine the drivers of food insecurity in Detroit and how community-led interventions could promote food security. We

found that single interventions were not as effective as multiple interventions in combination, due to the complex limits on a households' ability to purchase healthy foods. The iterative modeling process allowed stakeholders to jointly understand and generate insights into the cross-scale limits that households must navigate in order to achieve food security. Furthermore, our modeling effort demonstrates how time is a fundamental resource stock that limits the efficacy of behavioral and structural interventions.

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Keywords

Food Security, System Dynamics, Urban Food Systems, Participatory Modeling

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Introduction

Recent food security literature has stressed the necessity of a systems approach to understanding the complex nature and interconnections between the food system and public health outcomes (Story, Hamm, & Wallinga, 2009). Though systems approaches have been applied to these intersections (Conner & Levine, 2007; Fleischer et al., 2017), this work has primarily been qualitative. A quantitative systems approach has the advantage of allowing users to test system interventions, analyze system behavior over time, and understand complex interactions. The food systems literature has come to be more integrated with the complex systems and socio-ecological resilience literature, particularly at regional scales (Hodobod & Eakin, 2015; Lamine, 2015). This presents a potential framework for a better understanding of how social and ecological interactions produce different food security outcomes. However, this integration is still rare at the scale of an urban community, a setting in which many food security interventions are targeted.

A household's food security status, one contributing factor to healthy living, is a complex problem. It is shaped by the interactions between its resources and the broader food environment (Campbell, 1991). Households are embedded in larger systems that include cultural factors and determine physical access to food retailers, and thus the availability of healthy foods. Food environments and physical access to food retailers have become emerging areas of study, engendered by the concept of food deserts (Beaulac, Kristjansson, & Cummins, 2009; Guy, Clarke, & Eyre, 2004; McKenzie, 2014). Though the food desert literature has its critiques and limitations (Wrigley, Warm, Margetts, & Whelan, 2002), many empirical studies have concluded that there is a relationship between physical access to full-service grocery retailers and nutrition-related health outcomes (Hendrickson, Smith, & Eikenberry, 2006). One area improving our understanding of urban food security is research on food environments, which includes measures of market composition mix between healthier and less healthy options and assessments of how households access food vendors (Widener, Farber, Neutens, & Horner, 2013; Wrigley, Warm, & Margetts, 2003; Zenk et al.,

2009). There have also been recent attempts in the behavioral health literature to better understand the effect that perceptions of time scarcity have on food consumption choices.

In this article, we examine how urban food insecurity and its risk factors manifest and persist in Detroit, MI. We use a participatory system dynamic modeling approach to focus on how the complex interactions between household resources and the broader food system generate patterns of food (in)security. In doing so, we take an interdisciplinary methodology, integrating empirical and theoretical knowledge with insights from food system practitioners. The resulting model is then used to develop and test interventions and analyze potential leverage points.

Urban food insecurity is driven by characteristics of the food environment and individual household resource constraints (Beaulac et al., 2009; Campbell, 1991; Walker, Keane, & Burke, 2010). Campbell (1991) presents a food security framework that distinguishes between the experiential dimensions of food access and the social context of food security. Here, experiential aspects are used to explain the outcomes of diet sufficiency and its effects on health and quality of life. In this conceptualization, a household's resources are a product of, and often defined by, the dynamics of larger community systems—the local economy, labor market, education, and nonfood expenditure prices of housing, taxes, etc. These households exist within the larger food system and the local food environment. The food environment is characterized by relative access to food outlets and retailers and the quality of the available products.

In a systematic review of food access, Beaulac and colleagues (2009) find that “evidence is both abundant and robust enough for us to conclude that Americans living in low-income and minority areas tend to have poor access to healthy food” (p. 4). Hendrickson et al. (2006), studying food in urban grocery stores, discover that prices are higher, and food quality is poorer, in areas with high poverty. Additionally, there is less quantity and variety offered at stores in these areas. The authors also find that food prices in the urban food desert are higher than in suburban neighborhoods (Hendrickson et al, 2006).

Lack of transportation is a barrier to food access. Many low-income households lack access to cars and are unable to afford the costs of getting to larger supermarkets outside of their immediate neighborhoods (Guy et al., 2004; Hendrickson et al., 2006; Rose & Richards, 2004). Hillier, Cannuscio, Karpyn, McLaughlin, Chilton, and Glanz (2011) find that low-income parents travel further than other low-income groups to shop for food. Clifton (2004), in a case study examining mobility strategies for low-income food shoppers, found that the most common and useful approach is for households to purchase a vehicle for transportation (Clifton, 2004). The interaction of spatial proximity and how people access food through the transportation system is being addressed by some researchers including spatial-temporal measurements in food environment studies (McKenzie, 2014; Rose & Richards, 2004; Widener et al., 2013).

Behavioral health researchers have investigated how perceptions of time scarcity affect food consumption choices. Furst, Connors, Bisogni, Sobal, and Falk (1996) developed a conceptual model of food choice-making, documenting that time, as a resource stock, influences food choices. In a review of the literature on perceptions of time scarcity and food choices, Jabs and Devine (2006) document the growth in interest to further understand how time influences decision-making around food. They document how changes to intrafamily dynamics have influenced meal planning and how these changes are due to added time pressure (Connors, Bisogni, Sobal, & Devine, 2001; Furst et al., 1996). Time scarcity is linked to obesity (Cawley, 2004) and the rapid sale of convenience products, including convenience food (Gofton, 1995). Sales of convenience foods are on the rise (Jekanowski,

1999); fast food sales have increased for low-income households; and convenience foods and foods eaten outside of the home have lower nutritional value (Guthrie, Lin, & Frazao, 2002).

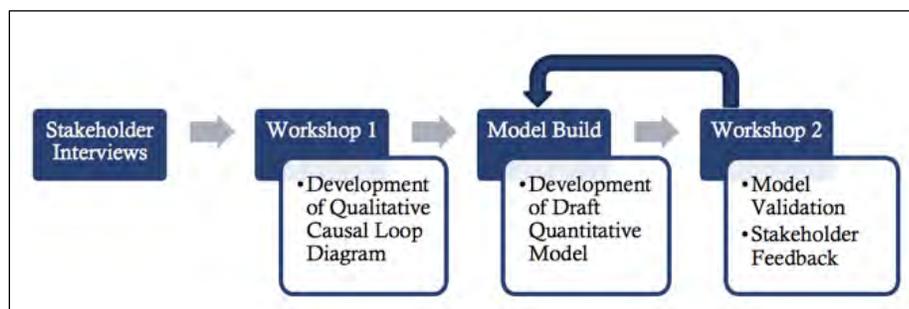
Much of the reviewed literature has called for systems thinking around food and nutrition security (Fleischer et al., 2017; Lamine, 2015; Story et al., 2009; Walker et al., 2010). The community food security literature states that to conquer food insecurity, it is necessary to address governance systems first (Bellows & Hamm, 2002; Hamm & Bellows, 2003; Pothukuchi, 2011). Campbell's food security framework emphasizes the interconnectedness of systems and household resources and the systemic barriers to achieving security (Campbell, 1991). In a review of the literature on food security and health disparities, Walker et al. conclude by recommending "an innovative method such as concept mapping, a participatory research method that allows hypotheses to be generated" and using the data to provide "understanding of the complexity of food access and the food environment, while providing a basis for program planning and policy development aimed at addressing access to healthy and affordable foods" (Walker et al., 2010, p. 882). Such a method would allow the integration of the different insights into the causes of food insecurity discussed above. In this paper, we heed Walker and colleagues' (2010) recommendation.

Research Design and Methods

For this research, we partnered with FoodPlus Detroit and the Detroit Food Policy Council to identify a meaningful problem statement. We worked with our community partners to design the research process illustrated in Figure 1. The research began by identifying and interviewing key

stakeholders in Detroit who have experiential knowledge of the systems governing food insecurity. The semi-structured interviews focused on barriers to household food security in the city as well as possible interventions to minimize them. We then

Figure 1. Study Design



conducted a workshop in Detroit to construct a qualitative model of the system. We used this system diagram and the interviews to develop a quantitative system dynamics model of urban food security. We demonstrated and validated this model with community stakeholders in a second workshop and received feedback on its assumptions and behavior.

Interviews

Our community partners identified 15 key stakeholders to include in the semistructured interview sessions. Stakeholders were affiliated with or represented interests from urban agriculture, local government, food sales and distribution, economic development, emergency food services, small business owners, and entrepreneurs (see Appendix A for the full list). The interviewees were prompted with questions that focused on the patterns and drivers of food insecurity over time (see Appendix B for the interview structure). Our goal was to elicit comments that would inform the system structure. We also inquired into perceptions of proposed solutions. We also asked about views of the future and if the participants expected things in the food system to improve, worsen, or stay the same. This process was conducted to prime participants to think about the systemic issues governing food security in their communities. The data were used to inform the quantitative system dynamics model and the scenarios tested in Section 4.

Participatory Model Building

Participatory modeling or Group Model Building (GMB) is a tool that has been used to mediate consensus and understanding of a problem statement (Hovmand, Ford, Flom, & Kyriakakis, 2009; Van den Belt, 2004). It is useful when multiple stakeholders hold competing mental models of how a system operates (Hirsch, Levine, & Miller, 2007; Olabisi, 2013; Van den Belt, 2004). Like traditional system dynamics modeling, it utilizes a simulation tool to examine the behavior of complex systems over time (Olabisi, 2013; Sterman, 2000). Its main features are the ability to represent feedback (circular causal relationships) and stock-and-flow dynamics. Through simulation and informal maps, the models assist with under-

standing the endogenous sources of system behavior. Participatory system dynamics modeling has been used to rigorously test the implications and effectiveness of policy interventions at community, state, and national levels (Olabisi, 2013; Stave, 2002; Stave, 2003; Van den Belt, 2004).

Causal Loop Diagrams (CLDs), which form the conceptual basis for a system dynamics model, can be used to illustrate and document the causal mechanisms and feedbacks governing a system (Kirkwood, 2013; Sterman, 2000; Van den Belt, 2004). Creating CLDs is a process that explicitly lays out assumptions of causal relationships and identifies any mutually causing variables, or feedback (Sterman, 2001).

Causal Loop Diagrams

Workshop 1 of our research design centered around diagramming potential barriers to food security in Detroit. With guidance from our community partners, we invited 16 stakeholders with unique and experiential knowledge of the food system to participate. Workshop 1 began with the focal question: What are the drivers of food insecurity in Detroit? This focal question was open to different scales of analysis (community, household, etc.). The workshop allowed stakeholders to work in small groups to diagram and map their perceptions of the system structure. The small groups worked independently, with assistance from facilitators who answered technical questions. The small groups then explained their diagrams to the larger group for input, critique, and clarification. The modeling team then worked to integrate and aggregate the diagrams into a qualitative model. This iterative process resulted in Figure 2. Fully assembled, the qualitative model documents 15 feedback loops, 13 of which are reinforcing, and two of which are negative or balancing. The diagram represents the stakeholder views of the system and its causal mechanisms.

There are four segments of the aggregated CLD addressing the multiple broad areas that the group identified. These segments, which are found in the aggregate diagram, have been identified as the Home-Economic, Cultural-Nutritional, Socio-Political, and Peer Network segments (see Appendix for CLD Segment descriptions and diagrams).

Each segment has specific features and drivers operating at different scales. Though some of the segments deal with macro-level system behavior, all groups identified how the processes affect community and household food security.

Quantitative Model

We used the qualitative CLD (Figure 2) to inform the creation of a quantitative system dynamics model (Kirkwood, 2013). The CLD demonstrates how the system is operating at two scales: the larger community food system and the dynamics influencing household food security. We chose to build the quantitative model at the household level as there was significant interest from our community partners in how policy interventions affect household food security. It was also believed that the model output at this scale would inform immediate policy considerations and be more easily understood by community members and associated practitioners.

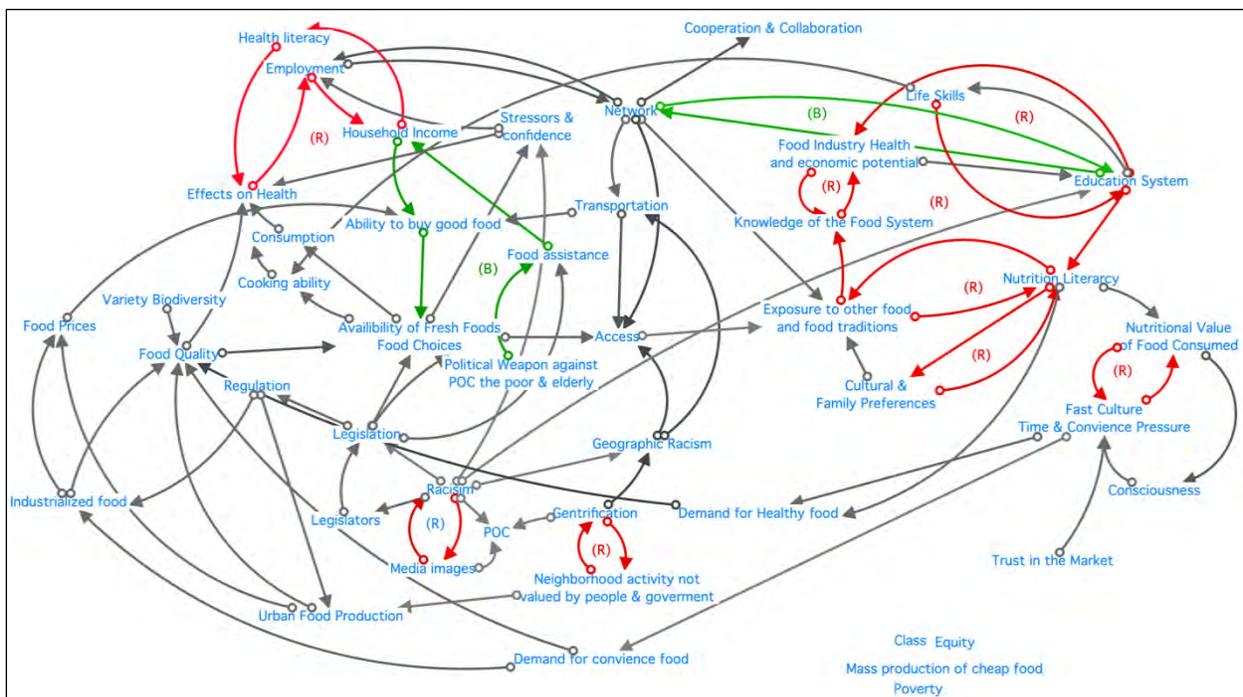
Model Description

The system dynamics model depicts a single household in the city of Detroit. The household is

programmed to make food purchasing and consumption decisions for different types of food products. The household attempts to fill its food pantry stock by purchasing “healthy food” or “convenience food.” It is constrained, however, based on available income and time. The time constraint is introduced by the physical distance of the household from produce vendors, and the type of transportation available to the household. The model uses the daily recommended consumption of fresh fruits and vegetables (FF&V) as a proxy for “healthy” food consumption (U.S. Department of Health and Human Services & U.S. Department of Agriculture, 2015). A list of all model equations can be found in Appendix C.

The modeled household makes two decisions every time step: the type of food to purchase and the type of food to consume. The purchasing decision functions by maximizing the fulfillment of healthy food preferences (which are influenced by the broader culture, peer influence, and the alternative food economy), given the constraints of time and income. The consumption decision is a function of current food stocks, current time stocks, and the household’s perception of time

Figure 2. Aggregate Causal Loop Diagram



scarcity. The household's time perception is a sigmoidal function that depicts the relationship of available free time and healthy food consumption. When time is more open, the household attempts to consume healthier food, as long as healthy food stocks are available and desired. Convenience foods represent highly processed or prepared foods that save time (Brunner, van der Horst, & Siegrist, 2010). If the household is low on time, they will eat these foods (if they are available in the pantry). Alternatively, if the household does not have enough food to eat, they will consume emergency food, which represents any food security coping strategy (not eating, going to a soup kitchen, food bank, eating at a friend or relative's, etc.) (Maxwell, 1996). If the household is low on time and does not have enough convenience food, they will consume a prepared meal or an "away-from-home meal" or, in some cases, "fast food" (Stewart, Blisard, Bhuyan, & Nayga Jr, 2004).

The model takes into account a simplified version of the food system, including the proximity of retail grocery stores, the amount of available alternative food system options (community gardens, farmers markets, CSA), and the effects of peer influence. These broader food system influences are also affected by the household's preferences, as there is a reinforcing feedback loop between household preference for fresh fruits and vegetables and the growth rate of the alternative food system.

The model functions within six modules: Home Economics, Time Cost, Nutritional Security, Preference for Fresh Fruits & Vegetable, Alternative Food Economy, and Retail Food Environment. The Home Economics module is where the household sells their labor-time on the market and receives a wage. This module structures the amount of money that can be allocated for food, housing, transportation, and bills, and receives feedback by way of a Health Event from the Nutritional Security Module. The Nutritional

Security module is where the purchase and consumption decisions are made. This module uses inputs generated from the other modules and follows simple rules for allocating resources. It has a reinforcing feedback loop with the Home Economics model; more income for food leads to a higher level of nutritional food security, which leads to a more stable availability of labor (time) and income for food (minus health-event costs). There is also a balancing feedback loop: if income increases through working overtime, this reduces the time stock, and therefore, nutritional security.

Home Economics Module

The Home Economics Module follows a stock-flow diagram that tracks the Household's monthly income and income allocated for food. Income is generated through labor, and the costs of this labor (e.g., commuting) are also included in the outflow expenses. The household first pays its housing and transportation costs before allocating money for food.¹ Transportation expenses include gas and monthly payments for car servicing, insurance, and leasing. This function can be toggled off, which defaults the model to use public transportation. This option requires more time but is significantly cheaper.

This food money then flows into a stock called Income for Food, which also has an inflow of Food Assistance, calculated using the USDA methodology for Supplemental Nutrition Assistance Program benefits (U.S. Department of Agriculture, Food and Nutrition Service, n.d.). Money spent on food is generated in the Nutritional Security Module and represents what the house is spending per month on food. There is also an expense labeled Health Event, which deducts money each month if a family member is sick or injured, which may cost a family working hours. There are of course other expenses that may be related to a health event (medical expenses, child care, etc.); however, these expenses occur outside the boundary of the

¹ This is a simplifying assumption and limitation imposed by the modeling process. In system dynamics modeling, there must be a "flow priority" when there are multiple flows out of a stock. Allowing the model to draw down the income stock with nonfood items first allows the impacts of variability to be shown through the lens of food security outcomes. If we reversed this priority, having the household draw down the income stock with food-related expenses first, we would have to expand the model to include indebtedness, late-fees and penalties, and possible housing evictions, which was out of scope for the purposes of this model.

represented cash-flow system. The module is defaulted to use an hourly workweek, which is highly variable, between 120 and 200 hours a month, representing that many hourly employees have inconsistent scheduling and income.

Time Cost Module

The Time Cost module uses a simple stock-flow structure to depict a household's available time. Each month, 720 hours are added to the time stock. The time stock is depleted by work hours, commuting hours, and other time (where food decisions are made). The model calculates commute time by dividing hours worked in the month by an eight-hour shift for commutes and multiplying by the median distance traveled for work in Detroit. Speed is captured in the Car Speed and Public Transportation Speed converters, which are 45 mph and 15 mph respectively.

Preference for Fresh Fruits and Vegetable Module

The Preference for Fresh Fruits and Vegetable module is where the household preference for healthy food is modeled. This preference represents a goal that the Nutritional & Food Security Module uses to calculate purchasing decisions. The dynamics of this module are influenced by healthy eating education programs, peer behavior, cultural impacts, and the level of household exposure to healthy options. Though this preference goal is not updated based on food security outcomes, it is influenced by the balancing dynamics of the larger food system culture and growth of the Alternative Food Economy (AFE).

Nutritional Security Module

The Nutritional Security Module is where the household makes decisions about which food to purchase and which foods to consume. It is a bi-flow relationship between two pantry stocks called Healthy Food and Convenience Food. These stocks are calculated in meals. Meals are purchased (inflow) once a month and consumed (outflow) at a rate of three meals a day per household member.

Purchasing

The inflows follow a simple set of rules for how the Household will purchase food. It assumes that

the household is trying to maximize its fulfillment of healthy food preferences and purchase healthy foods given the constraints of time and income. Here, maximizing the fulfillment of healthy food preferences does not mean that the household is trying to consume as much healthy food as possible; rather, the household is attempting to purchase the amount of healthy food it desires, which could be zero. The purchase quantity is limited to 45 meals a trip if the household does not have access to a car. Convenience foods are purchased at a quantity that satisfies the need to replenish the total stock of meals per month. Convenience meals purchased are a function of healthy meals purchased in the same time period. To illustrate this relationship, if the household is one member; they require 90 meals per month. If they purchase 30 healthy meals in a month, the model purchases up to 60 convenient meals, if the income for food is available. The household also tries to maximize its healthy meal preference fulfillment through consumption, which is limited by time and Healthy Meal stocks. We used a graphical function that illustrates the perceived time one needs to prepare food, which we derived from the American Time Use Survey. Convenience meals consumed is also a function of the healthy meals consumed, much like the purchase function. Besides going hungry, the household follows two more rules to satisfy their food needs. If they have low time and healthy foods, the household can consume food outside the home ('fast food'). If they have time and inadequate meals in their pantries, they seek emergency food, which can be part of an array of different coping strategies.

Model Demonstration and Validation

The second workshop was designed to demonstrate the quantitative system dynamics model to community stakeholders and elicit feedback on the model behavior and assumptions. A graphical user interface (GUI) was designed to allow the stakeholders to interact with and navigate the model firsthand. The GUI connected model parameters to sliders and buttons, making it simple to change assumptions and analyze the results. Stakeholders were encouraged to make hypotheses about system behavior and to test these with the model.

From the GUI display, stakeholders could also select critical interventions which the modeling team made accessible with a single click. These interventions were designed with information from the stakeholder interviews about possible solutions to food insecurity. Table 1 describes these interventions and their operations. The stakeholders were prompted to create their own ‘on-the-spot’ interventions and test them with the model. Participants also gave feedback on the model and its assumptions to validate the model accuracy and improve the model structure.

The model was tested with other standard validity methods (Barlas, 1996; Sterman, 2001). The equations were reviewed for consistency with the CLD and stakeholder interviews. The model was checked for consistency of units throughout. It generated reasonable behavior for a wide range of parameter values, including for extreme conditions.

Results

Reference Mode

A system dynamics model’s reference mode is used to illustrate the problem statement that the modeling effort seeks to examine (Sterman, 2000). For this modeling effort, we are tracking a household’s consumption of fresh fruits and vegetables, which serves as a proxy for the nutritional quality of all meals consumed. The model measures food consumed, instead of traditional food security measures like food access, to examine the experiential and behavioral dimensions of food and nutritional security.

The reference mode is run with no interventions and is parameterized to represent a typical household in Detroit. The median household income for Detroit (US\$26,325) and the median commuting time (26.6 minutes one way) are used

Table 1. Interface Intervention Definitions

	Condition	What it does
<i>Hourly Employee</i>	On *	Assumes the employee works a variable hour workweek between 30 and 50 (over 40 is 1.5 rate of pay)
	Off	Consistent 40 workweek, no overtime
<i>Owns Car</i>	On*	Household Owns a car, paying monthly fixed costs and mileage
	Off	Household uses public transportation, taking twice the time, and limiting how much food can be transported in a single trip
<i>Healthy Food Time Priority</i>	On	Graphical function. Time preference for purchasing and preparing healthy food is a priority.
	Off*	Graphical function. Time preference is consistent with time-use averages. As perceived time lessons, the preference to prepare healthy food declines.
<i>Healthy Eating Education</i>	On	An intervention that increases the household preference for purchasing healthy food.
	Off*	No increase in healthy eating preference.
<i>Education Strength</i>	Input	Input how effective the education intervention was, as a percent increase in preference as an annual increase.
<i>Healthy Peer Behavior</i>	On	Exposed to healthy eating habits, increasing preference for healthy food by 0.5% per month.
	Off*	Exposed to unhealthy eating habits, decreasing preference for healthy food by 0.095% per month.

for parameters. Figure 3 documents the types of meals the household is consuming by percentage when the model runs for two years (24 monthly time steps). The typical household is consuming far less than the recommended daily intake of nutritious foods, and this result tracks well with documented consumption habits for the residents of Detroit (Feeding America, 2016; Zenk et al., 2005).

Parameter Uncertainty

There are some model parameters that we have had to estimate because the secondary data was inconclusive or the value of an input variable was genuinely unknown. For these parameters, we tested the model with multiple runs, varying the parameter values incrementally. This technique, referred to as sensitivity analysis, allows the team to understand how these parameter assumptions affect the model behavior (MacFarlane, 1968).

Cost of Healthy Meals

There is some debate in the literature on the price difference between healthy and nonhealthy foods (Carlson & Frazão, 2012; Zenk et al., 2005). Here, healthy foods are represented by fresh fruits and vegetables. Figure 4B demonstrates the model's sensitivity to the relatively more expensive costs of healthy foods. As determined by the model structure, the Percent of Healthy Food Consumed Graph shows that for the most variance in meal price, the model output does not shift significantly. This output is explained because the modeled household seeks to maximize its preference for healthy food, which is not influenced by perceptions of affordability. However, the Percent of Emergency Food Consumed is sensitive to meal cost, varying between 0.3% of total food consumed on the lowest end and 5.6% of the total food consumed on the high end.

Figure 3. Reference Mode Model Output and Sensitivity Analysis

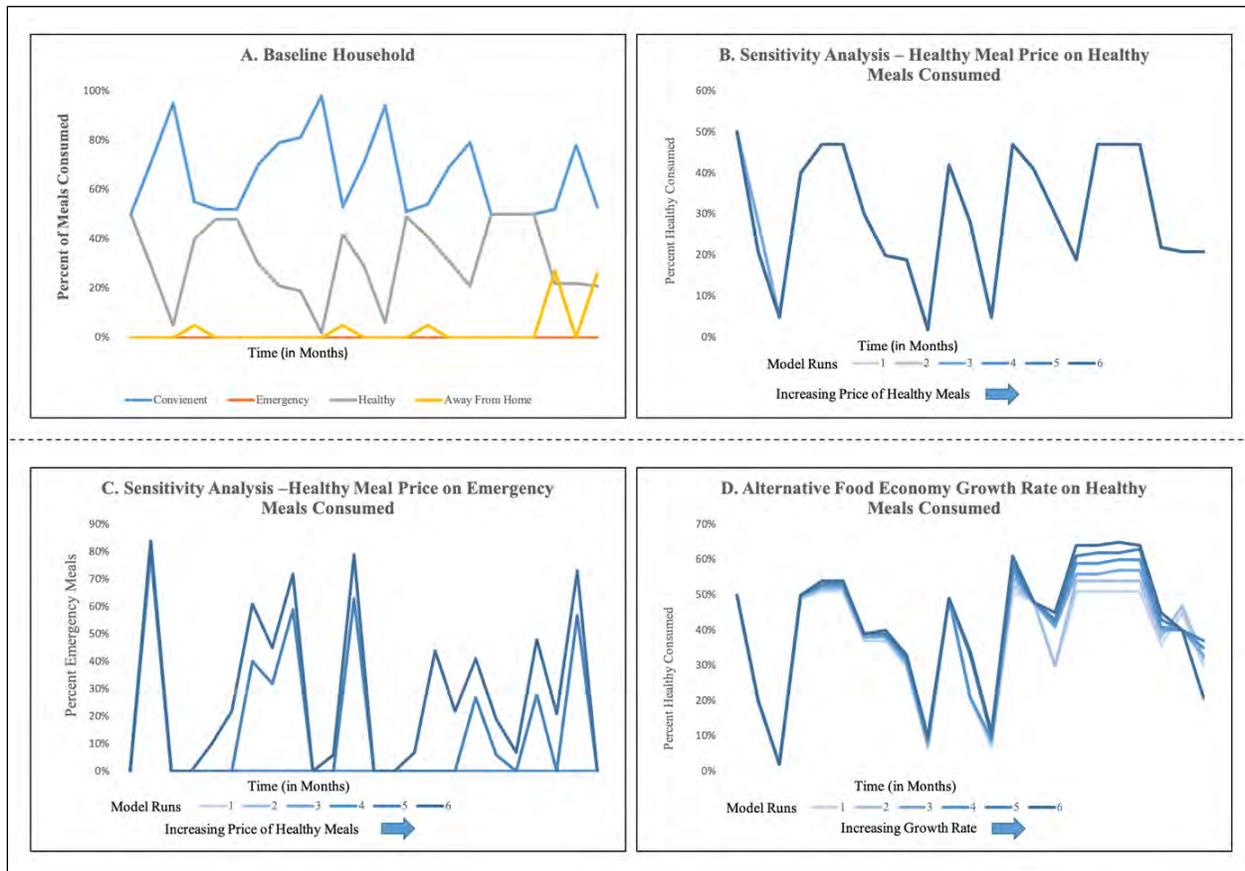
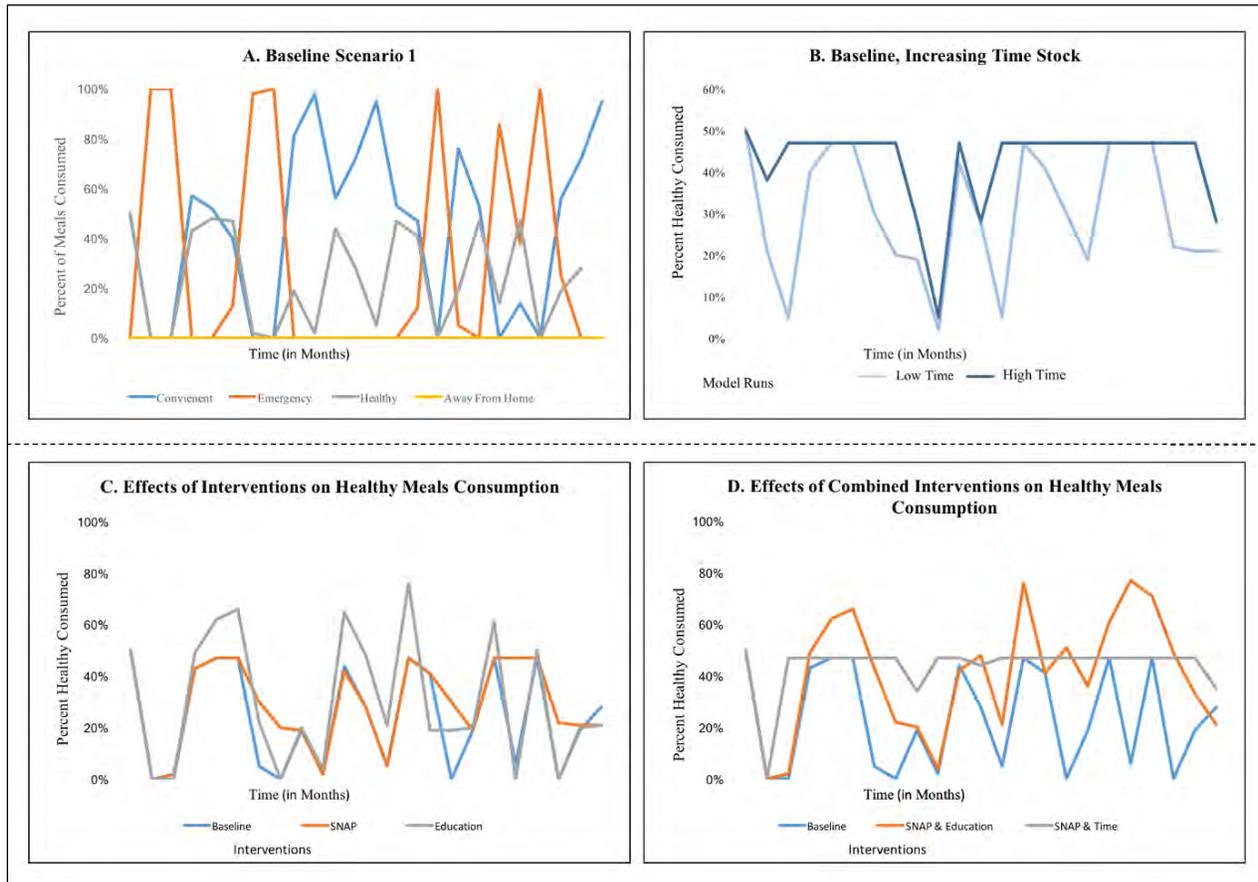


Figure 4. Scenario 1: Low Income, No Car, No Assistance, Variable Work Schedule

Alternative Food Economy Growth Rate

It is uncertain how the Alternative Food Economy (AFE) is evolving in the city of Detroit. Some stakeholders believed it to be growing at a rapid rate, while others did not. Figure 5D demonstrates the model's sensitivity to changes in this growth rate on the percentage of healthy foods consumed. The growth rate is modulated incrementally between 0% and 10% per year. Figure 5D demonstrates that increasing the growth rate increases the demand for healthy meals and decreases the number of healthy meals the household is required to travel long distances to procure. Increasing the growth rate also produces a small shift in the amount of 'away-from-home meals' the household consumes, as the household's preferences have changed, despite it still being time constrained. This behavior is due to a time delay between how quickly the AFE responds to increases in demand.

The growth rate is important because there is a feedback loop between FF&V Preferences and the AFE: the more the household prefers healthy food, the more the AFE grows, and, in turn, the more the household will be exposed to healthy foods, changing its preferences.

Scenario Results

During the modeling workshop, stakeholders created scenarios using the model interface. To interpret the effectiveness of interventions, we have created a scenario space that describes the initial household conditions and documents the model behavior when different interventions are applied (see Table 1).

Scenario 1

Scenario 1 represents a Detroit household that is quite vulnerable to food and nutritional insecurity.

The scenario simulates a household of three, which has one income earner making the minimum wage, with a highly variable work schedule. The household is not participating in any federal or state supplemental nutrition programs and does not have access to a vehicle. This variation in work schedule produces two constraints on the household, the first being the variation in income, and the second being the amount of time the household has to procure and consume meals. The difference in food consumption by type is driven by the ebbs and flows of this work schedule. Over the two years, this results in the household consuming 34% emergency meals, 42% convenience meals, and 24% healthy meals.

Figure 4C and 4D demonstrate the effects of the interventions. Applying for and receiving SNAP benefits does marginally increase the number of healthy meals the household is consuming by a 6-percentage point difference. SNAP's most significant role in this scenario is reducing the

number of emergency meals the household is consuming. In the intervention, emergency meals are replaced with convenience meals and not healthy meals due to access, time shortages, and preferences. Adding a healthy eating education program, which acts on preference for healthy food, increases the consumption of healthy meals by five percentage points. This intervention also increases the number of emergency meals the household consumes. This counterintuitive outcome is driven by the increased time and financial resources a household is required to use to meet this healthy eating goal. Because the inflow of financial and time resources is variable, in time steps where these resources are scarce, the household no longer has the time or financial resources to purchase less expensive meals. The healthy eating education program, which focuses on shifting household preferences, also influences the growth rate of the local food economy, and this marginally increases access and exposure to healthier food options.

Figure 5. Scenario 2: Mid-Low Income, Car, Variable Work Schedule

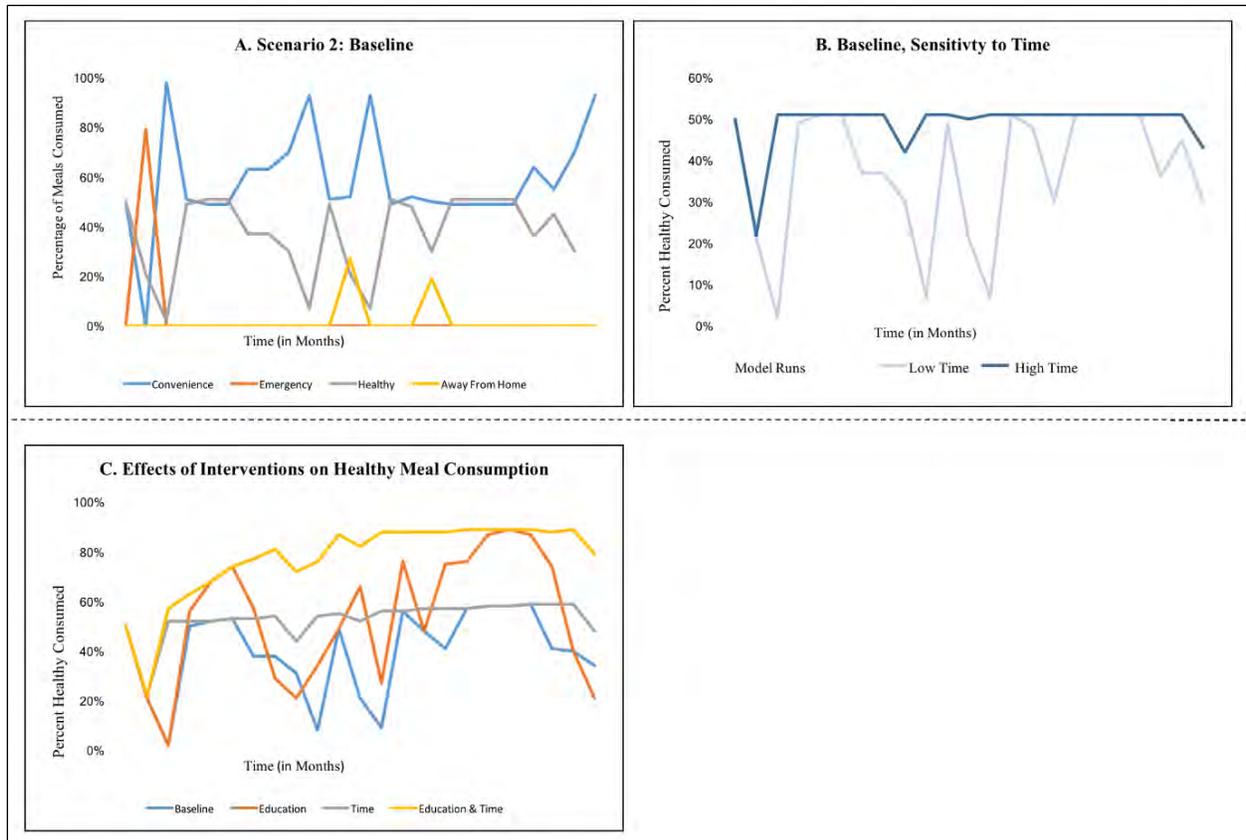


Figure 4D illustrates healthy eating consumption when the model is set to receive SNAP benefits and is allocated an additional hour for each day. This combination of household resources stabilizes the consumption of healthy foods. The extra hour per day represents interventions that save the household time, such as improvement of public transportation speed, development of organizational skills, or a change in family labor allocation.

Scenario 2

Scenario 2 represents a Detroit household that is vulnerable to food and nutritional insecurity. The scenario simulates a household of three, which has one income earner making US\$12 an hour, and a variable work schedule. The household is participating in the federal SNAP program and has access to a vehicle. The baseline run for this scenario, illustrated in Figure 5A, shows that the household is consuming 38% healthy meals, 56% convenience meals, 2% away-from-home meals, and 4% emergency meals. The variability of the diet is primarily driven by the variable work schedule, placing pressure on the time stock. Figure 5B shows how perceived time scarcity effects consumption decisions. Each model run in Figure 5B increases the time stock incrementally. The final model run (6) increases the time stock by one hour per day and reduces the variability and increases the quantity of healthy food consumed.

Figure 5C demonstrates the effects of various interventions on household healthy food consumption. The first intervention is a healthy eating education campaign that targets household food preferences. This intervention works to increase healthy meal consumption by ten percentage points, decrease convenience meals by 22 percentage points, and increase away-from-home meals by 12 percentage points. The increase in the use of away-from-home meals, which tend to be less healthy, is counterintuitive. It is caused by the increase in preferences for healthy meals and the household time stock remaining scarce. When the household perceives time scarcity, the household tries to consume a convenience meal; when none is available, the household consumes a prepared meal or away-from-home meal instead. The next intervention is a combination of additional time and the education

component previously noted. This intervention has the effect of increasing healthy meal consumption by 34 percentage points, reducing convenience meals by 33 percentage points and reducing away-from-home meals by two percentage points. This combination intervention has the outcome of a reasonably consistent diet with an average of 75% of meals being healthy. The variability of the diet in this scenario is driven by the work schedule placing pressure on the time stock, and to a lesser extent, the variability in income. Figure 5B shows how perceived time scarcity effects consumption decisions. Each model run in Figure 5B increases the time stock incrementally. The final model run six (6) increases the time stock by one hour per day and reduces the variability of and increases the quantity of healthy food consumed. The variability of run six (6) in Figure 5B is driven by the variability in income over the period.

Scenario 3

Scenario 3 represents a Detroit household that is vulnerable to food and nutritional insecurity. The scenario simulates a household of three, which has one income earner making US\$18 an hour and a variable work schedule. The household is participating in the federal SNAP program, though it is only periodically eligible for benefits, and has access to a vehicle. The baseline run for this scenario illustrated in Figure 6A shows that the household is consuming 26% healthy meals, 70% convenience meals, 5% away-from-home meals, and 0% emergency meals. The variability of the diet is due to the variable work schedule placing pressure on the time stock. Figure 6B shows how perceived time scarcity affects consumption decisions. Each model run in Figure 6B increases the time stock incrementally. The final model run (6) increases the time stock by one-hour per-day and reduces the variability and increases the quantity of healthy food consumed.

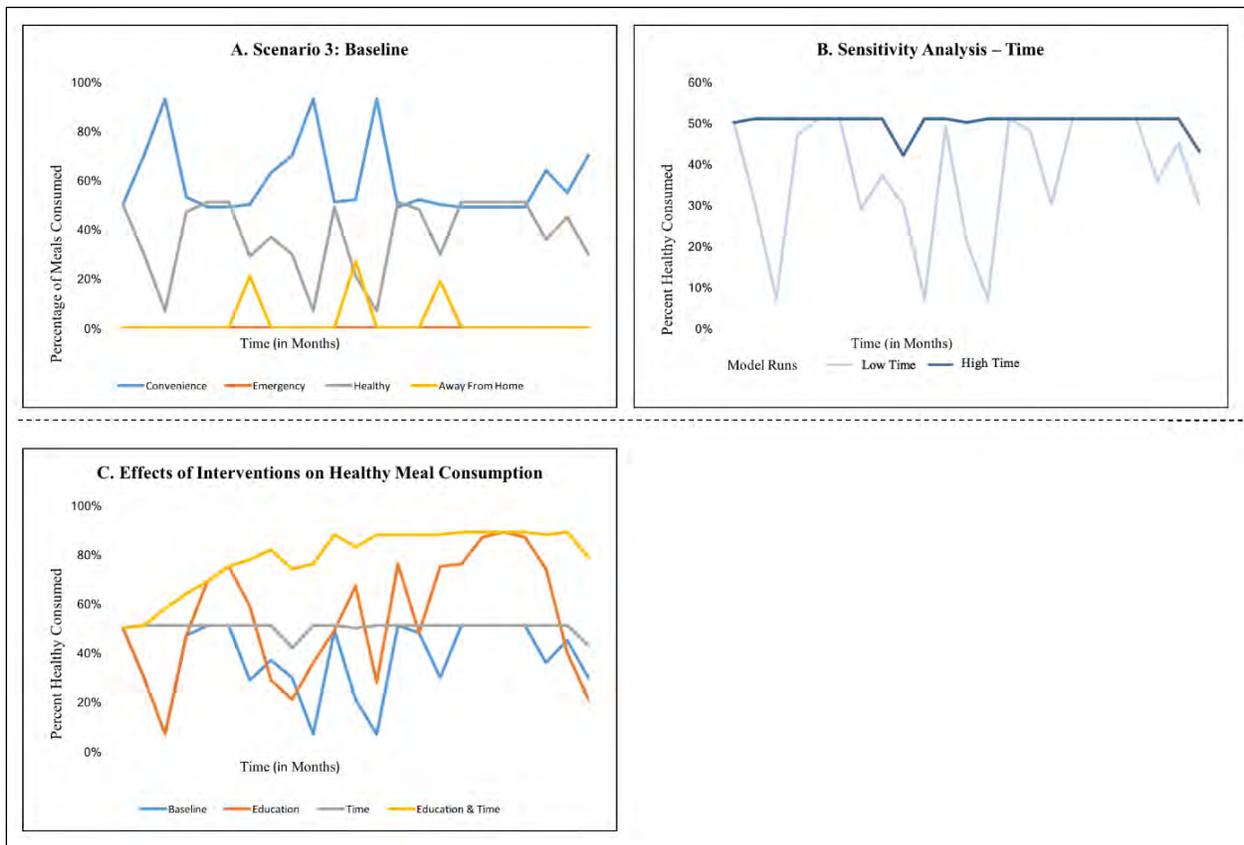
Figure 6C demonstrates the model output for various interventions for this scenario. The first run represents the baseline with no interventions. The second run (and first intervention) is a healthy eating education campaign targeted at increasing the household's awareness and preferences for healthy meals. For this scenario, the intervention

increases healthy meal consumption by 13 percentage points, decreases convenience meal consumption by 25 percentage points, and increases away from home consumption by 12 percentage points. There was no change in emergency food consumption. The increase in away-from-home meal consumption, as in Scenario 2, may be counterintuitive, but is a result of the decrease in convenient meal purchasing and perceived time scarcity. The household recognizes that it is time-poor, and then wishes to consume a convenience meal, but with limited meals in its pantry, it chooses to eat a meal away from home. The third intervention combines the time intervention, adding an extra hour of perceived free time per day to the time stock, and the healthy eating education program. It increases healthy meals consumed by 38 percentage points, decreasing convenience meals by 36 percentage points, and decreasing away-from-home meal consumption by 2.5 percentage points.

Participant Feedback on the Model

Stakeholders identified three areas of concern with the model, the first being the nutritional composition of “Away from home/Prepared Meals.” In the model interface, these meals are categorized as unhealthy. While research supports the finding that away-from-home meals are of lower nutritional value (Guthrie et al., 2002; Jekanowski, 1999; Stewart et al., 2004), this is on average and may not represent the preferences of some households for healthy prepared options. Secondly, there was extensive discussion in the workshop about the relative price of a healthy meal compared to a convenience meal. Sensitivity analysis demonstrates the effect of comparable price on model output and found that though it is important, it is not a major driver of nutritional food security status. The third concern with the model was that it lacked a feedback mechanism between changes in the Alternative Food Economy (AFE) and Preferences for

Figure 6. Scenario 3: Mid Income, Car, Variable Work Schedule



FF&V. This feedback loop was added to reflect that as the AFE expands, it increases exposure to, and demand for, nutritious food. Overall, the stakeholder group felt that the proposed model accurately captured their views of the complexity of household food and nutritional insecurity.

Discussion

Our model results document how specific limitations govern the dynamics of household food and nutritional security. These limitations operate by restricting a household's ability to access opportunities for food security. As all three scenarios demonstrate, the effects of singular interventions are mostly ineffective because other limits temper the opportunities they create. For example, in Scenario 1, the variability of the household's healthy eating behavior is being driven by the variability of the work schedule, both in terms of an income limit and time pressure limit. Applying a food income intervention is not fully effective, as time pressure is then the dominant limit. In another example, adding a vehicle to the household reduces the pressure of the time stock, but comes at a cost, reducing income available for meals and potentially reducing savings. We also document how healthy eating education can boost a household's healthy eating preferences, but in the absence of interventions to increase a household's access to healthy foods, economic status, or time, these preferences cannot be satisfied by the household. The results suggest that interventions are much more effective if they are designed to target multiple limits or drivers of food insecurity.

Much of the literature around household food security deals with what Campbell (1991) describes as the "social aspects of food security," focusing on household resources and characteristics of the food environment. This focus on the social aspects is evident in a literature review by Walker et al. (2010). Although useful for creating food security indicators and monitoring, this focus may lead to a limited understanding of the complexity and systemic factors that cause a household to experience food insecurity. Research that has included the experiential dimension of food security has done so through the use of food diaries and survey methods (Storberg-Walker, 2009; Wrigley et al., 2003,

2002). This approach has revealed implications for households living in different food environments but is limited in the number of studies and scope of dynamics that can be observed. An advantage of our modeling approach has been the ability to study the experiential dimensions of food security from stakeholder perspectives and simulate these dynamics over time. In our results section, we illustrated counterintuitive behavior, in which some interventions lead to an increase in away-from-home meal consumption or more reliance on emergency meal coping mechanisms. These behaviors were driven by system feedback and delayed effects between food availability and household preferences. This system behavior may reveal unintended consequences of interventions and programs that fail to include an experiential focus. Though the implications of this model are limited, it demonstrates the usefulness of separating social and experiential food security indicators. Contrasting the indicators more accurately captures the consequences of living in different food environments.

Our focus on experiential outcomes allows our model to take an expanded view of household resources—incorporating household knowledge, time availability, preferences, and income. We believe that documenting the interactions of these resources is a novel and necessary outcome of this research. The model output shows that households face periods of food insecurity when income and time availability fluctuate with variable work schedules. We were also able to merge research findings on behavioral health and food environments to explore the importance of time as a resource stock (Daly, 1996; Jabs & Devine, 2006; Jabs, Devine, Bisogni, Farrell, Jastran, & Wethington, 2007; McKenzie, 2014). Time affects the model as both a stock and a perception of time scarcity. As a resource stock, available time is a limit to the procurement of food items. This represents an interaction with the food environment through the physical distance to grocery stores and access to transportation. Our model, therefore, supports the incorporation of temporal distance and time-distance measures into the analysis of food environments and food security (McKenzie, 2014; Rose & Richards, 2004). Secondly, a household's perception of the necessary time to cook,

clean, and consume food leads households to choose alternative options for consumption, even if their food stock is plentiful. In our model, this leads to the use of potentially less healthy options and food spoilage. Our model explicitly assumes that the household drains their time resource stock when they must travel for a long-time procuring food; this then shapes how they perceive available time when they make consumption decisions. Coupling a time component with many of the other interventions has reinforcing effects, multiplying the effectiveness of interventions.

Further research is necessary to test the nature of these dynamics at different scales. It is also important to consider the macroscale dimensions of the CLD, notably the socio-political segment, which could affect the long-term system behavior through household actions shaping the food landscape.

Limitations

The system dynamics model presented in this article is based on an integration of stakeholder mental models with academic theory and secondary empirical data. Our stakeholder group mainly represented practitioner knowledge and expert testimony from years of experience working in the Detroit food system. A fair criticism of our process is that we did not include participants with first-hand experiential knowledge of food insecurity. The household decision process in our model is based on theory and our assumption that households would attempt to maximize the fulfillment of their healthy eating preferences. A group model-building process with food-insecure households could prove very advantageous and yield more system discoveries, as well as provide another source of validation for the model findings.

Another limitation is that although our model includes a representation of temporal distance as a function of transportation speed and distance, it is not geographically explicit. A geographically explicit model could introduce other elements into the temporal distance calculation, including congestion, road conditions, public transportation schedules, walkability, and safety. This could clarify the heterogeneous landscape of household food security in the city.

Our model may be limited in the way we approached intrahousehold dynamics. In the model, all household activities that require time, including all aspects of procuring, preparing, and cleaning up of meals, are attributed to the same time stock. Some research exists on how the shift in intrahousehold dynamics impacts food consumption and time allocation decisions though we did not find conclusive evidence to represent these effects in the model. This could be important, especially in circumstances in which households are utilizing emergency food coping mechanisms. Also, the model problematically assumes that the household is homogenous concerning eating preferences and dietary requirements. There could be an important delay in how a family adapts to shifts in preferences by the primary food decision-maker. For instance, a parent could purchase healthier meal options and receive feedback or resistance from family members, which may result in the food going to waste. This could result in reshaping the preferences of the purchaser in a balancing feedback loop. Furthermore, though using FF&V as a proxy for healthy food preferences is useful in this context, there are of course healthy options that are both affordable and nonperishable.

Potential Policy Implications

Interpreting the model behavior can be useful for informing policy considerations. It should be done with the cautious understanding that the model is not meant to be predictive but used as a tool to better understand the interconnectedness of variables driving system behavior. Given the limitations outlined above, we believe there are policy and programmatic areas where the model can help inform the discussion.

Our model demonstrates that coupling a time component with many interventions has reinforcing effects, multiplying the impact of interventions. Conceptualizing a time intervention may be difficult, and further research is needed, but here we will point to some hypothetical interventions that may be considered. For instance, at the national level, food assistance programs could make allowances for additional costs of semiprepared healthy food options or assist with transportation. We believe this could help reduce household time pres-

sure. Information and research on the marginal time savings and price premiums for such a program change are out of scope for this project but could reveal critical considerations. We also envision programs that assist people in understanding the true time it takes to prepare and consume healthy foods. It could be beneficial to link these programs to farmers markets and grocery stores where people are purchasing their groceries.

Conclusions

This modeling effort demonstrates the usefulness of using a participatory process to unpack a complex social issue. The research design enabled the modeling to be iterative and allowed participants to see the benefits of collaborative research and systems thinking. The qualitative CLD documented and explored stakeholder understanding and knowledge of systemic structural issues facing residents of Detroit and how the combination of these forces interacting may limit opportunities. The quantitative model allowed us to explore the experiential dimensions of food and nutritional security and test stakeholder assumptions of how various interventions should be structured and

implemented. The system dynamics model demonstrated the multiple drivers of food insecurity at the household level for residents of Detroit. Some of these drivers have been extensively documented in the literature including; the barriers of access, characteristics of the food environment, and the limits of household income (Beulac et al., 2009; Campbell, 1991; Lass, Stevenson, Hendrickson, & Ruhf, 2003; McKenzie, 2014; Walker et al., 2010; Zenk et al., 2005). We are also able to support findings that a household's stock of available 'free time' and its perception of time are important factors in food-related decision making (Furst et al., 1996; Jabs & Devine, 2006; McKenzie, 2014). Our model adds to the understanding that these behavioral dimensions and access barriers interact to limit household food security opportunities. The model's behavior demonstrates the necessity of taking an expanded view of household resources, one that includes aspects of time management and availability, food prices, knowledge, preferences, and peer behavior. We believe this research has explanatory power in why these resources should be integrated into measurements of food security, which is a novel and essential outcome. 

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Application of free-listing in identifying desirable foods and their accessibility in an urban nonprofit supermarket

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Abstract

There is a gap in the literature regarding the specific methods used by supermarkets to engage community members in operations and decision-making processes. Free-listing is an engagement

method that allows individuals to list all possible items associated with a particular topic or domain. This study explores the application of free-listing as a method to assess the availability and affordability of food items at DMG Foods, a nonprofit supermarket in Baltimore, Maryland, to assist with making stocking decisions and increasing store use.

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Twenty residents in central northeast Baltimore participated in free-listing desirable foods and frequented supermarkets. All selected participants were over 18 years of age, Black, and regularly shopped in the central northeast region of Baltimore. We calculated the saliency of food items and stores based on an item's frequency and order of mention in the free-listing. We then conducted store observations of the top salient stores three times at three-week intervals to identify the availability and accessibility of the top salient food items. Fifteen items had saliency scores greater than 0.1 and were retained for observation. Five stores had saliency scores greater than 0.1 and were within a five-mile (8-km) radius from DMG Foods. Larger supermarkets carried the widest variety of salient items, and the prices of items varied between stores, highlighting the importance of community-driven stocking for smaller supermarkets. Free-listing is a simple engagement method that store managers with limited research experience can use to identify foods that are desirable to residents of the community, ultimately leading to improved community food environments and increased store success.

Keywords

Free-Listing, Nonprofit Supermarket, Food Environment, Food Access

Introduction and Literature Review

In the United States, low-income communities and communities of color are disproportionately affected by food insecurity and diet-related diseases, in part due to limited access to nutritious and desirable foods (Gamblin, 2017; Petersen, Pan, & Blanck, 2019). Residential areas with limited access to affordable nutritious foods and areas with a high ratio of unhealthy food sources (e.g., fast food restaurants, carry-outs) to healthy food sources (e.g., supermarkets) have been termed “food deserts” and “food swamps,” respectively (Cooksey-Stowers, Schwartz, & Brownell, 2017). Living in a food desert or swamp is associated with having a poorer diet and increased risk of chronic disease (Cooksey-Stowers et al., 2017; Ghosh-Dastidar et al., 2014; Hager et al., 2017).

Establishing new supermarkets has been a key

strategy for improving low food access. The Healthy Food Financing Initiative (HFFI), created by Congress in 2010, planned to reduce the number of food deserts and swamps by opening or expanding 1,500 for-profit supermarkets, nonprofit supermarkets, and convenience stores in these areas (U.S. Department of Health and Human Services, 2019). However, this initiative was largely unsuccessful: only one-quarter of the number of supermarkets planned by HFFI were opened, and many of the supermarkets that opened during this time closed within five years. Previous research has shown that the success of new supermarkets depends in part on community engagement during planning and development (Brinkley, Glennie, Chrisinger, & Flores, 2019). Community engagement has also been shown to improve healthy food availability, sales, and consumption in interventions (Gittelsohn, Rowan, & Gadhoke, 2012; Gudzone, Welsh, Lane, Chissell, Anderson Steeves, & Gittelsohn, 2015).

Supermarkets developed by nonprofit organizations through the HFFI engaged community members in the planning process better and were more successful than those developed for profit by other entities (e.g., city or state government, commercial retailers) (Brinkley et al., 2019). Nonprofit supermarkets can be found in numerous cities across the U.S. The goal of many of these stores is to provide affordable foods for the community, as well as social services such as nutritional guidance, shopping education, and workforce development. However, nonprofit supermarkets face many challenges compared to larger chain supermarkets, including low customer turnout attributed to small store size, reduced selection, and inconsistent pricing and promotional strategies. There also seems to be a perceived lack of safety of the neighborhoods surrounding many nonprofit supermarkets (Yao, Hillier, Wall, DiSantis, 2019).

The Salvation Army established its first nonprofit supermarket, DMG Foods, in Baltimore, MD, in 2018. Similar to other nonprofit supermarkets, DMG Foods experiences challenges with store use (e.g., limited customer turnout) as well as low purchasing per customer visit. A recent mixed-methods study explored reasons for the low usage of DMG Foods and identified factors such as high

prices, unclear signage and advertising, and lack of product variety (Daniel et al., 2021). Although DMG Foods has a large selection of foods in store, they may lack foods that are desired by or culturally relevant to residents in the surrounding community.

There are numerous engagement strategies that may be used to collect information from community members, such as surveys, focus groups, individual interviews, and free-listing. Free-listing is a qualitative data collection method that is used to gather information about a particular cultural domain or topic (Weller & Romney, 1988). In free-listing, researchers ask a question (e.g., “What are all the different types of X?”), and participants list out all items they perceive to be part of that domain (Quinlan, 2017). Data collected from free-listing allows researchers to make inferences about the “saliency” of items within a domain, or which items are better known or important to the study population, with a relatively small sample size. Saliency scores can be calculated from the item’s frequency (how many participants mentioned the item) and order of mention in the free-listing (first, middle, last). Saliency scores vary from 1 (highest) to 0 (lowest), and highly scoring items are those that are mentioned more often and are positioned higher on participants’ lists. In the context of research, free-listing has been used extensively to assess categories of foods (e.g., junk food, culturally relevant foods, etc.) (Gittelsohn et al., 2016). However, to our knowledge, there have been no other studies in which free-listing has been used to identify foods that are desirable to customers specifically in retail settings.

There is a gap in the literature regarding the specific methods used by nonprofit supermarkets such as DMG Foods to engage community members in operations and decision-making processes. To our knowledge, no studies have explored how nonprofit supermarkets decide which items to stock or whether the items they stock are desirable to the surrounding community. Therefore, the overall goal of the present study was to explore foods that were desirable to community members and assess the availability and affordability of these items at DMG Foods in order to assist with making stocking decisions and increasing store use. The

specific aims of this study were to: (1) explore free-listing as a simple method to be used by nonprofit supermarkets to identify salient foods for residents of the surrounding community; (2) identify foods that are salient for Black residents living in central northeast Baltimore; and (3) examine access to the identified foods at DMG Foods and other community supermarkets. This research group has a strong and long-lasting partnership with DMG Foods, and the findings from this study informed recommendations for current in-store stocking strategies and for planning of future supermarkets developed by the Salvation Army.

Applied Research Methods

Setting Description

In Baltimore City, there are approximately 871 retail food stores, of which 47 (5%) are supermarkets, 633 are small grocery and corner stores (73%), 185 are convenience stores (22%), and 6 (less than 1%) are public markets (Misiaszek, Buzogany, & Freishtat, 2018). Nevertheless, almost one-quarter of Baltimore residents live in food deserts, which were renamed Healthy Food Priority Areas (HFPA) by the Baltimore City Department of Planning in 2018. HFPAs are defined as areas where there is low availability of healthy foods, the median household income is at or below 185% of the Federal Poverty Level, over 30% of households do not have a vehicle available, and the average distance to a supermarket is over one-quarter of a mile (.4 km) (Misiaszek et al., 2018). Thirty-one percent of Black Baltimore residents live in a HFPA compared to only 8.9% of White and 6.9% of Asian residents. This study was conducted in the central northeast region of Baltimore. Free-listing data were collected at DMG Foods, which is located in the Waverly neighborhood. The store is located within two blocks of an HFPA, and the neighborhood surrounding the store is primarily low-income (median income ~\$30,000) and consists of 75% Black residents (Baltimore City Health Department, 2017).

Data Collection

Data were collected in two phases: (1) free-listing and (2) store observations. Free-listing was used to

identify items within a domain most salient to the study population. The research team developed a set of three complementary open-ended questions, pilot-tested the questions with five individuals, and edited the wording of the questions based on responses from the pilot test. Considerable attention was given to the wording of the first question, how to select the appropriate term to identify salient foods. The questions were refined specifically to reflect foods that are purchased frequently, rather than foods that were eaten only on special occasions. Responses from pilot testing were not included in the final results. The final questions included: (1) “What are all the different foods that are special or meaningful to you, your friends, and your family?”; (2) “How often do you, your friends, and your family eat these foods?”; and (3) “Where do you, your friends, and your family typically purchase these types of foods?” Probing (e.g., “Can you think of any other foods that are special or meaningful?”) was used to create a complete list of foods. Data collectors were graduate students with experience in qualitative research methods who were trained in free-listing methods by the principal investigator (JG) of the study. Participants free-listed answers to the first and third questions orally while the data collectors wrote down each item listed; free-listing activities were not audio-recorded. The second question was asked specifically regarding the items listed in the first question. The saliency of food items and stores was determined based on an item’s frequency and order of mention in the free-listing.

The 15 most salient free-listed food items and five most salient free-listed stores within a five-mile (8-km) radius of DMG Foods were identified using saliency analysis, as described in *Data Analysis* below. A direct observation tool was developed to collect data on each of the items at each of the five stores. All observation sheets were composed of a table with one row for each of the food items. One item, collard greens, was not specified by participants as canned or fresh and was therefore listed twice to account for both, resulting in 16 rows total. Columns included presence or absence of the item, quantity of present items (<5 items, 5–10 items, >10 items), item shelf location (top shelf, eye-level, below eye-level, bottom shelf), item price

listed (e.g., US\$4.99), and item price per unit (e.g., US\$0.49 cents per pound). Three observations were conducted in each of the five stores approximately three weeks apart in order to account for (1) short-term price changes and (2) items that may have sold out at a certain time. For items that had multiple brands (e.g., canned greens), the lowest-cost item was recorded at all stores. For produce items with multiple varieties (e.g., apples: Red Delicious, Gala, Fuji; tomatoes: Roma, on-the-vine, cherry), a specific variety was chosen to represent the produce item if it was found in all stores where the item was present. Similarly, 80% lean ground beef was selected because it was found in all stores where the item was present. Only one food from the top 15 salient items—spaghetti—contained multiple ingredients, and for this item, data were collected on the lowest-priced brand of spaghetti sauce.

Study Participants

Twenty Black adults in central northeast Baltimore participated in the free-listing activity. Half ($n=10$) of the participants were male and half ($n=10$) were female. Participants were selected from two community locations—a recreation center and a supermarket—in July to October 2019 using convenience sampling. Participants were eligible for inclusion if they (i) identified as Black, (ii) were over the age of 18, and (iii) regularly shopped for food in the Waverly neighborhood. No demographic information was collected from participants except for sex.

Data Analysis

Saliency analysis was conducted for items from two free-lists (food items and stores), using the AnthroTools package (Purzycki & Jamieson-Lane, 2017) in R (R Core Team, 2020). Four free-lists were used to pilot test the instrument, and after subsequent changes were made, all four were excluded from analysis (final $n=20$). Saliency was determined using Smith’s S , a saliency index calculated by the equation: $S_j = ((L - R_j + 1) / L) / N$, where L is the list length, R_j is the rank of item J in the list (first=1), and N is the number of participants (Smith & Borgatti, 1997). Saliency scores range from 1 (high) to 0 (low), and there are no standardized cutoff

points to determine which items should be retained. In this study, a cutoff point of 0.1 was used for retention. This cutoff allowed us to obtain feasible numbers of food items (≤ 20) and stores (≤ 5) for observation, which researchers determined in the planning stage of the study. Additionally, the frequency of items eaten was grouped into six categories: (1) rarely/special occasions; (2) 1–3 times/month; (3) 1–2 times/week; (4) 3–4 times/week; (5) 5–6 times/week; (6) every day. We calculated the average frequency score per item for each Salient item ($S > 0.1$), as well as pairwise comparisons for the number of items present between stores using independent 2-sample t-tests with Bonferroni correction ($\alpha = 0.01$).

We then calculated the mean and standard

deviation of the price of each item across three store visits. Analysis of variance (ANOVA) was used to determine if there was a significant difference in mean price between stores using an alpha level of 0.05. Pairwise comparisons for each item were calculated between stores using independent 2-sample t-tests with Bonferroni correction ($\alpha = 0.01$). Additionally, the average number of items present per visit in each store was calculated, and pairwise comparisons between each store were calculated using Pearson's chi-squared test with Bonferroni correction ($\alpha = 0.01$).

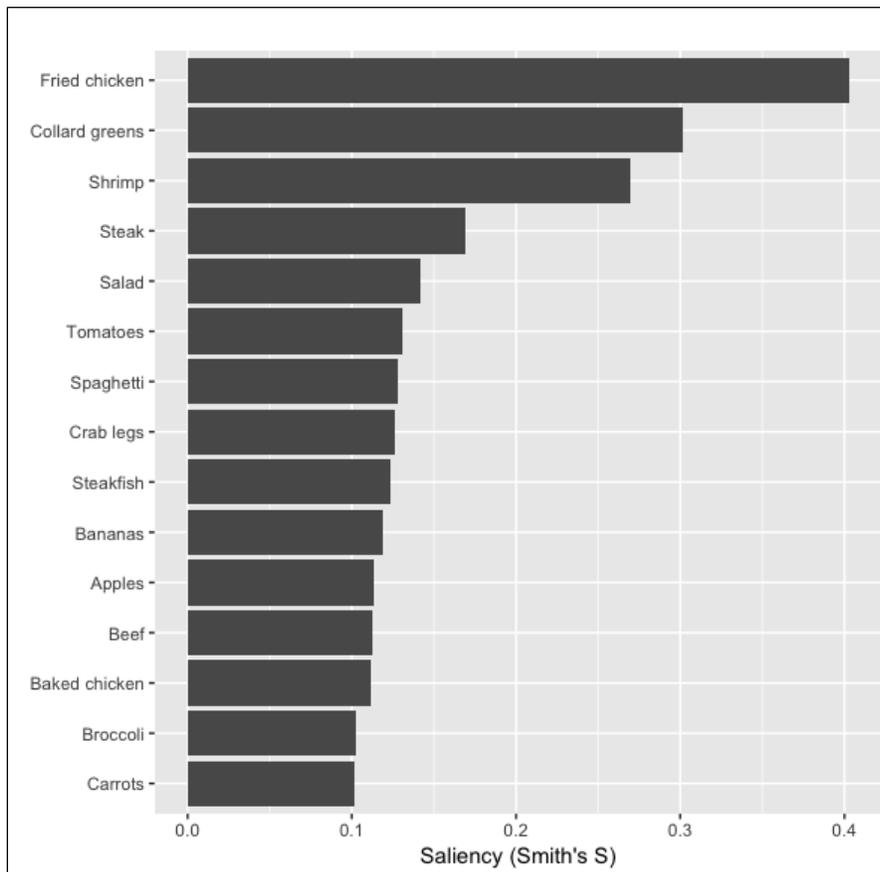
Ethical Approval

Approval for the study was obtained from the institutional review board at the Johns Hopkins

Bloomberg School of Public Health. All participants were provided with verbal and written details about the study at recruitment, and verbal informed consent was obtained from all participants.

Figure 1. Saliency of Food Items with the Highest Smith's S Saliency Index Scores from Free-listing Activity (N=20)

Figure 1 displays all items with saliency scores above the cutoff point of 0.1 (range: 0.10-0.40). These 15 items were retained for store observation. Since collard greens are often purchased fresh and canned, it was split into two distinct items for store observation, creating a total of 16 observed food items.



Results

Salient Food Items and Stores

Participants identified 146 food and beverage items during the free-listing activity (see Appendix A), with a range of saliency scores between 0.403 and 0.003. Of the total number of items, 33 (23%) were mentioned by three or more participants, and 14 (9%) were mentioned by four or more participants. Figure 1 shows the 15 items that had saliency scores greater than 0.1 and the three items—fried chicken ($S_i = 0.40$), collard greens ($S_i = 0.30$), and shrimp ($S_i = 0.27$)—that had

saliency scores above 0.2. The frequency of consumption score for each of the salient items ranged between 2 (1–3 times/month) and 4.4 (3–4 times/week), with a mean and median score of 3.3 (1–2 times/week).

Participants also identified 35 retail food stores during the free-listing activity with a range of Saliency scores between 0.005 and 0.703 (Appendix B). Of the total number of stores, 9 stores (26%) were mentioned by three or more participants, and 6 stores (17%) were mentioned by four or more participants. Six stores had saliency scores above 0.1—Giant ($S_i=0.70$), DMG Foods ($S_i=0.47$), Safeway ($S_i=0.18$), Aldi ($S_i=0.15$), Walmart ($S_i=0.12$), and Family Dollar ($S_i=0.11$), as shown in Figure 2. One store (Walmart) was outside a five-mile (8-km) radius from DMG Foods and was therefore excluded from the store observations.

Availability and Price of Salient Food Items by Store

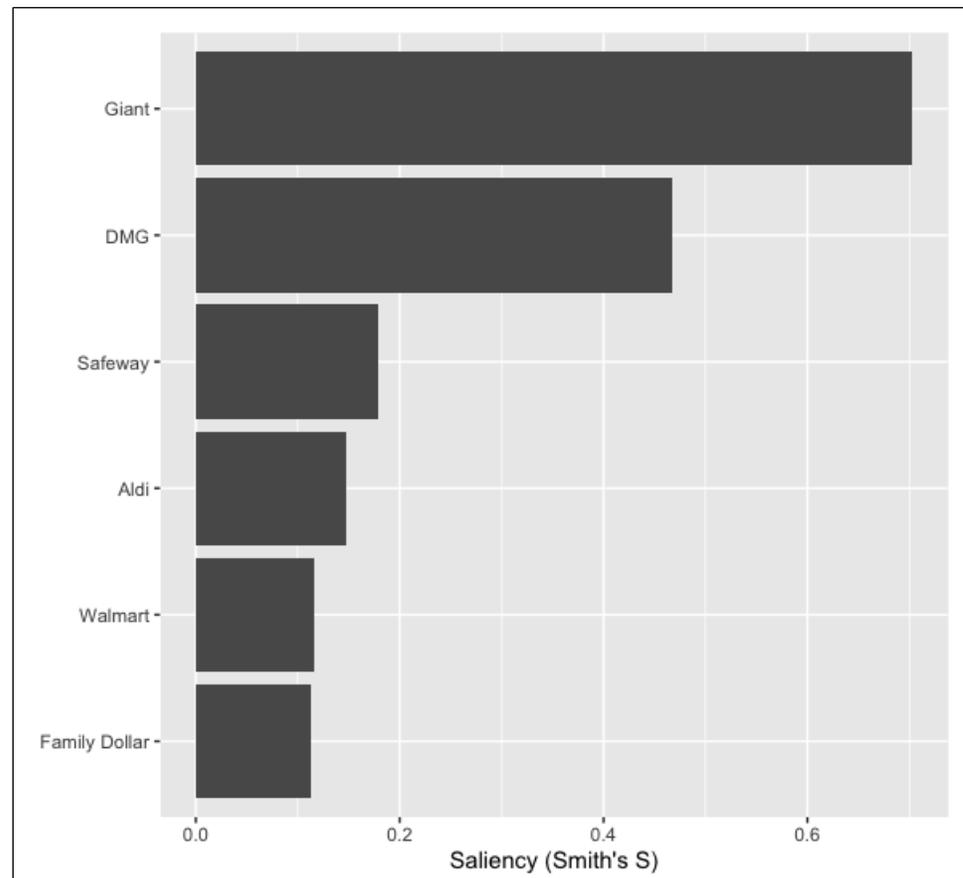
The average number of salient food items present at each of the five stores was variable, as shown in Figure 3. Giant had the highest number of salient foods ($n=15.3$; 96%), followed by Safeway ($n=15.0$, 93%), DMG Foods ($n=10.7$, 67%), Aldi ($n=10.0$, 63%), and Family Dollar ($n=2.3$, 14%). The number of food items present between all stores was significantly different except between Giant/Safeway and DMG Foods/Aldi. Additionally, not all food items were present

during every store observational visit. Some items, such as shrimp, were only available one time during observations at Aldi and Family Dollar, and others, such as “steakfish” (hake fish), were only available during one observation at one store throughout the entire data collection period.

Of the 16 items, 10 had prices that were significantly different between stores, as shown in Table 1. For example, of the four stores where apples were observed (i.e., Aldi, DMG Foods, Giant, and Safeway), the price of apples was significantly lower at Aldi and DMG Foods compared to Giant, but there were no significant differences in prices between Aldi, DMG Foods, and Safeway. DMG Foods and Giant had the greatest number of lowest-priced items ($n=5$ for each), followed by Aldi ($n=4$). Safeway and Family Dollar had the

Figure 2. Saliency of Stores with the Highest Smith's S Saliency Index Scores from Free-listing Activity (N=20)

Figure 2 displays the five stores with saliency scores above the cutoff point of 0.1 (range: 0.11–0.70). These stores were retained for observation of the top 16 salient food items.



smallest number of lowest priced items ($n=2$ for each). The proportion of lowest-priced items depended greatly on the number of items present in the store. For example, Family Dollar had the highest proportion of lowest-priced items ($n=2$, 67%) but only had three items present during store observations. In contrast, Safeway had the smallest proportion of lowest-priced items ($n=2$, 13%) but had an average of 15 items present during store observations.

Finally, Table 1 shows that the variability in price depended on the item and the store. For example, numerous items had standard deviations of zero, indicating that prices did not change between the three store observations. Safeway had the greatest number of items with the highest variability ($n=6$, 40%), followed by DMG Foods ($n=4$, 31%), Giant ($n=3$, 19%), Aldi ($n=2$, 18%), and Family Dollar ($n=0$). Some items, such as

spaghetti sauce, had very little variability between stores (standard deviation (sd) range: \$0–0.05/oz). Other items, such as shrimp and strip steak, had high variability between stores (shrimp sd range: \$0–1.53/lb; strip steak sd range: \$0–6.08/lb).

Discussion

The goal of this study was to use free-listing to identify and examine accessibility (i.e., availability and price) of salient food items for Black residents living in central northeast Baltimore. The use of free-listing methods in this study suggest that the application of this method is cost-effective and time-efficient. Existing nonprofit supermarkets can use this method to identify foods that may be missing from their inventory. Additionally, nonprofit organizations that are in the process of developing new supermarkets can use it to identify foods that may be important for the surrounding

Figure 3. Average Number of Items per Store, Measured by Three Consecutive Observations with Three-Week Intervals

Researchers observed each store on three occasions, approximately three weeks apart. During each observation, researchers looked for 16 items and counted the number of items that were present. The average number of items observed at each store was calculated by adding the number of items observed at each store over the three visits and dividing by three. This figure displays the average number of items present at each store and compares the stores to each other using independent 2-sample t-tests with Bonferroni correction ($\alpha=0.01$). NS indicates not significant.

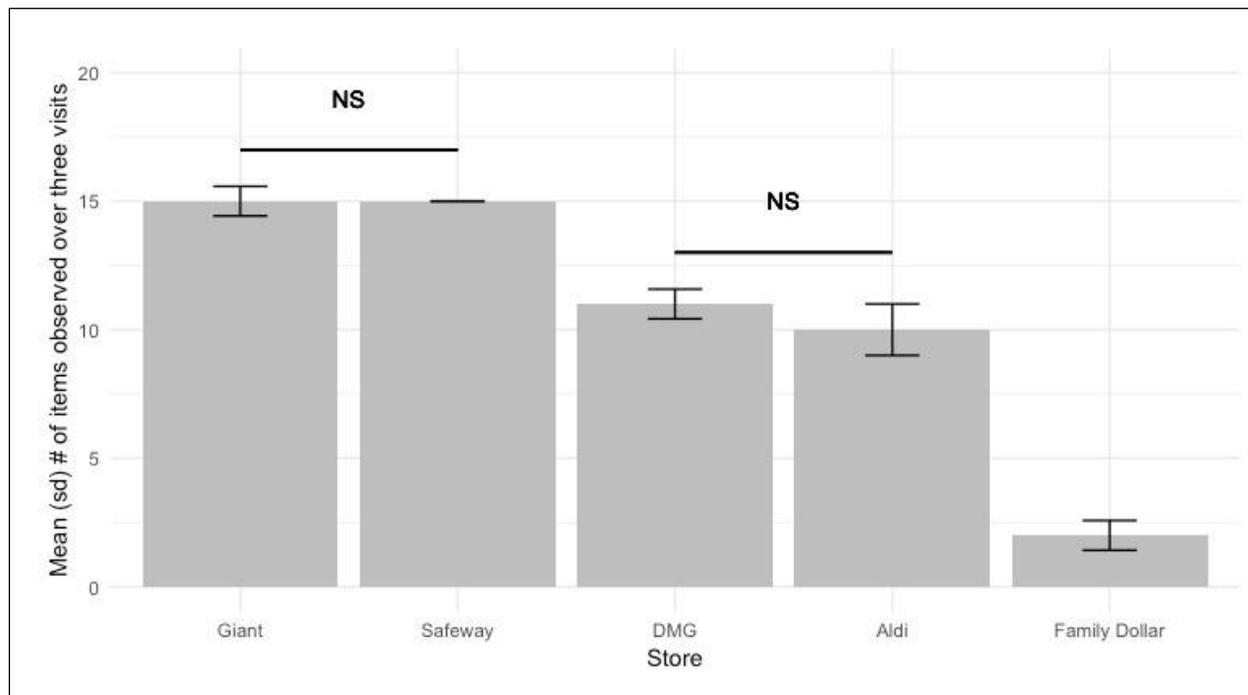


Table 1. Differences in the Prices per Unit of Top Salient Items by Store (N=16), Measured by Three Consecutive Observations with Three-week Intervals

Item (unit)	Aldi	DMG Foods	Family Dollar	Giant	Safeway	<i>p</i>
Apples (lb)	1.00 (0.02) ^b	0.99 (0) ^d	—	1.76 (0.06) ^{b,d}	2.16 (0.29)	<0.001
Baked chicken (lb)	—	—	—	6.66 (0.58)	6.99 (0)	0.374
Bananas (lb)	0.44 (0) ^{b,c}	0.34 (0.08)	—	0.59 (0) ^b	0.59 (0) ^c	<0.001
Broccoli (lb)	1.62 (0.15)	1.25 (0.35)	—	1.79 (0.17)	2.32 (0.29)	0.008
Canned greens (oz)	—	0.12 (0.04)	0.07 (0)	0.09 (0.01)	0.12 (0.05)	0.215
Carrots (lb)	0.98 (0.53)	0.97 (0.04)	—	0.82 (0.14)	0.96 (0.05)	0.874
Crab legs (lb)	—	—	—	10.99 (0) ^f	11.99 (0) ^f	<0.001
Fresh collard greens (lb)	3.72 (0.75)	2.49 (NA) ^{d,e}	—	1.49 (0) ^d	1.49 (0) ^e	0.002
Fried chicken (lb)	—	7.75 (0.36)	—	7.99 (0) ^g	6.99 (0) ^g	0.001
Ground beef (lb)	3.17 (0.03) ^{a,c}	1.99 (NA) ^{a,d,e}	—	4.32 (0.29) ^d	5.16 (0.29) ^{c,e}	<0.001
Iceberg lettuce (each)	1.36 (0.06) ^c	1.67 (0.1) ^e	—	1.88 (0.19) ^f	2.49 (0) ^{c,e,f}	<0.001
Spaghetti sauce (oz)	0.04 (0)	0.06 (0)	0.04 (0.01)	0.06 (0)	0.10 (0.05)	0.068
Shrimp (lb)	6.72 (NA)	7.99 (0)	8.64 (NA)	7.32 (0.58)	8.32 (1.53)	0.486
Steakfish (lb)	—	—	—	10.99 (NA)	—	N/A
Strip steak (lb)	8.89 (0) ^b	3.79 (1.7)	—	14.49 (0.87) ^b	11.99 (6.08)	0.046
Tomatoes (lb)	1.05 (0.63) ^c	3.32 (1.15)	—	1.82 (0.29)	3.82 (0.76) ^c	0.008

Standard deviations of zero indicate that all items were the exact same price at all three observations. Standard deviations denoted with NA indicate that the item was only present during one observation.

P-values calculated by ANOVA were assessed using a significance level of 0.05.

Superscript numbers indicate significant differences between stores: ^a DMG vs. Aldi; ^b Giant vs. Aldi; ^c Safeway vs. Aldi; ^d Giant vs. DMG; ^e Safeway vs. DMG; ^f Safeway vs. Giant. *P*-values calculated using two-sided pairwise comparisons with unpooled variances. Significance was determined using a Bonferroni-adjusted significance level of 0.01.

Bold prices (sd) represent the lowest-price store for each item.

neighborhood. Free-listing could easily be incorporated into other supermarket planning and development activities that are already in use, such as town hall meetings, which are often facilitated by nonprofit organizations to discuss various issues (e.g., building appearance and layout, hiring practices, and product offerings) (Brinkley et al., 2019).

Additionally, the free-listing method has many advantages as a standalone method. For example, as opposed to surveys, free-listing is open-ended and therefore does not limit the number of items or the content collected. This is particularly important in the retail setting—and especially in the development of new stores in food deserts—where store managers may not be familiar with the food preferences of the surrounding community. Thus, free-listing allows the discovery of foods that may not be previously recognized by store managers as important. Another advantage of free-listing is that it allows for rapid data collection in a short length of time and does not require prior expertise in data collection. Compared to activities such as focus groups and interviews, free-lists can be collected as customers walk or out of the store and take less than 10 minutes to complete. In our study, each participant spent less than five minutes completing the free-listing activity, and we were able to recruit participants easily at the entrance of the store. Customers were eager to participate in the study once we explained that the information would be used to provide DMG Foods with recommendations on improved stocking and pricing. Its simplicity makes the free-listing method ideal for store managers who may have limited or no experience with research techniques. Finally, the method does not require transcription and analysis of audio-recorded activities, nor does it require extensive knowledge of data analysis techniques. Smith's S can be calculated in a spreadsheet or common statistical software using the formula we presented above.

Free-listing can also help address some of the challenges faced by small and nonprofit supermarkets, such as reduced selection and inconsistent promotional strategies. For example, a store may have numerous types of dairy milk, but customers who desire to purchase nondairy milk may view the milk selection as limited. Free-listing can help stores—particularly small stores—make decisions

on how to use their limited stocking space. Free-listing helps identify items that will expand their selection (e.g., different brands, sizes, etc.) of preferred foods while reducing the selection of foods that may not be as desirable. Additionally, knowing which foods are meaningful to customers can help stores highlight and promote preferred foods. Previous interviews with customers from DMG Foods as well as store observations have shown that excess promotional signage is confusing to customers (Daniel et al., 2021). Free-listing can help stores identify a set of foods for promotion while reducing signage on other products. Finally, since free-listing is a time-efficient and straightforward way to collect information, stores may choose to repeat the free-listing process multiple times throughout the year to collect information on seasonal foods.

We also explored the accessibility (defined as ready availability and affordable price) of the identified preferred food items in DMG Foods and other nearby supermarkets. This was a natural next step, since we wanted to use free-listing to inform recommendations to DMG Foods, but the free-listing questions did not provide sufficient in-depth information on availability or price. We used the 15 most salient items identified through free-listing because we found that they were regularly consumed by participants (1–2 times/week), providing evidence that these are important foods for supermarkets to stock consistently. Observations of DMG Foods and neighboring stores highlighted differences in both availability and price. Item availability was observed on a spectrum, where larger chain supermarkets carried all or most salient items, midsized supermarkets (including DMG Foods) carried fewer items, and Family Dollar carried the fewest number of items. These results are supported by previous research that shows that small supermarkets and dollar stores carry a smaller selection of food items, particularly of healthier food items (Caspi, Pelletier, Harnack, Erickson, & Laska, 2016; Laska, Borradaile, Tester, Foster, & Gittelsohn, 2010). These findings are unsurprising, given that smaller stores have limited capacity to stock a wide variety of items. Thus, it is imperative that new and existing smaller stores use their limited capacity to stock food items that are preferred by community members, again highlighting the im-

portance of free-listing. Additionally, the store observation process was straightforward and feasibly could be adapted by store managers to track products over time to ensure that their prices are competitive (matching or lower) with nearby supermarkets. For example, it took approximately 10 minutes to observe all items in a single store, and comparisons of prices could be done using a spreadsheet or similar programs.

Based on the findings from our study, we developed three recommendations for DMG Foods to increase store usage. First, DMG Foods should continue to stock the salient items identified in this study, and stock the remaining three salient items (baked chicken, crab legs, and steakfish) that were not available at the time of observations. Second, DMG Foods should reduce the prices of salient foods by 15–30% for items that were not already priced lower compared to other stores. Although DMG Foods did carry most of the salient items identified by participants, their prices were not always lower than nearby stores. Decreases in this range would allow all but one salient item (tomatoes) to have the lowest price of all five stores. Lowering the prices of salient items could help improve customer turnout and is a common practice used by stores known as “loss leader pricing” (Hess & Gerstner, 1987). Loss leader pricing assumes that desirable items (i.e., the leaders) sold at a reduced price will entice customers to visit the store, which in turn leads to increased purchasing of other items. We recognize that lowering the prices of salient items would likely lead to decreases in profits due to the marginal costs associated with these items, which are often determined by manufacturers and wholesalers. DMG Foods is already operating at a loss each month, and further reductions in prices may not be feasible for the sustainability of the store. Therefore, our third recommendation is that DMG Foods should evaluate its current relationship with wholesalers and potentially partner with wholesalers that provide salient food items for lower prices.

This is the first study to use free-listing methods to help a supermarket identify foods that are important to community members. To our knowledge, only one other study has assessed the accessibility of culturally relevant fruits and vegetables in

supermarkets within communities of color; it found that over half of stores in predominantly Black neighborhoods carried only 6% of culturally relevant fruits and vegetables (Grigsby-Toussaint, Zenk, Odoms-Young, Ruggiero, Moise, 2010). That study emphasized the need to create interventions and develop measurement tools that include culturally relevant foods, but did not provide guidance on how to identify these foods. Free-listing is a quick and straightforward method that can lead to increased community engagement in future studies that aim to assess the prevalence of culturally relevant foods in predominantly Black neighborhoods.

Community engagement strategies should be used whenever new supermarkets are developed, and particularly when they are developed in food deserts and food swamps. People of color are disproportionately affected by negative health outcomes due to living in food deserts or food swamps, a direct result of historic systemic racism, including white flight, residential redlining, and “supermarket redlining” (Eisenhauer, 2001; Zhang & Debarchana, 2016). We recognize that there is no silver bullet to solve the issue of low food access and unavailability of healthy foods in communities of color. Moreover, we believe that developing equitable supermarket solutions can only be done when led by fully compensated members of the community, with economic growth pathways built into the process and institution, and that anything less upholds white supremacy culture within the current food system. Developing supermarkets *with* communities can begin, in part, to shift food system power dynamics away from historically racist practices. It is our hope that free-listing can be used as one tool in this process by helping organizations engage communities to identify culturally relevant foods to stock in new supermarkets.

Despite its strengths, this study had several limitations. First, convenience sampling was used to recruit participants for free-listing and therefore the results may not be generalizable outside the study sample. No demographic information other than sex was collected, so we were unable to stratify our analyses to explore potential subgroup patterns (e.g., age, income, participants with children). Although the sample size of 20 participants is com-

mon and sufficient in free-listing (Quinlan, 2017), it may be beneficial for stores to collect larger samples and more demographic information to explore differences by factors such as race, ethnicity, age, gender, and household make-up (e.g., children or elderly in the home). It is also possible that responses for free-listing may differ based on time of year due to seasonal variation in dietary intake (Ma et al., 2006). Similarly, we only conducted three store observations over a two-month period in winter, and it is possible that the availability and prices of items may differ at various times of the year. Additionally, we did not collect information on the quality (e.g., appearance, taste) of salient items, which may have varied between stores. Finally, this study did not capture the reasons why foods were salient to the participants. We can infer that the items listed were based, at least in part, on the frequency of consumption, given the overall high frequency scores for each item. However, there are likely other influential factors that were not captured by our data collection tool. Future research can build on these results by creating a

free-listing tool that directly measures culturally relevant foods, which would likely involve conducting formative research using cultural domain analysis techniques (Borgatti, 1998).

Conclusion

This study addresses a gap in the literature regarding the methods used by nonprofit supermarkets to engage community members in their operations and decision-making processes. We used a free-listing method to help a nonprofit supermarket identify and further examine the accessibility of salient food items as shared by the study participants. We developed three recommendations for DMG Foods and determined that free-listing is a straightforward method that may be used by organizations with existing supermarkets or those developing new supermarkets. Thus, the present study identifies a method for improving community engagement, particularly among low-income communities and communities of color, and increasing success for new and existing nonprofit supermarkets in urban settings across the United States. 

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Appendix A. Saliency and Frequency of Mentions of All 145 Items Collected During Free-listing

Italics indicate the foods that were included in the analysis.

Food	Smith's S	Frequency
<i>Fried chicken</i>	0.403	11
<i>Collard greens</i>	0.302	10
<i>Shrimp</i>	0.269	8
<i>Steak</i>	0.169	5
<i>Salad</i>	0.141	5
<i>Tomatoes</i>	0.131	5
<i>Spaghetti</i>	0.128	5
<i>Crab legs</i>	0.126	4
<i>Steakfish</i>	0.124	3
<i>Bananas</i>	0.119	3
<i>Apples</i>	0.114	4
<i>Beef</i>	0.113	4
<i>Baked chicken</i>	0.111	3
<i>Broccoli</i>	0.103	6
<i>Carrots</i>	0.102	4
<i>Cabbage</i>	0.100	3
<i>Pasta</i>	0.098	3
<i>Onions</i>	0.098	5
<i>Strawberries</i>	0.096	3
<i>Grapes</i>	0.093	3
<i>Kale</i>	0.091	3
<i>String beans</i>	0.089	4
<i>Spinach</i>	0.080	3
<i>Turkey</i>	0.079	3
<i>Watermelon</i>	0.078	3
<i>French fries</i>	0.078	2
<i>Pizza</i>	0.072	3
<i>Sushi</i>	0.071	2
<i>Cucumbers</i>	0.071	3
<i>Eggs</i>	0.067	3
<i>Milk</i>	0.063	3
<i>Catfish</i>	0.060	2
<i>Baked potato</i>	0.057	2
<i>Pineapple</i>	0.056	2
<i>Pork chops</i>	0.056	2
<i>Bread</i>	0.055	2
<i>Corn</i>	0.055	3
<i>Salmon</i>	0.054	2
<i>Green beans</i>	0.053	3
<i>Cereal</i>	0.053	2
<i>Oranges</i>	0.053	2

Food	Smith's S	Frequency
Cheese	0.053	2
Clif bars	0.050	1
Lamb	0.050	1
Lamb chops	0.050	1
Legumes	0.050	1
Mac and cheese	0.050	1
Smoothies	0.050	1
Tacos	0.050	1
Water	0.050	1
Fried fish	0.047	1
Frozen veggies	0.047	1
Bottled water	0.047	3
Burritos	0.046	1
Asparagus	0.046	1
Candy	0.045	1
Kombucha	0.045	1
Baked fish	0.044	1
Plums	0.044	1
Tilapia	0.044	1
Steamed crab legs	0.044	1
Hamburgers	0.043	2
Enchiladas	0.043	1
Fettucine	0.043	2
Peppers	0.042	1
Potato chips	0.042	1
Rockfish	0.042	2
Croaker fish	0.041	1
Red snapper	0.041	1
Rice	0.041	1
Turkey bacon	0.041	1
Turkey lunchmeat	0.041	1
Lettuce	0.040	2
Lunch meat	0.040	1
Soda	0.040	1
Blueberries	0.039	1
Clam chowder	0.038	1
Trail mix	0.037	2
Fish	0.036	1
Turkey wings	0.036	1
Almonds	0.036	2
Whitefish	0.036	2

Food	Smith's S	Frequency
Mango	0.036	1
Juice	0.035	1
Mayo	0.035	1
Pretzels	0.034	2
Purple cabbage	0.033	1
Chips	0.032	1
Turkey meatloaf	0.032	1
Potatoes	0.032	3
Frozen spinach	0.032	1
Maple bacon	0.030	1
Ice cream	0.029	1
Brussels sprouts	0.029	1
Spinach and cheese	0.029	1
Peaches	0.027	1
Shellfish	0.027	1
Chicken nuggets	0.026	1
Chicken tenders	0.026	1
Potato salad	0.025	1
Spinach dip	0.024	1
Oodles of noodles	0.023	1
Porgies	0.022	1
Zucchini	0.021	1
Perch	0.021	1
Pork	0.021	1
Radishes	0.021	1
Chicken wings	0.021	1
Coleslaw	0.021	1
Pasta salad	0.020	1
Oatmeal	0.020	2
Corned beef	0.019	1
Granola bars	0.018	1

Food	Smith's S	Frequency
Calamari	0.018	1
Lasagna	0.018	1
Cod	0.017	1
Pickled herring	0.016	1
Fettucine alfredo	0.015	1
Spaghetti sauce	0.015	1
Silk milk	0.014	1
Lima beans	0.013	1
Mushrooms	0.013	1
Turkey burgers	0.012	2
Canned tuna	0.012	1
Almond milk	0.011	1
Fig newtons	0.010	1
Grilled chicken	0.010	1
Grits	0.010	1
Hot peppers	0.009	1
TastyKakes	0.009	1
TV dinners	0.009	1
Gravy	0.009	1
Meatballs	0.009	1
Chicken	0.008	1
Trout	0.008	1
Mussels	0.006	1
Ben and Jerry's	0.006	1
Veggie soup	0.006	1
Pastries	0.005	1
Sausages (breakfast)	0.005	1
Buffalo wings	0.004	1
Peanut butter	0.004	1
Frozen okra	0.003	1
Hotdogs	0.003	1

Appendix B. Saliency and Frequency of Mentions of All 35 Stores Collected During Free-listing

Italics indicate the stores that were included in the analysis.

Store	Smith's S	Frequency
<i>Giant</i>	0.7031	20
<i>DMG</i>	0.4669	17
<i>Safeway</i>	0.1784	6
<i>Aldi</i>	0.1479	4
Walmart	0.1162	6
<i>Family Dollar</i>	0.1123	4
Trader Joes	0.0704	2
Lexington Market	0.0615	3
Corner store	0.0602	3
Bi-Rite	0.0556	2
MOMs	0.0556	2
Farmers market	0.0464	2
Food Depot	0.0417	3
Redner's	0.0417	1
Whole Foods	0.0397	2
NE Market	0.0347	1
Save-a-lot	0.0347	2
Sprouts	0.0324	1
H-Mart	0.0278	1
Shoppers	0.0278	1
Family farm	0.0255	2
Convenience store	0.0208	1
Montgomery Street Market	0.0208	1
Sam's club	0.0208	1
Harvest Fare	0.0179	1
Amazon (Online)	0.0139	1
Dollar Store	0.0139	1
Hamilton Market	0.0139	1
Northeast Market	0.0139	1
Food Lion	0.0104	1
H-mart	0.0104	1
Rite Aid	0.0093	1
Market	0.0069	1
Arabber ^a	0.0046	1
Target	0.0046	1

^a Arabbers are street vendors particular to Baltimore who sell fruits and vegetables from colorful, horse-drawn wagons; see <https://en.wikipedia.org/wiki/Arabber>

Assessing sense of community at farmers markets: A systematic review

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Abstract

Farmers markets are valuable for reducing food insecurity and delivering healthy food options to populations living with low incomes. However, farmers markets have developed a reputation for being exclusive shopping spaces devoted to affluent, white shoppers. Sense of community (SOC), or a person's feelings of belonging at farmers markets, could be an important, under-addressed asset or barrier to farmers markets patronage for people living with low incomes. To document and describe how SOC influences customer engagement with farmers markets, we conducted a systematic review of published, peer-reviewed literature following PRISMA guidelines. Systematic review protocol involved three stages: identifying peer-reviewed articles using key search terms, screening abstracts and articles for inclusion

and exclusion, and analyzing articles for SOC at farmers markets. Of the 24 articles included in the systematic review, 10 addressed SOC in farmers markets shoppers living with low incomes, 6 addressed SOC in farmers markets shoppers living with middle to high incomes, and 8 did not indicate the shoppers' income level. SOC served as both a barrier and facilitator to farmers markets patronage for all income levels. However, farmers markets shoppers who received federal food assistance reported a feeling of exclusion discouraging them from shopping at farmers markets. These negative experiences were more prominent among Black, Indigenous, and other People of Color (BIPOC) living with low incomes. SOC appears to be an important factor in determining who shops at farmers markets and the frequency with which they visit. Farmers markets managers should consider how to strengthen SOC to improve engagement with people living with low incomes, and more specifically, BIPOC living with low incomes.

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Farmers Market, Sense of Community, SNAP, Low-Income, Shopping Behaviors

Introduction

Farmers markets are important community mechanisms for bringing affordable, healthy food options to populations living with low incomes (Appalachian Sustainable Agriculture Project, 2012; Briggs, 2010; Fisher, 1999; Markowitz, 2010). Accepting food assistance programs like the Supplemental Nutrition Assistance Program (SNAP) is one strategy that has been widely used by markets to attract shoppers living with low incomes and to promote their purchasing of affordable, healthy food options (Briggs, 2010; McGill, 2015; Young et al., 2013). As of December 2019, there were 8,788 farmers markets registered in the U.S. Department of Agriculture (USDA) National Farmers Market Directory (USDA, 2019b). Of those markets, 2,947 (33.5%) were authorized to accept SNAP as an approved payment method, a 215% increase over the number of farmers markets that were SNAP-authorized in 2009 (USDA, 2010).

SNAP redemption at farmers markets has seen significant growth in the past decade. In Fiscal Year (FY) 2009, SNAP redemption at farmers markets totaled US\$4.2 million. In FY 2017, that number grew to US\$22.4 million, an increase of 433% (Farmers Market Coalition, 2020b). This increase can be attributed to the introduction of monetary incentive programs such as 'Double Up', where SNAP dollars are matched in value by farmers markets. For example, a SNAP recipient may redeem US\$10.00 of their SNAP benefits at a local farmers market, and, in turn, the market doubles this amount, giving the SNAP recipient a total of US\$20.00 to spend at the market.

Incentive programs at farmers markets appear to increase accessibility and consumption of locally sourced fruits and vegetables by shoppers living with low incomes (Briggs, 2010; McGill, 2015; Olsho et al., 2015; Young, Karpyn, Uy, Wich, & Glyn, 2011; Young et al., 2013). Many farmers markets across the U.S. report significant increases in SNAP redemption with the implementation of incentive programs. Michigan's Fair Food Network has seen significant growth in SNAP redemption since the 2009 implementation of their 'Double Up' Incentive program. In 2007, less than US\$16,000 in SNAP benefits were redeemed at Michigan farmers markets. In 2016, because of

their 'Double Up' program, Michigan farmers market SNAP sales increased to over US\$1.9 million (Fair Food Network, 2018). Similarly, Pennsylvania farmers markets reported a 375% increase in SNAP redemption after the implementation of their Philly Food Bucks Program in 2010 (The Food Trust, 2018).

While incentive programs have proven successful in increasing farmers market SNAP redemption and self-reported fruit and vegetable consumption by people living with low incomes (Evans et al., 2012; Jilcott Pitts et al., 2013; Walkinshaw, Quinn, Rocha, & Johnson, 2018), SNAP redemption at farmers markets continues to represent a small fraction (<0.1%) of all SNAP transactions across the U.S. (Center on Budget and Policy Priorities, 2019). The lack of overall SNAP redemption at farmers markets indicates that additional barriers beyond monetary incentives may be dissuading people living with low incomes from shopping at farmers markets. Previous research suggests that spatial barriers including transportation (Freedman et al., 2016; Misyak, Ledlie Johnson, McFerren, & Serrano, 2014; Racine, Smith Vaughn, & Laditka, 2010) and limited operating times (Colasanti, Conner, & Smalley, 2010; Farmer, Chancellor, Gooding, Shubowitz, & Bryant, 2011; Freedman et al., 2016) as well as economic barriers such as perceived increased costs for goods (Colasanti et al., 2010; Flamm, 2011; Freedman et al., 2016; Ruelas, Iverson, Kiekel, & Peters, 2012) limit farmers market participation by people living with low incomes. However, one concept that has been widely overlooked when assessing farmers market patronage is sense of community (SOC).

SOC experienced by shoppers living with low incomes at farmers markets could play an important role in retaining and improving SNAP redemption. 'Sense of Community' is defined as "a feeling that members have of belonging; a feeling that members matter to one another and to the group, and there is a shared faith that members' needs will be met through their commitment to be together" (McMillan & Chavis, 1986, p. 9). McMillan and Chavis theorize that sense of community and belonging are essential to civic participation, social identity, and community

attachment. We believe that SOC is an important aspect of farmers markets and that, for some, farmers markets represent community centerpieces and central gathering spaces (Feagan & Morris, 2009; Project for Public Spaces, 2013). Building and maintaining a welcoming environment and positive SOC could be an important factor in determining who shops at farmers markets and the frequency with which they visit.

Past research indicates that farmers markets are primarily attended by shoppers that meet select demographic criteria (middle- to high-income and predominately white), and the ways in which farmers markets are established, managed, and promoted are structured toward people who match these demographics (Alkon & McCullen, 2011; Briggs, 2010; Colasanti et al., 2010; Rice, 2015). In a study assessing farmers markets as niche shopping experiences, DeLind (1993) concluded that marketing strategies used by farmers markets most often target an elite customer base. Additionally, in an ethnographic study assessing farmers markets in Northern California, Alkon and McCullen (2011) uncovered that many farmers market managers, vendors, and customers held notions of what farmers and community members should look like, which reflected visions of affluent, white people. These perceptions and beliefs, along with market implementation strategies, may translate into an unintended message that people living with low incomes are unwanted and unwelcome at farmers markets.

Shoppers living with low incomes and SNAP recipients are not a monolith; they are a racially and ethnically diverse group of individuals. According to a USDA report on the characteristics of SNAP recipients, over 40% of recipients are Black, Indigenous, and/or People of Color (BIPOC) (USDA, 2019a). If farmers markets are regarded as predominately white spaces, being BIPOC, low-income, and a SNAP beneficiary could position shoppers to have unique perspectives and experiences that may not produce a positive sense of community or belonging at farmers markets. In fact, given the evidence about farmers markets implementation strategies, and vendor and customer beliefs, it is possible that BIPOC who are living with low incomes and receive SNAP benefits

may have negative experiences that influence their likelihood of shopping at farmers markets.

According to community-based evidence, SOC is important to shopping behaviors and experiences. Plas and Lewis (1996) assessed the community development and urban planning of Seaside, Florida, and determined that a town strategically designed to induce high SOC and individual well-being positively influenced an individual's desire to shop in local stores, support local businesses, connect with neighbors, and participate in community events. Additionally, Muniz and O'Guinn (2001) found that individuals residing in one Midwestern neighborhood influenced one another to purchase particular brands of products (e.g., Saab, Apple, and Coca-Cola) and that purchasing the same products as their neighbors produced an important social bond within the community (Muniz & O'Guinn, 2001). Following this evidence and McMillan and Chavis' theory of SOC, if farmers market shoppers experience positive SOC and feel included as members of the farmers market community, the likelihood of continued and more frequent support of the farmers market could be greater.

The empirical notion that SOC could relate to farmers market shopping behaviors of people living with low incomes is relatively new. There are only a few existing studies that reference SOC as one of many potential barriers or assets to farmers market usage (Baker, Hamshaw, & Kolodinsky, 2009; Colasanti et al., 2010; Feagan & Morris, 2009; Szmigin, Maddock, & Carrigan, 2003), yet none have examined SOC as a standalone asset or barrier to farmers market participation. Our purpose was to conduct a review of farmers market literature and to summarize and document what is empirically known about SOC as an asset or barrier to farmers market usage for shoppers based on income level and race and/or ethnicity. To fulfill this purpose, we conducted a systematic review of published, peer-reviewed literature.

Methods

Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines were followed for this systematic review. PRISMA guidelines provide an evidence-based set of 27 activities

for conducting and reporting findings produced by systematic reviews of literature (Moher, Liberati, Tetzlaff, & Altman, 2009). Our systematic review is registered with and can be reviewed at PROSPERO, an international registry of systematic reviews, under protocol registration number CRD42019118234. The review protocol involved three stages. A complete illustration of article selection procedures is included as Figure 1. Articles were identified by applying specific search terms in online databases in addition to a snowball technique when reviewing full-text articles.

primary qualitative or quantitative data, and included the key terms “sense of community” and/or other terms that are a logical indicator of or proxy for SOC including, but not limited to, *social factors, social benefits, social interaction, social embeddedness, community ties, and cultural barriers*. These key terms were selected because of their similarity to SOC as defined by McMillian and Chavis (1986) (Figure 2). During the title review process, 20 studies were excluded from further analysis as they were not published in peer-reviewed journals. An additional 191 articles were excluded based on

Stage 1

In September and October 2018, peer-reviewed articles were identified using three online databases, PubMed, PsycINFO, and Google Scholar, with no specific publication date range selected. Defined search terms used in each database included the words *farmers market* paired with each of the following: *low-income, barriers and low-income, community, SNAP, and sense of community*. This search resulted in a return of 475 articles, with 352 remaining after duplicates were removed. Documentation of the search results, including search terms, is included as Table 1.

Stage 2

The remaining 352 articles were screened for inclusion based on titles and abstracts. Inclusion criteria included: written in English, published in a peer-reviewed journal, reported on

Figure 1. Systematic Review Process for Article Selection

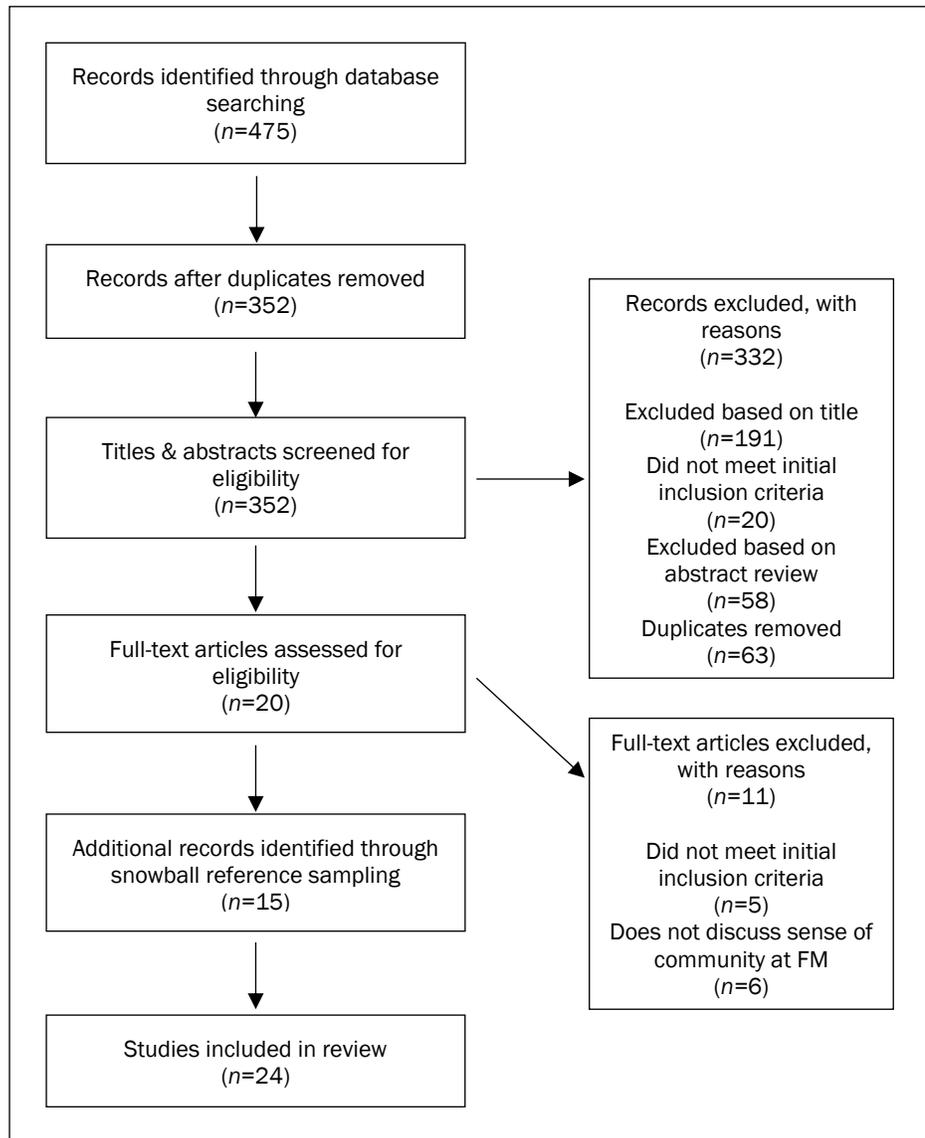


Table 1. Systematic Review Search Results

Search Term	PubMed	Google Scholar	PsycINFO	Total Results	Duplicates	Subtotal	Removed Based on Title	Subtotal
Low-income and farmers markets	103	26	47	176	38	138	79	59
Low-income and farmers markets barriers	20	1	14	35	4	31	7	24
Farmers markets and community	112	80	11	203	72	131	94	37
SNAP and farmers markets	27	13	13	53	9	44	7	37
Sense of community and farmers markets	1	0	7	8	0	8	4	4
							Total	161
							Duplicates Removed	63
							Removed (book, thesis, dissertation, report)	20
							Total	78

article title and lack of relevance to SOC among farmers market shoppers.

The remaining 78 article abstracts were screened by two reviewers (JR and JJT). Two independent reviewers were used to screen potential abstracts for inclusion to mitigate the risk for individual bias in the review process. Review protocol required reviewers to include articles for full-text review if the abstract contained any of the identified key words or phrases that represented SOC. Discrepancies between reviewers were discussed until consensus was achieved. Abstract screening resulted in the identification of 20 articles for full-text analysis.

Stage 3

The remaining 20 articles were reviewed by the first author. Inclusion criteria for full-text review included the criteria outlined in Stage 2 and if key terms for SOC were discussed in the results section. Full-text review resulted in the exclusion of an additional 11 articles. Of the 11 excluded articles, five were excluded because they did not involve primary qualitative or quantitative data, and six did not include SOC among farmers market shoppers in the results section.

During the full-text review, an additional 15 articles were identified using a snowball technique of article

reference sections (Horsley, Dingwall, & Sampson, 2011; Wohlin, 2014) that involved reviewing the reference lists of included publications to see if these references produce yet unidentified publications that could be eligible for review (Horsley et al., 2011). A total of 24 articles were included in the final sample for analysis.

After the full-text review was complete, all publications were grouped into two categories—SOC among farmers market shoppers living with low incomes and SOC among farmers market shoppers living with middle to high incomes. Studies including shoppers living with low incomes were identified as such based on authors' disclosure that either participants had low incomes

Figure 2. Key Words Identified in Abstracts

Social embeddedness	Community involvement
Social interaction	Interpersonal relationships
Social participation	Satisfaction with farmers markets
Social access	Relationships
Social benefits	Communication
Social networking	Shopping experiences
Support for local agriculture	Social events and activities
Community	Local identity
Prejudice/discrimination	Sense of community
Perceptions of markets	Community values
Cultural barriers	Community ties

and/or participated in one or more income-based federal food assistance programs. Studies including shoppers living with middle to high incomes were identified from the authors' disclosure that participants came from middle to high income households or based on the average reported income of participants.

All publications that presented SOC proxy terms or phrases were included in the review and any missing demographic characteristics were labeled as 'not recorded' (NR). Study population and demographic information included in the review were sample size, study location, income level of participants (high, middle, or low), and majority race and/or ethnicity of participants. Direct quotes related to SOC proxy terms or phrases were documented from each study and were included in the review.

This project did not involve human subjects and did not require approval by the University of Tennessee Institutional Review Board.

Results

Table 2 summarizes the 24 articles included in this review. Of the 24 articles, 41.7% ($n=10$) explored SOC among farmers market shoppers living with low incomes, 25% ($n=6$) explored SOC among farmers market shoppers living with middle to high incomes, and 33.3% ($n=8$) did not report income. For articles that explored SOC among populations living with low incomes, all 10 disclosed that study participants were recipients of one or more income-based federal food assistance programs. For articles that explored SOC among shoppers living with middle to high incomes, five (Alonso & O'Neill, 2011; Baker et al., 2009; Eastwood, Brooker, & Gray, 1999; Feagan, Morris, & Krug, 2004; Feagan & Morris, 2009) disclosed that participants had middle to high incomes based on their city or region, and one (Hunt, 2007) disclosed the average income of participants was over US\$75,000, which is nearly 600% of the U.S. Federal Poverty Level for a household of one. Regarding race and ethnicity, 25% ($n=6$) included farmers market shopping experiences of BIPOC, while 37.5% included experiences of primarily white farmers market shoppers. Additionally, 41.6% ($n=10$) of the studies did not report the race

or ethnicity of their population.

Most articles (75%, $n=18$) focused on populations in the U.S., with concentrations in the Western ($n=6$), Southeast ($n=4$), Midwest ($n=4$), and Northeast ($n=3$) regions of the country. One study, by Buman et al. (2015), only indicated that it took place in a "large U.S. based metropolitan city" but did not provide a specific location. Studies from outside the U.S. (20.8%; $n=5$) focused on populations in Canada ($n=3$) and Australia ($n=2$). One study conducted by Garner (2015) did not provide a study location. A plurality of studies (41.7%; $n=10$) were quantitative, while 33.3% ($n=8$) were qualitative, and 25% ($n=6$) utilized mixed methods. The median sample size for all studies was 198 participants (range=14 to 1,016). The wide range in sample sizes was related to each study's design, with qualitative studies including smaller sample sizes compared with quantitative studies.

Description of SOC in the Included Articles

In the 24 articles, authors operationalized SOC using a range of proxy terms and descriptors that fit within McMillan and Chavis' (1986) definition of SOC. In 50% of the articles ($n=12$) (Alonso & O'Neill, 2011; Baker et al., 2009; Buman et al., 2015; Dailey et al., 2015; R. Feagan et al., 2004; Feagan & Morris, 2009; Garner, 2015; Grace, Grace, Becker, & Lyden, 2007; Hunt, 2007; McGuirt, Ward, Elliott, Bullock, & Jilcott Pitts, 2014; O'Kane, 2016; Payet, Gilles, & Howat, 2005), the authors described 'social interactions' among community members, farmers market vendors, or other patrons as a primary barrier to or facilitator of farmers market usage. Other aspects of SOC discussed in the articles included 'social and community connectedness' (29.2%, $n=7$) (Alkon & McCullen, 2011; Alonso & O'Neill, 2011; Freedman et al., 2018; Garner, 2015; A. J. Johnson, 2013; O'Kane, 2016; Savoie Roskos, 2017), 'social benefits' (12.5%, $n=3$) (Baker et al., 2009; Feagan et al., 2004; Velasquez, Eastman, & Masiunas, 2005), 'community pride' (12.5%, $n=3$) (A. J. Johnson, 2013; Payet et al., 2005; Savoie Roskos, 2017), and participation in special events or community activities hosted by the farmers market (16.7%, $n=4$) (Eastwood et al., 1999; Grace et al., 2007; Hunt, 2007; Walkinshaw et al., 2018). Additionally, in

Table 2. Summary of Articles Included in the Systematic Review that Focused on Sense of Community at Farmers Markets (FM) (n=24)

Primary Author	Publication Date	Data Collection Approach	Study Location	Sample Size	Majority Race/Ethnicity	Income Level (High, Middle, Low)
Alkon	2011	Mixed	California	Interviews (21) Surveys (100)	White, Asian	High
Alonso	2011	Quantitative	Alabama	356	NR	NR
Baker	2009	Quantitative	Vermont	229	White	Middle, High
Buman	2015	Qualitative	Large metropolitan U.S. city	FM Shoppers (n=38)	White	NR
Colasanti	2010	Mixed	Michigan	Focus Groups (63) Surveys (953)	White, Latina, Arab Americans	Low
Dailey	2015	Mixed	Pennsylvania	47	Hispanic	Low
Eastwood	1999	Quantitative	Tennessee	NR	White	High
Feagen	2004	Quantitative	Niagara (Canada)	146	NR	Middle
Feagan	2009	Quantitative	Canada	149	NR	Middle
Freedman	2018	Quantitative	Ohio	270 SNAP shoppers	African American	Low
Garner	2015	Qualitative	NR	19	NR	NR
Grace	2007	Qualitative	Oregon	108	White	Low
Hunt	2007	Quantitative	Maine	297	NR	Middle, High
Johnson	2013	Qualitative	Canada	20	NR	NR
McGuirt	2014	Qualitative	North Carolina	62	African American, White	Low
Misyak	2014	Quantitative	Virginia	52	NR	Low
O'Kane	2016	Qualitative	Australia	20	NR	NR
Payet	2005	Mixed	Australia	128 (100 FM shoppers; 28 vendors)	NR	NR
Ritter	2018	Mixed	Washington	451 (400 SNAP-ed shoppers; 51 stakeholders)	White	Low
Savoie Roskos	2017	Qualitative	Utah	14	White	Low
Sommer	1981	Quantitative	California	349	NR	NR
Valasquez	2005	Quantitative	Illinois	60	NR	NR
Walkinshaw	2018	Mixed	Washington	n=545 SNAP-Ed Stakeholders (51) SNAP Participants (400) FM Managers (94)	White	Low
Wetherill	2015	Qualitative	Oklahoma	64	African American	Low

50% of the articles (n=12) (Colasanti et al., 2010; Eastwood et al., 1999; Feagan & Morris, 2009; Freedman et al., 2018; Grace et al., 2007; Hunt, 2007; Misyak et al., 2014; O'Kane, 2016; Ritter, Walkinshaw, Quinn, Ickes, & Johnson, 2018; Sommer, Herrick, & Sommer, 1981; Velasquez et al., 2005; Wetherill & Gray, 2015), the authors described the 'shopping atmosphere and/or environment' as either welcoming or unwelcoming,

which served as a barrier to or facilitator of farmers market usage based on the shopper's perspective of the shopping atmosphere.

SOC Among Farmers Market Shoppers Living with Low Incomes

Among articles that included populations living with low incomes (n=10), authors reported that SOC operated as both a facilitator of and barrier to

farmers market patronage. Sixty percent ($n=6$) of the articles reported high SOC among farmers market shoppers living with low incomes. Of these articles, 66.6% ($n=4$) focused on primarily white participants. Related to SOC as a facilitator of market patronage, these articles cited a welcoming, fun atmosphere (Grace et al., 2007; Ritter et al., 2018; Walkinshaw et al., 2018), participation in children’s activities (Grace et al., 2007; Walkinshaw et al., 2018), and increased community involvement (Dailey et al., 2015; McGuirt et al., 2014; Savoie Roskos, Wengreen, Gast, LeBlanc, & Durward, 2017) as the primary facilitators of farmers market patronage among shoppers living with low incomes.

The remaining 40% ($n=4$) of articles reported

low SOC among farmers market shoppers living with low incomes. Of these articles, 75% focused on BIPOC, and one did not report race or ethnicity of participants. These articles cited SOC features such as an uncomfortable atmosphere (Colasanti et al., 2010; Misyak et al., 2014), distrust of vendors (Colasanti et al., 2010), and an unwelcome shopping environment (Colasanti et al., 2010; Freedman et al., 2018; Wetherill & Gray, 2015) as primary barriers to farmers market patronage. Table 3 provides a summary of these findings.

SOC Among Farmers Market Shoppers Living with Middle to High Incomes

Among articles that included populations living with middle to high incomes ($n=6$), SOC served

Table 3. Summary of Articles Related to Sense of Community Among Farmers Market (FM) Shoppers Living with Low Incomes ($n=10$)

Primary Author	Publication Year	Study Location	Sample Size/ Population	Race/ Ethnicity	Results Related to SOC at Farmers Markets
<i>High SOC (n=6)</i>					
Dailey	2015	Pennsylvania	47	Hispanic	Participants reported in the post program survey that Healthy Options offered opportunities for social interaction. 81% of survey participants stated that farmers markets gave them a chance to hang out with people in their community
Grace	2007	Oregon	108	White	Occasional shoppers (shopped at a Portland market more than once—43% of sample) were likely to mention the fun atmosphere and sense of community within Portland’s markets as the top reason for using them. This included comments about the social interaction with other shoppers, music, and activities for kids.
McGuirt	2014	North Carolina	62	African American, White	Participants mentioned that they commonly went to shop at local food sources with their family members or friends, and that experiences with home-grown produce were often very social in nature. The women also mentioned interacting with the producer as a positive aspect of the farmers market shopping experience.
Ritter	2018	Washington	451 (400 SNAP-Ed shoppers; 51 stakeholders)	White	A large majority agreed that FMs are comfortable ($n=181$; 92%), easy to navigate ($n=175$; 89%), welcoming to all ($n=180$; 91%), and affordable ($n=160$; 81%). ...respondents referred to the community feeling and friendliness of FMs.
Savoie Roskos	2017	Utah	14	White	Community involvement and support was important for many participants. (table con't.)

Primary Author	Publication Year	Study Location	Sample Size/ Population	Race/ Ethnicity	Results Related to SOC at Farmers Markets
Low SOC (n=4)					
Colasanti	2010	Michigan	Focus Groups (63) Surveys (953)	White, Latina, Arab Americans	[Rural, Latina women / young mothers] Felt they were distrusted by vendors and atmosphere was unfriendly for children The women in this group also felt that they themselves were disrespected by the vendors. One woman described how she felt like she was being watched whenever she went to the farmers market and others agreed that they had had similar experiences.
Freedman	2018	Ohio	270 SNAP shoppers	African American	Social connectedness to FMs was significantly, but inversely, related to FM shopping frequency. Every one-unit increase in social connectedness to FMs is associated with 15% reduction in the frequency of FM use For this group, there is a chance that visiting the FM resulted in a negative social experience contributing to their decisions to discontinue FM shopping.
Misyak	2014	Virginia	52	NR	SNAP-Ed clients listed "uncomfortable atmosphere" as a barrier to FM usage.
Wetherill	2015	Oklahoma	64	African American	[Participants stated] "It is not our kind of environment. Some people don't like that kind of environment." "I am not going to lie; it mainly has to do with race to be honest. I see more Caucasian people going to farmers markets than African American. 'Oh... I want a fresh pack of carrots.' No, you're gonna see Susie and Harry and the kids picking up a pack of fresh carrots from the farmer's market."

primarily as a facilitator of farmers market patronage, with 83% ($n=5$) of these articles reporting high SOC. These articles cited positive social benefits (Baker et al., 2009; Feagan et al., 2004; Feagan & Morris, 2009; Hunt, 2007), a fun shopping environment (Eastwood et al., 1999; Feagan et al., 2004; Hunt, 2007), and the friendliness of the market (Hunt, 2007) as SOC facilitators of farmers market patronage.

Among articles specifically dedicated to SOC among farmers market shoppers living with middle to high incomes, only one noted that SOC at farmers market may differ based on race and ethnicity. In their study assessing inclusion at farmers markets among Asian and white patrons in California, Alkon and McCullen (2011) commented that white patrons may feel more included in farmers markets than BIPOC. They concluded that participating in shared common interests and community activities

among farmers market shoppers and vendors may contribute to a feeling of inclusion at local farmers markets. Given these social activities were primarily attended by white community members, it left room for BIPOC within the community to feel excluded from the farmers market social experience (Alkon & McCullen, 2011). Table 4 provides a summary of these findings.

SOC Among Farmers Market Shoppers With Non-specified Income

Income levels of participants were not specified in the remaining eight articles, however, results from these studies suggest that SOC plays an important role in farmers market patronage. The eight remaining studies suggested that farmers markets are more than just venues to purchase groceries and that a friendly, welcoming atmosphere (Alonso & O'Neill, 2011; McGuirt et al., 2014; Payet et al.,

2005; Sommer et al., 1981; Velasquez et al., 2005) and positive social connections with other patrons and farmers market vendors (Alonso & O'Neill, 2011; Buman et al., 2015; Garner, 2015; A. J.

Johnson, 2013; McGuirt et al., 2014; O'Kane, 2016) were primary driving factors for farmers market patronage. Table 5 provides a summary of these findings.

Table 4. Summary of Articles Related to Sense of Community Among Farmers Market (FM) Shoppers Living with Middle to High Incomes (n=6)

Primary Author	Publication Year	Study Location	Sample Size/ Population	Race/ Ethnicity	Results Related to SOC at Farmers Markets
High SOC (n=5)					
Baker	2009	Vermont	229	White	Social benefits* [were] listed as an important reason to visit the market * <i>Social benefits include a good place to see friends and family, a good place to meet people, a good place to take visitors.</i>
Eastwood	1999	Tennessee	NR	White	Special events were a draw for just under one-third of Knox County shoppers. Shoppers were more likely to have checked...atmosphere as reasons for shopping.
Feagen	2004	Niagara (Canada)	146	NR	Results from Port Colborne indicate greater emphasis on voiced themes like 'ambience', 'atmosphere', 'talking to people and farmers', 'people and friends', 'it's a people-bonding place', 'I like the activity', 'I like to talk to the growers', than at the other two markets, but it is useful to note that the other market shoppers voiced similar kinds of sociocultural satisfactions that they associate with their farmers market experience.
Feagan	2009	Canada	149	NR	Brantford FM patrons identified their shopping experience as strongly associated with the convivial quality of the social and cultural interaction at the FM. "...we love it because it is the fabric of the community. Price isn't that much of a concern because again it's the whole social aspect, and the culture of eating."
Hunt	2007	Maine	297	NR	Social factors, such as having fun at the market and interacting with farmers, are important aspects of shopping at farmers markets. Nearly all respondents (98%) had fun at the farmers markets. More than half of the survey respondents (59%) make the farmers market a family event. The social atmosphere, friendliness of the markets, and the ability for consumers to meet other people that they know indicate that community interactions are part of shopping at a farmers market.
Low SOC (n=1)					
Alkon	2011	California	Interviews (21) Surveys (100)	White, Asian	Farmers markets such as those we study emphasize the importance of building community but are often unaware that they define community in a way that draws in whites while pushing away people of color. The first author has overheard discussions between vendors and shoppers who have run into each other hiking, or who recognize the places and events depicted on one another's t-shirts and canvas shopping bags. This creates a kind of insider ambience, in which those who know the wider scene, who tend to be white, feel welcome while those who do not may feel excluded.

Table 5. Summary of Articles Related to Sense of Community Among Shoppers with Non-Specified Income (n=8)

Primary Author	Publication Year	Study Location	Sample Size/ Population	Race/ Ethnicity	Results Related to SOC at Farmers Markets
Alonso	2011	Alabama	356	NR	The importance of socializing, social interaction, or 'embeddedness' as some researchers have noted was also clearly higher among respondents from the Langdale Mill (a more rural environment).
Buman	2015	Large Metropolitan US City	FM Shoppers (n=38)	White	"This is the most exciting place in town...this is the place you can meet people like you can't meet any place else." Perhaps more interesting was that other contextual factors such as product presentation and social interactions were also deemed important both in terms of frequency of coded elements and consensus among shoppers.
Garner	2015	NR	19	NR	In my interviews with shoppers, there proved to be a spectrum of desires for social interaction. On the extreme social end of the spectrum, there were the highly social shoppers who wanted to make friends with farmers and other shoppers. On the less social end of the spectrum, there were shoppers who purchased their products quickly and exited the market. Different consumers and farmers possess varying degrees of community connectedness.
Johnson	2013	Canada	20	NR	Themes drawn from the data suggest that market participants shared a collective sense of connection to the people who form the community. In addition, the activities that occur in the space reinforce the connection between community members. Connection to the people and connection to the activities, therefore, are important characteristics of this consumption community. For most participants, the interactions between the vendors and the buyers created a positive atmosphere and sense of community.
O'Kane	2016	Australia	20	NR	Shopping, rather than being an imposition, is an enjoyable and relaxing event, where these farmers market devotees become immersed in the atmosphere, happily devoting their social time to developing meaningful relationships with the vendors who provide their food.
Payet	2005	Australia	128 (100 FM shoppers; 28 vendors)	NR	A high proportion of consumers had an increased sense of community pride (92%). The market experience has become a vital part of the stallholders' and the community's social interaction and has fostered a sense of civic pride.
Sommer	1981	California	349	NR	The farmers market was perceived by its shoppers as a more friendly, personal, rural, smaller, and happier setting than was the supermarket by its shoppers.
Valasquez	2005	Illinois	60	NR	Consumers at Urbana also visited the market to support local farmers (87%) and enjoyed the informational/social atmosphere (90%). 57% of Collinsville shoppers enjoyed the information/social atmosphere.

Discussion

The purpose of this paper was to conduct a review of farmers market literature to summarize and document what is empirically known about SOC as an asset or barrier to farmers market usage for shoppers living with low and middle to high incomes. Our findings extend the existing literature by specifically describing and summarizing SOC and how SOC functions as a barrier to and facilitator of farmers market usage. Prior studies have not focused exclusively on SOC, but rather on a blend of social, environmental, spatial, and economic considerations (Freedman et al., 2016). Our study was the first to describe SOC as it relates to shopping behaviors as a specific construct, how SOC may function differently by income level, and how SOC may function differently by race and/or ethnicity.

SOC as a Facilitator of Farmers Market Usage

Our systematic review uncovered that SOC can play an important role as a facilitator of farmers market usage among people with all income levels; the most noted SOC facilitators were a welcoming and fun shopping atmosphere and social interactions experienced at farmers markets. Several studies indicated that for shoppers living with low incomes, special events and children's activities that focused on their needs were facilitators of farmers' market patronage. For example, Grace et al. (2007) noted that shoppers at a farmers market in Portland, Oregon listed a fun atmosphere and social interaction at markets as the top reasons for shopping there. Activities mentioned in the article included conversing with other shoppers, live music events, and activities for kids.

Additionally, among shoppers living with middle to high incomes, 'social and community benefits' were noted as primary facilitators of farmers markets usage. Social benefits described by these shoppers included socializing with friends, conversing with market vendors, and meeting new community members. Several studies noted that these social benefits are so powerful, that they may be more important to more affluent shoppers than the cost of goods available at the market. For example, in a study by Feagan et al. (2009) assessing farmers market shoppers in the Ontario region

of Canada, participants stated "...we love it because it is the fabric of the community. Price isn't that much of a concern because again it's the whole social aspect, and the culture of eating (p. 239). This indicates that placing emphasis on creating a positive and welcoming atmosphere may be a more important community consideration to attract potential farmers market customers than considerations of farmers market product cost, at least for shoppers living with middle to high incomes.

SOC as a Barrier to Farmers Market Usage

For shoppers living with low incomes who also receive federal food assistance, negative shopping atmosphere was listed as a primary barrier to farmers market usage. Shoppers who receive SNAP benefits viewed farmers markets as exclusive spaces that did not create a welcoming environment for people living with lower incomes. For example, in a study by Misyak et al. (2014), SNAP Education (SNAP-Ed) clients listed an "uncomfortable atmosphere" as a primary barrier to farmers market usage. Russomanno and Jabson's (2016) qualitative findings validate these shoppers' perceptions; market managers at East Tennessee farmers markets reported that vendors often showed resistance toward SNAP recipients. In the study, market managers disclosed that vendors did not support SNAP incentive programs, and that vendors often had misconceptions of SNAP recipients as a "lower class people." One manager stated, "They [vendors] don't necessarily want to attract the kind of people that they believe would have access to SNAP" (Russomanno & Jabson, 2016, p. 2834). These findings are also consistent with a previous systematic review by Freedman et al. (2016) that reported an unwelcome shopping environment as one of several major barriers for farmers market shoppers living with low incomes.

Many studies that reported high SOC among farmers market shoppers focused on white patrons. However, SOC was consistently low across all income levels for BIPOC. SOC was lowest among studies that reported on shopper experiences of BIPOC living with low incomes. Colasanti et al. (2010) noted that Latina shoppers living with low incomes in Michigan reported feeling disrespected

and uncomfortable at local farmers markets. This study reported: “The women in this group [young Latina women] felt that they were disrespected by the vendors. One woman described how she felt like she was being watched whenever she went to the farmers market and others agreed that they had had similar experiences” (Colasanti et al, 2010, p. 231). In an Oklahoma based study, Wetherhill and colleagues (2017) had similar findings among low-income Black shoppers. One participant noted, “I am not going to lie; it mainly has to do with race to be honest. I see more Caucasian people going to farmers markets than African American. ‘Oh... I want a fresh pack of carrots.’ No, you’re gonna see Susie and Harry and the kids picking up a pack of fresh carrots from the farmer’s market” (Wetherhill et al, 2017, p. 7). These negative social experiences contributed to a lowered SOC and acted as barriers to using farmers markets among BIPOC living with low incomes. These results support the previous notion that farmers markets are exclusionary spaces that are primarily designed for more affluent white shoppers (Alkon & McCullen, 2011; Freedman et al., 2016; Wolf, Spittler, & Ahern, 2005) and are especially pertinent given that, in FY 2018, 40.6% of SNAP recipients identified as BIPOC (USDA, 2019a).

If farmers markets are to be viewed as spaces that contribute to improving food access by delivering high quality, local produce to diverse shoppers, including shoppers living with low incomes and/or BIPOC, then SOC is something that farmers markets should carefully consider and deliberately address. Farmers market managers and community leaders should consider who is being attracted to their local markets and how the shopping environment may be inclusive or exclusive to members of economically, racially and/or ethnically diverse groups. Considerations of diverse racial and ethnic identities should be reflected in farmers market promotional materials and participation from vendors of diverse identities should be encouraged.

In addition, farmers markets organizers should consider developing partnerships and relationships with community organizers that work with people living with low incomes and racial and/or ethnic minority groups to enhance SOC at farmers mar-

kets. For example, in their study assessing farmers market shopping behaviors among SNAP-Ed participants in Washington State, Walkinshaw and colleagues (2018) found that participants who partook in one or more farmers market activities coordinated by the local SNAP-Ed office and associated community-based organizations (e.g., local health departments, extension programs) had a higher probability of shopping at farmers markets when compared with those that participated in no activities. They concluded that SNAP participants who participate more frequently in SNAP-Ed farmers market activities also shop more often at farmers markets. Shopping frequency at farmers market was beneficial to SNAP participants as it was associated with increased consumption of fruits and vegetables (Walkinshaw et al., 2018).

Limitations

Our review has limitations. Several publications included in our review ($n=12$) did not include key demographic information about study participants, therefore it was impossible to assess the SOC experiences by income and/or race or ethnicity. Lack of standardization in the assessment and reporting of income and race and/or ethnicity limited our ability to draw comparisons in SOC among farmers market shoppers using these measures. Additionally, all studies included in our systematic review were cross-sectional and observational. None of the studies involved documenting and testing shoppers’ experiences over time, nor did they test an intervention to improve SOC for shoppers. These study characteristics limit what we can say about the impact of SOC on sustained shopping behavior.

Conclusion

Findings from this systematic review suggest that SOC plays an important role in who shops at farmers markets and at what frequency. When designing local farmers markets and associated activities, farmers market managers and community leaders should consider SOC. Our results suggest that offering special events, especially family-friendly activities, may be attractive additions to the farmers market experience for shoppers at all income levels.

Additionally, farmers market managers and community leaders should take extra precaution when implementing markets and associated activities to create an inclusive environment for shoppers of diverse income and racial and/or ethnic identities. The responses provided by BIPOC SNAP recipients suggest that vendors at farmers markets may be creating an unwelcome and uncomfortable shopping environment. Farmers market managers should consider conducting training programs for market vendors to combat any negative stereotypes and perceptions of SNAP recipients. Lastly, farmers markets should consider adding BIPOC and/or people with diverse income levels to their planning committees or executive boards to ensure a range of community voices and perspectives are represented.

Special Pandemic Considerations

During widespread crises, such as the COVID-19 pandemic, SOC may be even more salient and vital to farmers markets' efforts to retain and attract people living with low incomes and BIPOC. While many farmers markets around the country are still operational, the social landscapes of markets have been altered, with many practicing social distancing guidelines, limiting the number of shoppers, and requiring masks during shopping hours (Farmers Market Coalition, 2020a). These extra precautions mean that many of the social activities described by authors and included in our systematic review have been paused indefinitely. However, SOC can still be established by offering a friendly, safe, and inclusive shopping environment. For example, many farmers markets around the country are creating a modified SOC among shoppers by offering take-home activities for children and to-go samples of various farmers market products (Minnesota Farmers' Market Association, 2020; Nourish Knoxville, 2020). Additionally, while maintaining appropriate social distancing at farmers markets, shoppers are encouraged to get outdoors and interact and converse with local area farmers, neighbors, and community members, which may be a welcome change

for some farmers market shoppers (C. Johnson, 2020; Massachusetts Municipal Association, 2020). In a time that is currently dominated by virtual meetings, limited contact, and computer screens, the ability to engage with other shoppers and vendors may help contribute to a positive outlook and sense of normalcy for some. Creating a welcoming and positive space at markets during the pandemic may be a useful tool to retain existing shoppers and attract new ones.

Considerations for Future Research

Researchers interested in the influence of SOC on farmers markets participation, patterns of shoppers who are BIPOC and/or living with low incomes, use of SNAP benefits at farmer's markets, and other shopping and related behaviors should consider assessing SOC in their studies. The dearth of literature on this topic suggests that there is room for and benefit from additional assessment and inclusion. For example, researchers interested in understanding low-income and/or BIPOC shoppers' experiences at farmers markets, or their SOC at farmers markets, or reasons for not shopping at farmers markets, could capture these experiences using primary data collected from farmers market shoppers through methods such as focus groups or semi-structured interviews. Future work in this area also lends itself to a Community Based Participatory Research (CBPR) approach (Minkler, Thompson, Bell, & Rose, 2001; Roussos & Fawcett, 2000). CBPR researchers, in collaboration with community members, could expand what is known about SOC and its role in farmers markets patronage among shoppers who are BIPOC and/or living with low incomes. Approaches for measuring SOC that facilitate participants' direct and engaged perspectives include, but are not limited to, Photo-voice or Videovoice methods. These methods would allow community organizers and farmers market managers to see their market through the lens of the people who shop there and add to our understanding about SOC and its influence on shopping behaviors and customer experiences. 

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Growing a sustainable local grain economy in Arizona: A multidimensional analytical case study of an alternative food network

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Abstract

Local grain economies are being developed in North America and Europe as alternatives to the global grain economy and its negative externalities. Little is known, however, about their size, structure, and sustainability, in particular as they evolve. This study offers such insights from a case study of the local grain economy in Arizona. The study uses an analytical framework that combines quantitative and qualitative data and a number of analytical methods to construct a multidimensional profile of the local grain economy. The findings indicate steady growth of the local grain economy in Arizona—in production quantities, range of businesses, diversity of products, and local economy benefits over a number of developmental stages. The findings also suggest that challenges of consolidation, transparency, and other growth

issues might undermine its sustainability. The insights can inform the further development of the local grain economy in Arizona and other regions. The study also provides a framework that, through comparative research, allows for creating generalized knowledge about local grain economies and alternative food networks.

Keywords

Local Grain Network, Sustainable Local Economy, Short Supply Chain, Artisan Mills and Bakeries, Craft Malt and Beer, Relocalization, Alternative Food Network, Analytical Framework

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Introduction

Many regions of North America and Europe have been re-localizing their grain economy over the last decade (Carlisle, 2019; Halloran, 2015; Smith & Barling, 2014). Driven by the same social, cultural, ecological, and economic concerns as alternative food networks (Renting, Marsden, & Banks, 2003), clusters of small grain growers, processors, and producers offer alternatives to the commodified and centralized grain industry (Carlisle, 2019; Halloran, 2015; Hergesheimer & Wittman, 2012; Hills, Goldberger, & Jones, 2013a; Jones & Harvey, 2017; Robinson, 2020; Steavenson, 2019). As the need for sustainable alternatives increases, so does the need to better understand them and how they might be supported toward achieving their goals. With this in mind, we investigate the local grain economy in Arizona through an analysis of its structure and development and a preliminary appraisal of its sustainability.

Emerging in the 1990s and gaining momentum since the late 2000s, local grain economies have grown in size and number, often as grassroots initiatives driven by passionate individuals (Halloran, 2015; Nabhan, 2018; Sen, 2008; Thomas, 2013). Examples exist in New York (Halloran, 2015), New England (Halloran, 2015; Jones & Harvey, 2017), Western Washington (Hills et al., 2013a), British Columbia (Hergesheimer & Wittman, 2012), England (Steavenson, 2019), Scotland (Robinson, 2020), Lower Austria (Milestad, Bartel-Kratochvil, Leitner, & Axman, 2010), Tuscany (Galli et al., 2015), and elsewhere. They typically consist of a network of small farmers, millers, bakers, maltsters, and brewers, sustainably growing wheat and barley, often of heritage and ancient varieties, operating within local or regional supply chains, and committed to quality, craft, identity, and provenance (Halloran, 2015; Hergesheimer & Wittman, 2012; Hills, Corbin, & Jones, 2011; Jones & Harvey, 2017; Steavenson, 2019).

Despite wide popular interest, most recently indicated in a *New York Times* article (Wu, 2020), local grain economies are an under-researched area of alternative food networks, with only a handful of studies, mostly qualitative and descriptive, beginning in 2010. Research has explored what “local” means in the context of the grain economy

(Hills, Goldberg, & Jones, 2013b; Milestad et al., 2010); demand and supply of local flour among commercial bakers in western Washington (Hills et al., 2013a); the embedded social and cultural value in local grain supply in British Columbia (Hergesheimer & Wittman, 2012); the social relations in a local organic grain network in Austria (Milestad et al., 2010); the meaning of local grain to craft brewers in New England (Jones & Harvey, 2017); the challenges of marketing ecologically grown grain in Ontario (Mann, 2016); and local bread supply chains in the UK (Smith & Barling, 2014) and Italy (Galli et al., 2015). Yet, in line with Tregear’s (2011) and Deller, Lamie, and Stickel’s (2017) observation that alternative food network research lacks quantitative and structural studies, research on local grain economies to date provides little evidence of their size, structure, development, and sustainability. The lack of analysis of the evolution and properties at the whole network level makes it difficult to put the significance of the phenomenon in context, understand it from a structural perspective, and gain insight into gaps, shortcomings, trends, and possible futures.

Using the case of the local grain economy in Arizona, we address the following research questions:

1. What is the size of the local grain economy, and how did it develop?
2. What is its network structure and composition, and how did it evolve?
3. What are the impacts on the broader local economy?
4. How sustainable (economically, environmentally, socially) is it?

The case study unit of analysis is the economic network of growers, primary processors, and secondary processors in Arizona who are producing or using small grains in their production for local or regional human consumption. Due to constraints in data availability, this scope does not include distribution or general retail sectors or the many local restaurants that use small amounts of local grain products for in-house purposes.

Arizona is a suitable case for investigation due to the well-established nature of its local grain

economy and its rapid development from 2012 to 2019. As such, this study offers a rich description of the structure and evolution of a particular local grain economy that may provide valuable insights to scholars and practitioners for accelerating similar efforts in other regions. It also offers a framework for research through a novel analytical approach combining qualitative and quantitative data and a number of analytical methods. If adopted by other researchers, coordinated comparative research may serve to fill the research gap identified above. In this article, we focus more on the quantitative aspects, whereas the qualitative results will be reported in more detail in a forthcoming article.

Research Design

Analytical Framework

Development of our analytical framework was informed by the literature on alternative food networks. Local grain economies, and related entities such as local grain networks and short grain supply chains, are a type of alternative food network. Alternative food networks, and similar concepts of short food supply chains and values-based supply chains, have arisen over the last 20 or more years in response to increasing dissatisfaction by both consumers and producers with the global, commodified agri-food industry (Renting et al., 2003; Stevenson & Pirog, 2008). Dissatisfaction stems from various concerns, including the decline of local economies, negative environmental impacts, food safety issues, health and nutrition deficits, farmer livelihoods and small farm survival, and disconnection between consumers and producers (Renting et al., 2003; Stevenson & Pirog, 2008). However, defining what alternative food networks are is less straightforward than identifying what they are in opposition to (Tregear, 2011).

In theory, alternative food networks are considered to be place-based and community-connected, economically viable for all participants, ecologically sound, socially just, and democratic (Feenstra, 1997). They are local or regional in scale, composed of micro and small enterprises, and involve close connections between producers, processors, and consumers (King & Venturini, 2005; Renting et al., 2003). They are associated

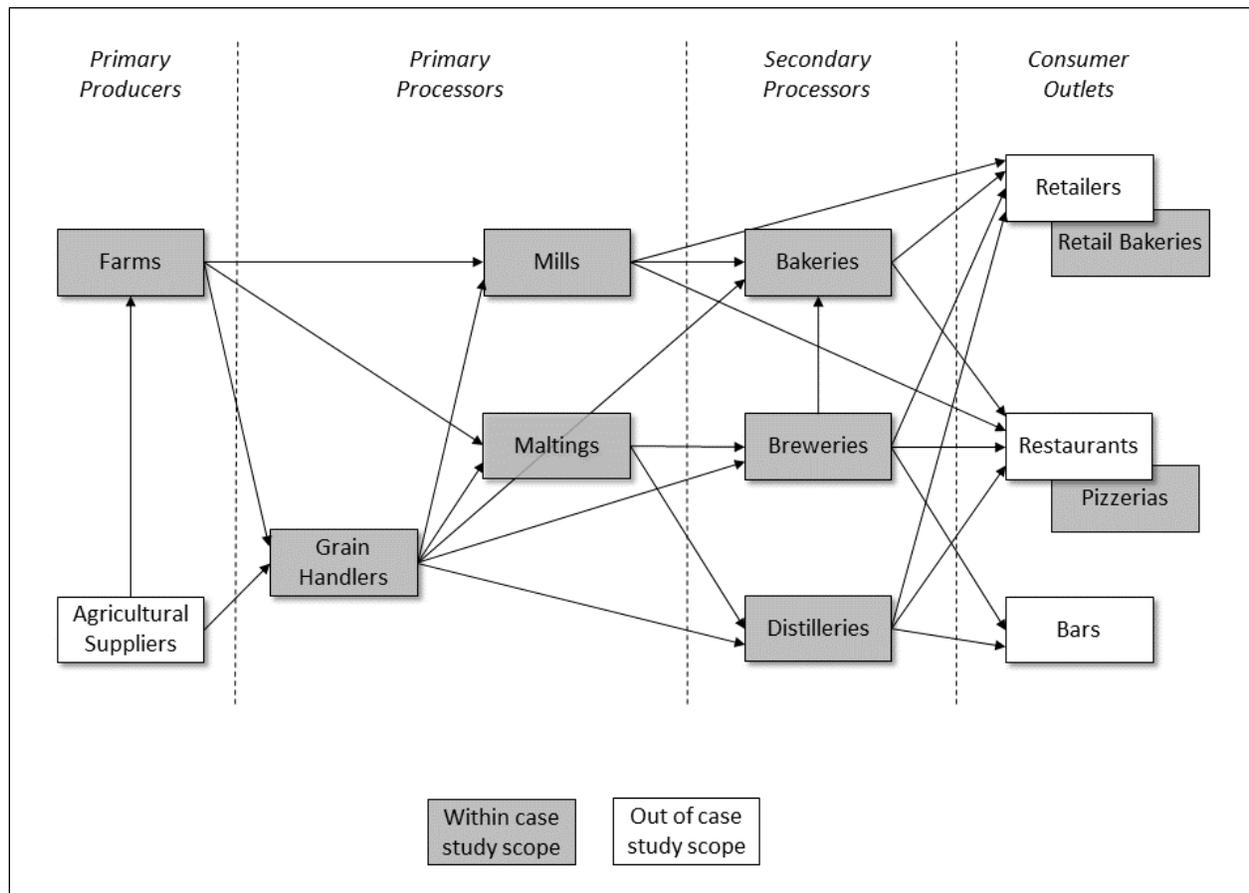
with high-quality products, unique local or regional attributes, organic production, and artisan crafts (King & Venturini, 2005; Stevenson & Pirog, 2008). Alternative food networks are commonly claimed to create and capture additional economic *value* for producers and processors, and qualitative *values* for all (including consumers) by satisfying shared social and environmental interests (Stevenson & Pirog, 2008).

Alternative food networks in reality, however, are more nuanced, contingent, and pragmatic (Diamond & Barham, 2011; Mount, 2012). There is considerable heterogeneity within and between them and in the degree to which they meet sustainability criteria (Mount, 2012; Tregear, 2011). For example, the use of sustainable production methods is not universal among farmers who participate in alternative food networks, and neither is the socio-economic inclusivity of alternative food network consumers (P. Allen, 2010; Tregear, 2011). The closeness of connection between producer and consumer is often questionable (Tregear, 2011), while hybrid food businesses, which participate in both an alternative food network and the mainstream food economy, are not uncommon (Milestad et al., 2010; Mount, 2012).

Structurally, alternative food networks vary in the number and diversity of participating entities and their connections, ranging from closed, vertically integrated partnerships (e.g., a farmer cooperative) to large open networks (Renting et al., 2003; Stevenson & Pirog, 2008). A functional alternative food network results in a range of products making their way from many varied producers, through multiple primary and secondary processors, to numerous outlets of varying types. Businesses in one sector (e.g., production) may have multiple connections to those in another (e.g., processing). Alternative food networks are dynamic, changing configuration as entities join and leave, making different connections, and extending or shortening pathways from producers to consumers (e.g., adding a processing tier). Along these lines, we sketch out the general structure of a local grain economy in Figure 1.

We drew on these alternative food network concepts in developing a framework for the analysis of Arizona's local grain economy, which com-

Figure 1. General Structure of a Local Grain Economy Showing Core Entity Types, Identified as In- or Out-of-Scope in This Study and Scope Exceptions



prises 14 variables and three categories of sustainability criteria, each consisting of numerous aspects (Table 1). For the purposes of this study, we define Arizona’s local grain economy as the network of businesses involved in production (farms), primary processing (grain handlers, maltings, mills), and secondary processing (bread bakeries, pasta makers, pizzerias, tortillerias, breweries, distilleries, home brew stores) of *small* grains (wheat, barley, oats), intermediate products (clean grain, flour, malt), and end products (bread, beer, or pasta) for human consumption within a 150-mile (240-km) radius of central Arizona (approximating to the state of Arizona). The local grain economy is therefore distinct from the Arizona mainstream grain economy in which small grains are grown for commodity markets or the local animal feed market (Duval, Kerna, Frisvold, & Avery, 2016).

The main reasons for focusing on production and processing is that data were not readily available for other sectors, and, at the time of this study, we were not aware of any distributors orienting their business toward local grain or derived products, while general retailers and most restaurants only use local grain or flour in small quantities relative to their total output. Some notable exceptions that we do include, however, are bakeries with retail operations and pizzerias that use significant proportions of local flour (20% or more).

Research Methods

The research uses a single case study, combining quantitative and qualitative data to explore and gain explanatory insights into the local grain economy in Arizona. While a single case study is generally less

valid than a comparative case study, it is justified here in that the case is “representative” and “revelatory” (Yin, 2003). It is representative as it appears to share similarities with other local grain economies, such as its grassroots origins, microscale operations, close relations between farmers, bakers, and brewers, and general alignment with the features of alternative food networks (Halloran, 2015; Hergesheimer & Wittman, 2012; Hills et al., 2011). It is revelatory in that there is something worthy of study (an established local grain economy with an

approximately 10-year history) that has not been studied before with respect to size, structure, and evolution. The study uses a novel analytical approach, which, if adopted by other researchers, allows for comparisons with other cases, and from this, generalizing knowledge of local grain economies and alternative food networks.

Data collection was primarily guided by the research questions and analytical framework, and focused on the businesses, products, production, transactions, and developments of the local grain

Table 1. Analytical Variables and Evaluative Criteria Applied to the Local Grain Economy in Arizona with Corresponding Results Section

<i>Variables</i>	<i>Definition</i>	<i>Section</i>
Production	Quantity and value of local small grains produced (also compared to the size of the conventional grain economy)	Production
Farm size	The size and type of farms producing local small grains (also compared to the conventional grain economy)	
Farming Methods	The type of farming methods used	
Business Output	Output of individual businesses in each sector	
Retention	Ratio of number of businesses participating in 2019 to the total number of businesses that participated in at least one year between 2012 and 2019 (value of 0: all businesses dropped out; value of 1: no business dropped out)	Structure of the Economic Network
Longevity	Ratio of the total number of businesses that participated for at least 3 of the last 4 years to the total number participating in 2019 (value of 0: all current business are new; value >= 1: all businesses are established participants)	
Network size	Number of producers (farms), primary processors (grain handlers, maltsters, mills), or secondary processors (bread bakeries, pasta makers, pizzerias, tortillerias, breweries, distilleries, home brew stores)	
Diversity	Number of business categories covered and number of products	
Geographical clustering	Supply chain connections between businesses within a geographical area (north, central, south)	
Network density	Number and length of supply chains (links)	
Central businesses	Businesses (network nodes) with links to many other businesses	
Short Supply Chain Aspects	Connections between supply chain actors and with consumers; place-based food culture; food miles.	
Local money flow	Direct and indirect financial value generation in the region	Impacts on the Local Economy
Local job creation	Direct and indirect job generation in the region	
Sustainability Criteria		
Economic	Economic diversity, stability, resilience, local value and job generation, business model innovation	Sustainability Features of the Local Grain Economy
Environmental	Impacts of farming (soil, pollinators), renewable energy, energy efficiency, water efficiency, biodiversity	
Social	Meaningful jobs, craftsmanship, culture, ethics, wages, benefits, diversity, employee ownership	

economy on an annual basis, as well as basic profiles and notable practices of businesses involved. We also collected additional qualitative information on participants' views on meanings, motivations, functions, challenges, and visions of the local grain economy, but do not fully report on these in this article. Data collection consisted of interviews, email correspondence, and review of secondary sources, including reports, media articles, websites, and literature, conducted between January and June 2020.

Data were collected from 19 individuals across 17 businesses and organizations (Table 2). Participants were recruited by email and follow-up phone calls. Some participants were known to the researchers through prior research. Interviewees were selected primarily for their knowledge of the local grain economy and its development, and secondarily for representativeness across sectors. The initial selection was of individuals (or businesses) known (e.g., from media reports) to have played a prominent role in the local grain economy, such as in its early development or as a central organization. Additional participants were selected by snowballing to fill gaps or broaden the representativeness, with a pragmatic cut-off when additional interviews yielded little new data. Interviews were semistructured, of 30–90 minutes duration, and content was captured through note-taking, recording, and transcription.

Supply-chain data analysis entailed reducing

the data to a set of annual transactions consisting of year, source entity, destination entity, product, and quantity, modified for primary production data to ignore the source and include the area planted. As data were incomplete, inference, estimates, extrapolation, and interpolation were used to fill gaps. Gephi network graphing software (Bastian, Heymann, & Jacomy, 2009) was used to visually plot and connect supply chain elements in a time sequence.

QDA Miner software (Lite version 2.0.7; Provalis Research) was used to code interview transcripts and notes, email texts, documents, and articles. Coding was inductive within the predefined qualitative data collection categories (meanings, motivations, functions, challenges, and visions) and underwent several iterations of consolidation and generalization. While we draw on some of the qualitative data collected in the study, particularly in the sustainability appraisal, we report the results more fully in a forthcoming publication.

As already mentioned, the study was limited by the exclusion of distributors, restaurants, and retailers, as grain products are rarely the focus of businesses in these sectors, but also because capturing their contribution is a major methodological obstacle beyond the feasibility of this study. We therefore capture the core of the local grain economy, but not its full extent. Another limit is our concentration on some aspects of the local grain economy and not others. In particular, we focused on col-

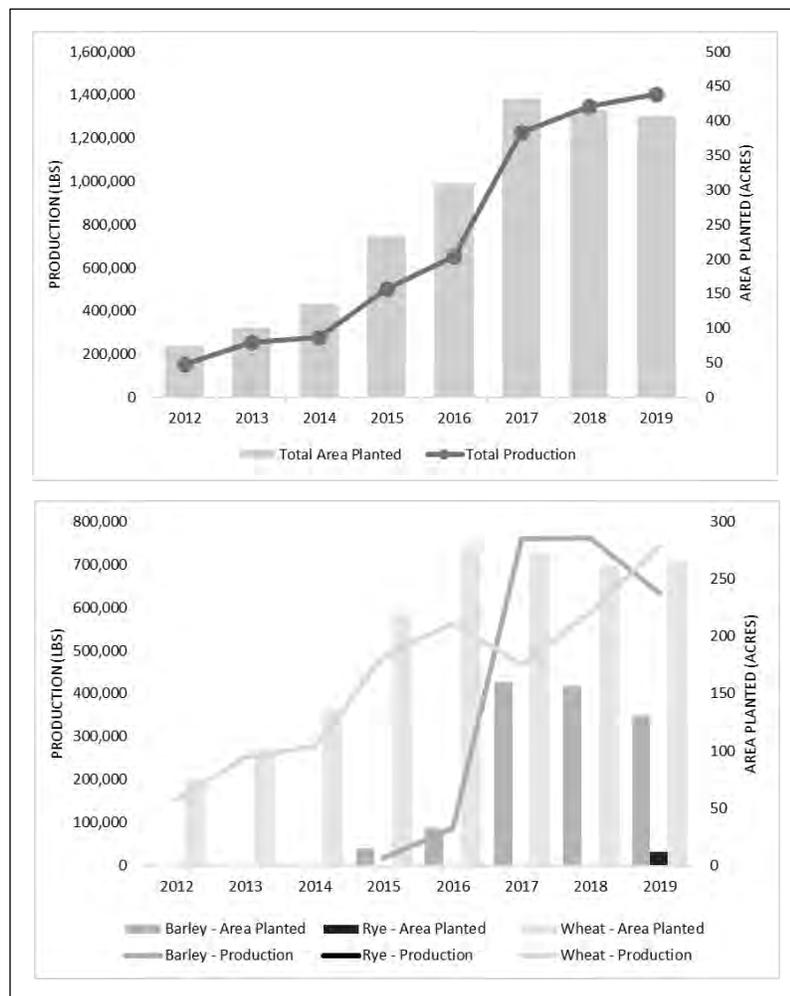
Table 2. Summary of Interview Participants

Sector	Interview Participants	Notes
Producers	Farmers (3)	Two others did not respond to interview request and one other declined.
Primary Processors	Grain handler (1) Millers (2) Maltster (1)	
Secondary Processors	Bakers (4) Pasta maker (1) Pizza maker (1) Brewers (5)	One other baker cancelled due to scheduling difficulty.
Developers	Entrepreneurs (3)	
TOTAL	19 individuals from 17 businesses/organizations	Two individuals with dual roles.

lecting basic production data only, and not financial details, such as pricing, costs, and sales, with the exception of some primary processor aggregate sales data. The sustainability appraisal is also limited in scope by the data collected as opposed to aiming for comprehensive coverage of a sustainable economy. As such, only a little attention was paid to critical sustainability issues such as economic participation, diversity, and justice (P. Allen, 2010). Finally, some limitations of the study pertain to data completeness and accuracy. Regarding completeness, data collection was not exhaustive in terms of identifying every entity involved in the local grain economy in every year, and it is quite

possible some were missed. Production data may also be missing due to participants being unwilling or unable to participate, non-existent or difficult-to-access records, and failing memories. Using multiple sources and talking to key individuals with wide knowledge of the local grain economy reduces these possibilities, but it is quite likely the data are incomplete, and the results are underquantified. Regarding accuracy, values have been imputed for some gaps in the data, while data provided by participants were often an estimate rather than from detailed records. The data, therefore, include a margin of error.

Figure 2. Annual Production Quantities and Area Planted in the Arizona Local Grain Economy, 2012-2019: Aggregate Total for all Small Grain Types (Top), and Totals For Wheat, Barley and Rye (Bottom)



Results

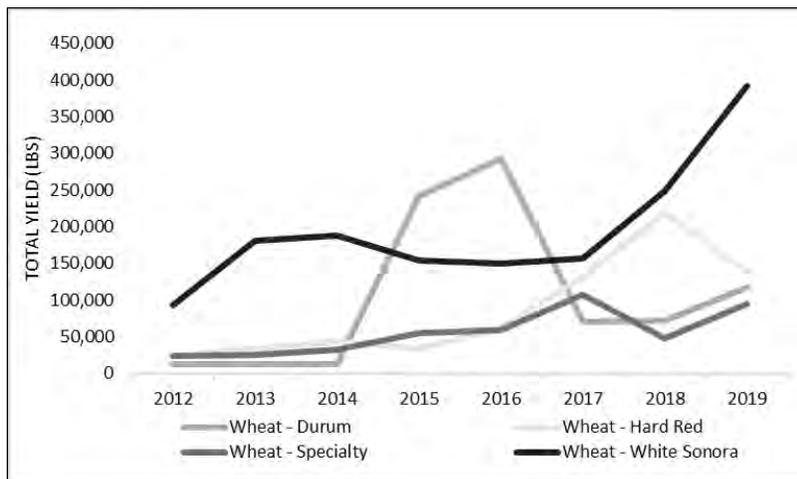
Production

Production quantity

The aggregate total area planted and production quantity of grains grown for the local grain economy increased from zero in 2011 (pre-development phase) to over 400 acres (162 ha) and 1.4 million pounds (635,029 kg) in 2019. The predominant trend has been year-to-year growth, but with some flattening-out in 2017–2019 (Figure 2). The total number of producing farms in the local grain economy has been fairly constant at between five and seven.

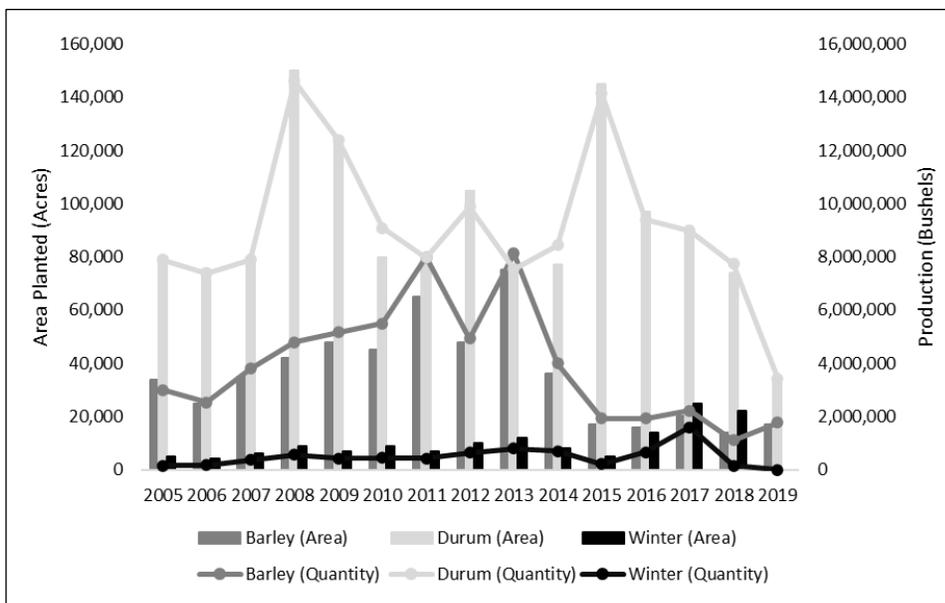
Looking more closely at wheat production, there is an upward trend in all categories (White Sonora, hard red, durum, and other types) from 2012 to 2019 (Figure 3). Production has been greatest for White Sonora, due to its local uniqueness and versatility, with hard red (primarily Red Fife) being next, reflecting demand by bakers for a local complement to White Sonora as they learned how to create the ideal bread-baking flour mix. Durum production, mostly Blue Beard, spiked in 2015 and 2016, as growers and processors

Figure 3. Wheat Production Quantities in Arizona’s Local Grain Economy, 2012-2019, for Major Wheat Categories



were still searching for the right production levels. Other varieties, such as emmer and einkorn, make up the balance, reflecting their specialty nature. While there was experimentation with varieties in the first few years, there has been “convergence toward a smaller range” (grain handler and farmer, personal communication, January 10, 2020) in response to demand-side influence from bakers, brewers, and others, and as knowledge and experience of growing increased.

Figure 4. Arizona Small-Grains Production, 2005-2019



Source: NASS, 2019.

Farm size and type

Farms growing for the local grain economy have ranged in size from small (one acre, [~0.4 ha]) to medium (4,000 acres [~1,600ha]), and have included locally focused organic farms, medium-sized conventional grain and feed-crop family farms, Indigenous community farms, ecovillage farms, and seed-bank/conservation farms. While the total number of farms has remained between five and seven, the type has shifted from predominantly smaller, alternative growers to mostly medium-sized commercial farms of hundreds to a few

thousand acres. For the 2019 growers, local grain production varied from 1% to 25% of their total production area.

Comparison with mainstream production

To put the size of local grain production in context, we compare it to the mainstream small grain economy in Arizona. Arizona has long produced sizeable quantities of barley, durum wheat, and to a lesser extent, winter wheat. From 2005 to 2018

(Figure 4), the total acres planted have ranged from 104,000 to 200,000 acres (median=134,000) (42,000-81,000 ha; 54,000 ha) producing between 9 and 20 million bushels (median 14) (317,000-705,000 m³; 493,000 m³) (U.S. Department of Agriculture, National Agriculture Statistics Service [USDA NASS], 2019). However, a steep decline since 2017, likely due to commodity prices (L. Allen, 2019), has seen the 2019 acres

planted plummet to 51,000 (21,000 ha) and just 5 million bushels (176,000 m³) harvested, of which winter wheat production dropped below the reporting threshold. The majority of Arizona’s mainstream small-grain production is either exported out of state or sold in-state for animal feed (Duval et al., 2016). Small grains are frequently grown for crop rotation reasons, usually every three to four years, and often in combination with high value, nitrogen-fixing alfalfa feed crops (Duval et al., 2016).

In 2017 to 2019, a slight upward trend is discernable in local grain production in proportion to mainstream production (Table 3). The overall proportion, however, is still only one percent or less of both acres planted and production for durum, barley, and total, though notably reaching five percent for other wheat production in 2018 and 2019. The proportional increases observed, however, are more a function of the aforementioned historically low acres planted by mainstream growers in these years and the very low 2018 harvest of winter wheat than increased local grain production.

Farming Methods

The seven producing farms in 2019 included two certified organic, one practitioner of natural methods, one low-input, two conventional (high-input), and one unknown. Low-input consists of a single herbicide application in early growth. With respect to water consumption, modern small grain varieties in Arizona use roughly half the water of alfalfa, which it most commonly replaces (3 versus 6 feet, or 900 vs. 1,800 mm), and heritage grains, such as White Sonora, require half of modern varieties (1.5 feet or 450mm). Part of the lower water use of small grains compared to alfalfa or corn is due to being spring crops rather than summer, when

evapotranspiration is higher. So, for example, switching from corn to malting barley in the Verde Valley has reduced water use by 30%.

Business Output and Operations

Local grain farms have outputs of tens to a few hundred tons, while the primary processors involved (mills and maltings) have similar outputs of low hundreds of tons. Bakers using local flour range in outputs from dozens of loaves per day to several thousand, and most breweries output less than a few thousand barrels per year. These are, in all sectors, two or three orders of magnitude less than mainstream grain industry producers and processors. The small batches involved and the size of available equipment, whether it is for harvesting, cleaning, milling, malting, or baking, results in sub-optimal water and energy efficiency in operations. Despite their apparent awareness of high water and energy use, few businesses have introduced resource-efficiency measures such as solar energy or water reclamation, although there are notable exceptions, such as Grain R&D’s extensive solar installation.

Regarding future output, we found that many businesses expressed a desire for some growth, primarily for reasons of business stability. Almost all, however, would like to see the local grain economy grow through new businesses, again, partly for reasons of business stability (e.g., supply reliability), but also for the wider benefits provided.

Structure of the Economic Network

Retention and Longevity

The network of local businesses that grow, process, and otherwise work with local grains in Arizona has increased in size from 12 businesses in 4

Table 3. Local Small Grain Production as a Percentage of Mainstream Small Grain Production in Arizona

Year	Acres Planted				Production Quantity			
	Durum	Other Wheat	Barley	Total	Durum	Other Wheat	Barley	Total
2017	<0.1%	1.0%	0.8%	0.3%	<0.1%	0.4%	0.6%	0.2%
2018	<0.1%	1.0%	1.1%	0.4%	<0.1%	5.4%	1.1%	0.2%
2019	0.1%	>1.0%	0.8%	0.7%	0.1%	>5.0%	0.6%	0.4%

Source: Mainstream data from NASS (2019).

categories in 2012 to 45 businesses in 11 categories in 2019, or 47 if BKW's triple farming, grain handling, and milling operations are counted separately (Table 4). The largest increases are seen in secondary processors, with bakeries, pizzerias, and pasta makers growing from four to 11, and breweries and distilleries from two to 24, while primary processors have grown to five since the first mill started operating in 2012 (again, noting that BKW's grain handling and milling are counted separately). In contrast, the number of small-grain growers has changed little, fluctuating between five and seven.

Retention and longevity indices indicate the turnover and long-term stability of participating businesses (Table 4). Production exhibits moderately low retention (0.4), with 10 farms no longer participating out of a total of 17 (after excluding two seed-purchasing but nonproducing farms), but also moderately high longevity (0.6), with six of the current seven producing farms being long-term participants. This reflects a number of farms that experimented, especially in the period 2012–2016, but a hardening of the supply chain in more recent years around market demand and a core group of growers, mostly larger farms, with the capacity to

reliably meet that demand. The primary processing sector shows high retention (1.0), with no drop-outs, and high stability (1.0), with all four participants (five when BKW grain handling and milling are counted separately) active over the most recent four years. In the secondary processing sector, the artisan bread bakeries show high retention (0.8) and longevity (0.8), with three of the five participating bakeries in 2019 being steady participants since at least 2016, the other two being newer entrants in 2018, and one other with long-term although irregular participation, being out in 2019. The overall bakery sector has expanded in the last two years, adding pizzerias, pasta makers, and tortillerias (indicated by longevity of 0.5), yet remarkably high retention (0.9), with only one business dropping in and out over the years. The breweries and distilleries sector (including homebrew stores) shows moderately high retention (0.7), with 24 of 35 businesses currently participating, but low longevity (0.2), with only five long-term participating businesses. This is primarily due to a large number of breweries and distilleries experimenting with local grains and malt in the last two years. Over all sectors, retention is moderate-high (0.7), indicating

Table 4. Number and Types of Businesses in the Arizona Local Grain Economy, 2012–2019

<i>Business Type</i>	2012	2013	2014	2015	2016	2017	2018	2019	Total	Retention	Longevity
<i>Farms</i>	7	8	7	8	7	5	6	7	19	0.4	0.6
<i>Primary Processors</i>	1	1	4	4	5	4	5	5	5	1.0	1.0
Grain Handlers	0	0	2	2	2	2	2	2	2	1.0	1.0
Maltings	0	0	0	0	1	0	1	1	1	1.0	1.0
Mills	1	1	2	2	2	2	2	2	2	1.0	1.0
<i>Bakeries</i>	4	4	5	5	5	5	10	11	12	0.9	0.5
Bread Bakeries	3	3	4	4	4	4	6	5	6	0.8	0.8
Pasta Makers	0	0	0	0	0	0	0	1	1	1.0	0.0
Pizzerias	1	1	1	1	1	1	2	2	2	1.0	0.5
Tortillerias	0	0	0	0	0	0	2	3	3	1.0	0.0
<i>Breweries & Distilleries</i>	0	2	9	4	5	5	15	24	35	0.7	0.2
Breweries	0	2	9	4	5	5	14	18	29	0.6	0.3
Distilleries	0	0	0	0	0	0	1	4	4	1.0	0.0
Home Brew Stores	0	0	0	0	0	0	0	2	2	1.0	0.0
TOTAL	12	15	25	21	22	19	36	47	71	0.7	0.4

Notes: (1) the number of farms counted in 2018 and 2019 includes one in each year that purchased seed but were nonproducing in terms of output to the network; (2) One business (BKW) has distinct farming, grain handling, and milling operations that are counted separately.

considerably more businesses currently participate than have dropped out over the eight-year period, with lower longevity (0.4) reflecting a modest but stable core and relatively large number of newer participants.

Network Size and Diversity

Diversity of both businesses and products increased over time (Table 5). In 2012, there were a handful of mainly small farms growing primarily White Sonora, very limited grain handling facilities, a rudimentary milling operation, and three bakeries. In 2019, five larger farms were growing around 10 varieties of wheat and barley, two dedicated grain handling facilities were in operation, two craft milling and one malting business had been established producing a broad range of value-added and packaged grain products, and almost 40 secondary processing businesses were using local grain ingredients to produce a wide variety of baked goods, beers, and spirits. This account does not include the dozens of restaurants, numerous small stores, and several supermarkets that also regularly use end products from mills and grain handlers.

Some other facets of the local grain economy,

however, show low diversity. The corporate form of all businesses that have participated in the local grain economy is dominated by conventional, for-profit forms of limited liability companies (67%), general corporations (20%), and limited liability partnerships (4%). Two nonprofit corporations participated in the early years, and one (for-profit) benefit corporation is still active. The size of businesses involved in most sectors is in the micro to very small range, most with fewer than 10 employees and many with fewer than five. The exceptions are a few larger breweries with restaurant operations that have over 50 staff. Regarding the racial, ethnic, and gender diversity of people involved in the local grain economy, we did not formally collect data, but from observation we believe it is safe to say it is predominantly white and male. Notable exceptions though, include two Indigenous community producers, a second-generation Asian producer/processor, and Latino bakers, particularly since the recent uptake by tortillerias.

Network Density, Clustering, and Centrality

The current state of the economic network (Figure 5) can be described using network metrics

Table 5. Change in Diversity of the Local Grain Economy in Arizona Between 2012 and 2019

Sector	Business / Products	2012	2019
Production	Growers	6 micro to small community farms and 1 larger family farm, ranging from 1–700 acres (0.4–283ha)	8 small to medium family and Indigenous community farms ranging from 50 to 4,000 acres (20–1,619ha)
	Grain Varieties	3 Wheat: White Sonora, Emmer, Red Fife	6 Wheat: White Sonora, Red Fife, Rouge Bordeaux, Emmer, Einkorn, Khorasan 2 Durum Wheat: Blue Beard, Desert 3 Barley: Purple Barley, Bronze Barley, Copeland
Primary Processing	Businesses	1 micro mill	2 small mills, 1 bakery with an integrated micro mill 2 grain handlers (cleaning, storage) 1 malting
	Ingredient-Products	Small variety of flours (see above)	Large variety of flours (see above) One base malt
Secondary Processing	Businesses	3 small bakeries, and 1 pizzeria	5 bakeries (1 micro, 3 small, 1 medium) 2 pizzerias, 3 pasta makers, 3 tortillerias 18 breweries, 4 distilleries, 2 home brew stores
	End-Products	Bread	Bread, Pizza, Pasta, Wheat berries, Tortillas Beer, Spirits

from graph theory. The density (measure of connectedness among all nodes or businesses) is very low at 2%, the average degree (number of connections of each node) is also low at 1.12, and the average path length is short, at 1.79, compared to the maximum of 3. These numbers express what is visually apparent: that most nodes or businesses have only a single connection and go through two or three links to connect to other nodes or businesses. This is expected, knowing that the grain usually goes through the primary processors (grain handlers, mills, maltings) to get to secondary processors. There are, however, some instances of grain going direct from farm to secondary processor (one link), such as unmalted White Sonora being used in wheat beers, or bakers using whole grains in multigrain loaves. For the most part, however, the centralization of the network around four star-shaped nodes is clear, showing that almost all of the supply-chain paths go through one (or two) of these four nodes, and as such, they are critical links in the economy.

There are three supply-chain types: (i) grower → secondary processor; (ii) grower → primary processor → secondary processor; and (iii) grower → primary processor → primary processor → secondary processor. When retailers or restaurants are appended to these chains, as outlets for products such as wholesale bread, packaged flour, or beer, supply chains can extend to four links. There is some local centrality, meaning that many of the growers or secondary processors connect to only one of the primary processing centers, but there are some that connect to more than one. We see, for example, some brewers obtaining supplies from both malting and grain handler, and bakers obtaining supplies from both mills. This local centrality is somewhat geographically

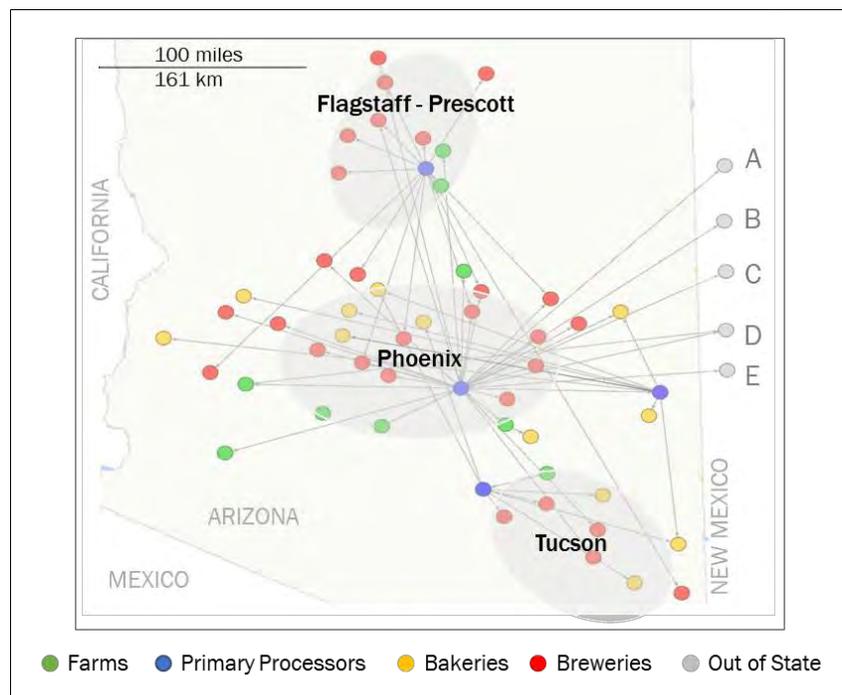
clustered (Figure 5): around Tucson in the south, Phoenix in the center, and Verde Valley/Flagstaff in the north, indicating that secondary processors have some affinity for local processors. Yet, for the most part, processors supply end-producers all over the state.

Short Supply Chain Aspects

The possibility of making personal connections within the supply chain was given by 25% of interviewees as a motivation to participate in the local grain economy. This extended to making connections to consumers in order to build, and be supported by, community (mentioned by 20% of interviewees as important functions of the local grain economy). There was also a strong indication from interviewees that creating a culture and identity around local food, particularly heritage grains, was of high importance, with significant appreciation for White Sonora's historical connections. The extent to which this is shared by customers, however, is less clear.

Figure 5. The Local Grain Economic Network in Arizona, 2019

Four main business categories are shown in different colors using an adjusted geospatial layout in Gephi network analysis tool (Bastian et al., 2009). Nodes are not in their exact location and the Arizona geographical overlay is indicative only. Out-of-state entities are: A=Malting, B=Brewery, C=Bakery, D=Mill, E=Farm.



Another aspect, seen as important by 20% of interviewees, is that the physically short supply chains reduces food miles. This replaces flour and

wheat previously shipped 1,000 miles (1609 km) or more from mills and growers mostly in western U.S. states, and malt shipped 2,000 miles (3218 km) from midwestern maltings and Canadian growers.

Due to the relatively low volumes and logistics involved in local grain distribution, however, the associated greenhouse gas emissions reductions might be offset to some extent by less-efficient smaller vehicles and lower loads.

Development of the Economic Network

We tentatively identified four stages in the development of the economic network (Figures 6 and 7), described below with key activities marked in italics.

Early Development (2012–2014)

In the first stage, development happened around one central node, the initial mill in Phoenix (Hayden Flour Mill), which provided a first critical link between growers and bakers. Key activities and supporting factors in this stage included: (i) the *formation of a core group* of transformational entrepreneurs, consisting of a miller, a restaurateur, an artisan baker, and a farmer; (ii) support from the Arizona-based seed conservation organization, Native Seed/SEARCH (NS/S), with US\$50,000 USDA funding, who led a

Figure 6. Year-by-Year Development of the Local Grain Economic Network in Arizona, 2012–2019

Four main business categories are shown in different colors using an adjusted geo-spatial layout in Gephi network analysis tool (Bastian et al., 2009). Out-of-state entities are: A=Maltster, B=Brewery, C=Bakery, D=Mill, E=Farm. Longitudinal arrows demarcate early development, consolidation, and expansion stages.

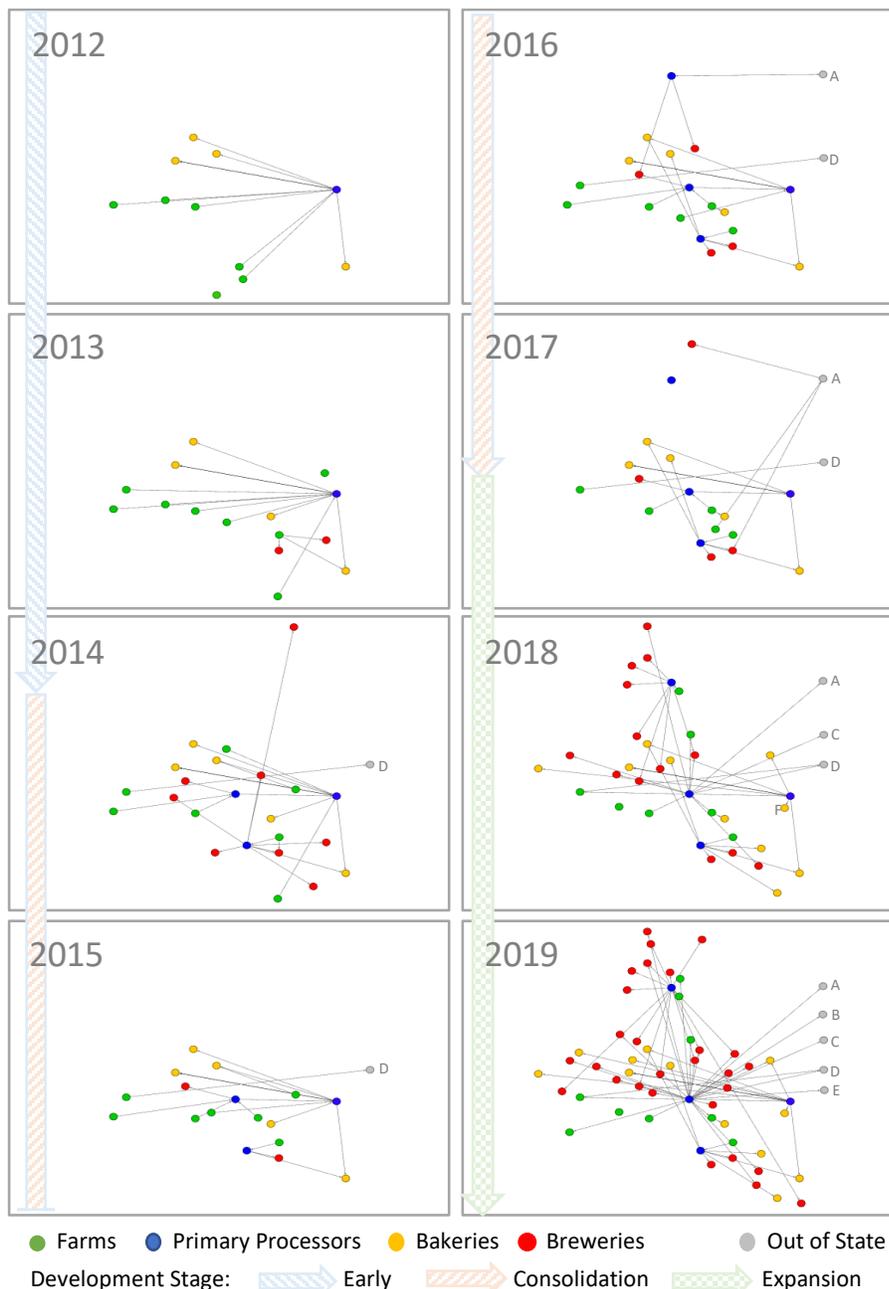
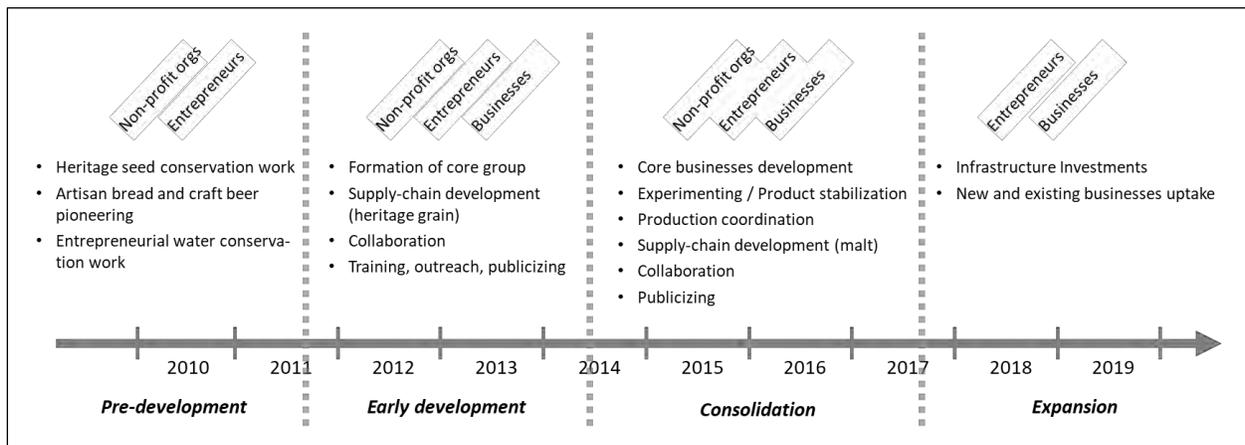


Figure 7. Development Stages of the Local Grain Economic Network in Arizona with Key Activities and Primary Type of Actor Performing Them



supply-chain development project to create an initial constellation of growers, millers, bakers, and chefs to simultaneously develop the demand and supply sides around the startup milling operation; (iii) *collaboration* between the aforementioned entrepreneurs involving openness, resource and information sharing, experimenting, and learning tacit skills from each other; and (iv) performing *training, outreach, and publicity* activities to build capacity in growers and bakers, and grow the market.

Consolidation (2014–2017)

Two additional central nodes started in this stage: a Phoenix grain handling operation (Grain R&D) and an integrated grain handling and milling center in the Tucson area (BKW). Many supply-chain paths now became three links with two primary processing steps (producer → primary processor → primary processor → secondary processor). A fourth central node, the Sinagua Malt malting in the Verde Valley, 90 miles (146 km) north of Phoenix, also began to emerge. Key events and activities in this phase included: (i) *business development* of Hayden Flour Mill (including online retail) and Barrio Bread, an artisan bakery in Tucson, funded by separate USDA grants of US\$100,000 each; (ii) *experimenting* with new varieties requested by bakers and brewers, leading to *stabilization* of products (e.g., grain varieties, flour mixes), and, with some *production coordination* among growers by Grain R&D, finding an equilibrium between supply

and demand; (iii) breweries *experimenting* and beginning to regularly use (unmalted) White Sonora; (iv) a second, unrelated, *supply-chain development project* to develop demand and supply sides for malted barley, conducted by The Nature Conservancy and a group of transformational entrepreneurs; and (v) *collaboration and experimentation* in a pilot project to grow barley in Arizona, malt it out of state, transport it back to Arizona, and brew experimental beers; and (vi) continued prominent national and regional *publicity*.

Expansion (2017–2019)

In the third stage, the four processing operations were prominent hubs in the network, and the number and types of secondary processors significantly expanded. Key activities and events were: (i) major *investment in infrastructure*, including US\$2M in grain handling and milling facilities by Grain R&D and Hayden Flour Mill, and US\$0.8M for Sinagua Malt's malting facility; and (ii) significant *uptake* of local grain by existing businesses, particularly breweries and distilleries, and new businesses (bakeries, tortillerias, pizzerias, pasta makers) forming around the use of local grains as a core feature.

Predevelopment (pre-2012)

Predevelopment and contextual aspects were also important in the network development. Contextually, Arizona's hot desert climate and the availability of irrigated water makes it suitable for growing

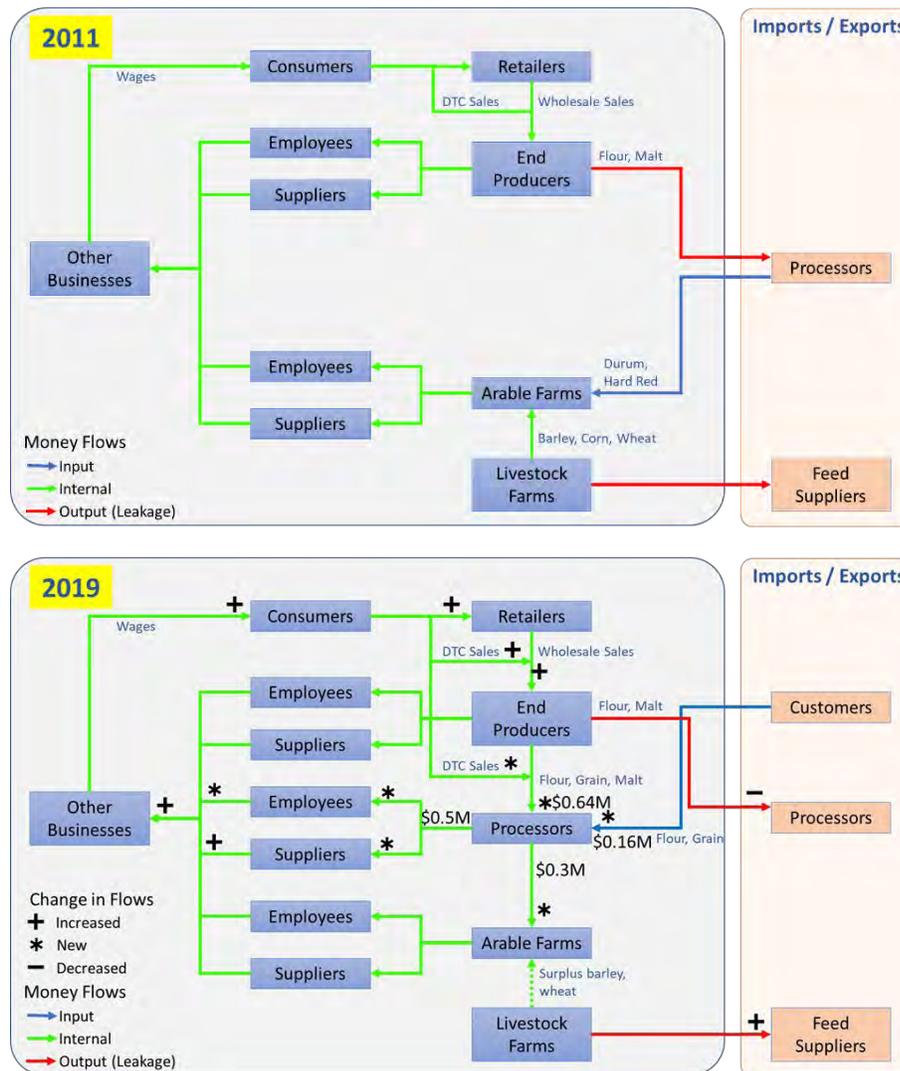
specialty wheats, like khorasan, that originated in a similar climate, while White Sonora is a uniquely desert-adapted variety with a 400-year history in the region. Large areas of agricultural land in proximity to two large cities (Phoenix and Tucson) with strong local food cultures and direct sales channels are enabling factors for the local grain economy in particular and for alternative food networks in general (Hills et al., 2013b).

Important predevelopments include the extensive *work of seed conservationists* and revivalists, Glenn Roberts (Anson Mills) and Gary Nabhan (NS/S), whose knowledge, experience, and seed bank were

essential for the development of the local grain economy in Arizona. Another is the rise in interest and demand for *artisan bread and craft beer* which created a market for the local grain products while driving development of the network through participation of passionate, curious, and skilled bakers and brewers. A third early factor, out of which Sinagua Malt grew, were the several years of groundwork by The Nature Conservancy in Central Arizona to find innovative, multistakeholder, *entrepreneurial solutions to water conservation*.

Impacts on the Local Economy

Figure 8. Changes in Money Flows in the Local Grain Economy in Arizona, Pre-2012 and 2019 (DTC=Direct to Consumer)



Local money flow and job creation

With the growth of the local grain economy, secondary processors and direct consumers have redirected some expenditures on grain, flour, and malt to the new primary processors (grain handlers, mills, maltings), which also receive revenue from out-of-state sales (Figure 8). The processors' aggregate total revenue in 2019 is estimated at US\$800,000, of which 20% is from exports. Thus, US\$640,000 is money that would have left the state, and US\$160,000 is new money coming into the state. The processors spend that income on grain from local farms, other suppliers, employee costs, and taxes. We estimate that US\$300,000 is paid to farmers, replacing income they would receive from local livestock farms for feed barley or corn, or from conven-

tional durum wheat exports, in the absence of demand for sustainably grown heritage grains and malted barley (farmer, personnel communication, February 10, 2020). This is not new money for these farms; it is replacing their previous earnings from livestock farmers, who, we assume, are now increasing imports of feed by the same amount (although some of the demand may have switched to other in-state farms). The processors are assumed to spend the US\$500,000 balance on local supplies, wages, and taxes. This is new money being kept in the state. Secondary and tertiary transactions by suppliers and their employees keep some percent of this new money in-state as well, including some of it being spent on local grain end-products (beer, bread, pizza, etc.). Thus, there is a boost to the overall Arizona economy, and even to the local grain economy, however small, from the increased money circulation in the state.

Similar to the money flow, it is the jobs created by the primary processors that can be considered new jobs. For farms, the labor demand was unchanged: farms are still growing crops, albeit different ones. Secondary processors (bakeries, breweries, etc.) have the same labor demand: they are still baking bread or brewing beer, albeit with different flour or malt. We estimate a total of 10 jobs have been directly created by 2019. Some are minimum wage, a few tend toward “unskilled” labor, while several are skilled craft jobs (millers, maltsters), and all require learning much about the new grain economy. There is also some augmentation with free labor by entrepreneurs.

Duval et al. (2016) put the total value of conventional Arizona small grains agriculture sales in 2014 at US\$104 million and estimated a multiplier effect for the mainstream small-grain economy through economic input/output analysis of 2.0, or a total of US\$206 million of sales in the state including indirect and induced expenditure. They also estimated a jobs multiplier of 1.8 (814 direct jobs and 671 secondary). There are significant differences between the mainstream small-grain producers of Duval et al.’s (2016) study and the local grain processors of our study, including being in different supply-chain sectors, and therefore, significant differences in multiplier effects are likely. Notwithstanding such differences, it is still useful

to apply Duval et al.’s (2016) multiplier effects to the local grain economy in Arizona as a first-order approximation. Doing so suggests that the local grain economy has boosted sales by US\$1M ($2.0 * US\$500,000$) and jobs by 18 ($1.8 * 10$) in total across all sectors.

Numerous additional indirect jobs may have been created as bakeries and breweries have expanded and new ones have started. While local breweries, bakeries, and restaurants clearly drive demand for local grain, it is not clear the extent to which local grain supply is driving growth in these secondary processing businesses: they may have grown or have been started whether they use local grain or not. However, some of the businesses make local grain a prominent “unique selling proposition.” All the businesses, whether explicit or not in their marketing, may benefit from producing unique and quality products made possible by local grains. Local grains therefore may also be credited with contributing to the growth of secondary processing businesses.

Interviewees clearly see contributing to the local economy as an important part of what they do, with 25% mentioning it as a key characteristic of the local grain economy and 40% stating it as a reason why they choose to grow or use local grain. Keeping money in the local economy was the common refrain, with a concern for farmer livelihoods and a desire to see money more evenly distributed across the supply chain also frequently mentioned. However, there was little mention of the job-creation aspects and no mention of improving employment conditions for farm workers or other minimum-wage workers in the food sector.

Sustainability Features of the Local Grain Economy

The local grain economy seems now well established in Arizona, with hundreds of acres under production, yielding hundreds of tons of well-adapted grain varieties and involving dozens of well-connected small businesses that produce a variety of quality local products for a growing consumer base. Below, we synthesize the results presented in the sections above to offer an initial, though limited, appraisal of the local grain economy’s sustainability (Table 6).

To summarize, it seems the local grain econ-

omy in Arizona is having positive sustainability impacts, with some clear economic, environmental, and social benefits, although there is room for improvement.

Discussion

While the local grain economy in Arizona has grown in size, diversity, and sustainability efforts since its inception in 2012, there are a number of critical issues that warrant closer scrutiny as they

are of relevance to the development of local grain economies in other regions, too.

Impact. The total local grain production, and in most grain categories, is currently (2019) less than one percent of total grain production in Arizona, even though conventional production is at its lowest level in 15 years. Clearly, the impact compared to conventional grain economy outputs is small. Yet, it would be misleading to gauge the impact of

Table 6. Sustainability of the Local Grain Economy in Arizona, 2019

	<i>Economic Features</i>	<i>Environmental Features</i>	<i>Social Features</i>
Achievements	<p>45 local businesses (partially) build their operations around local grain, covering all sectors and business categories.</p> <p>Many businesses, particularly in production, processing, and baking sectors show stability over the last four years.</p> <p>Ca. \$0.5M annually added to the Arizona economy with another \$0.5M added through local multiplier effects.</p> <p>10 jobs directly created in processing sector, with an estimated 8 more created in the wider Arizona economy.</p> <p>Numerous additional indirect jobs may have been created through expansions and start-ups of bakeries and breweries.</p>	<p>Most farmers practice organic, natural, or low-input farming. For some, the switch to local grain reduced pesticide and herbicide use.</p> <p>Local grains need less water than the crops they replaced (e.g., White Sonora needs only 50% of the water than conventional wheat).</p> <p>Switching to barley in the Verde Valley has helped restore Verde River flows.</p> <p>Re-establishing (locally extinct) heritage grains increases agricultural biodiversity.</p> <p>Food miles have been vastly reduced from thousands to mostly less than one hundred.</p>	<p>Meaningful skilled jobs created in primary and secondary processing businesses.</p> <p>Revival of artisan crafts in the food economy.</p> <p>Strengthening of social relations among supply chain participants and consumers.</p> <p>Development of a strong culture around local grains as well as rebuilding historical ties (e.g., White Sonora).</p> <p>Appreciation for the ethical trade aspects of the network, making sure that farmers are adequately supported.</p>
Challenges	<p>Many businesses are micro or small in scale making them very vulnerable to shocks (sickness, turnover, pandemic, etc.).</p> <p>Diversity of corporate forms is low (very few cooperative businesses, benefit corporations, or social enterprises).</p>	<p>Some grow heritage grain only as rotational crop every 3-4 years to augment growing alfalfa for the meat and dairy industry—with negative impacts.</p> <p>Conventional road transport and logistical challenges (relatively small volumes) create inefficiencies and associated GHG emissions.</p> <p>Small-scale harvesting, cleaning, milling, malting, baking, and brewing operations are less energy efficient than large-scale centralized ones.</p> <p>Only a minority of businesses use solar energy or energy-efficient operations.</p>	<p>There is less concern for supporting farm workers and other assisting jobs in the grain economy to ensure living wages and benefits.</p> <p>The racial, ethnic and gender diversity of people involved in the local grain economy is limited.</p> <p>Employee ownership is low.</p>

the local grain economy by a narrow comparison against the conventional grain economy, which is focused on livestock feed, oriented toward exports, and driven by profit maximization. By contrast, the local grain economy focuses on food products for human consumption, generates value in the region, and balances economic viability with environmental and social benefits. A meaningful reference is therefore not the conventional grain economy, but the local economy. With focus on economic indicators, when consumers and businesses shift spending to businesses that are locally owned and operated, it increases the multiplier effect, keeping money circulating locally for longer, increasing output, jobs, and income, and expanding the total value of the local economy (Benedek, Fertő, & Szente, 2020). This is what the local grain economy in Arizona has been demonstrating over the past several years. It might be of interest to economic development organizations, in particular as they consider the wider scope of sustainability, that businesses in the local grain economy have a significant local economic impact in addition to their social and environmental benefits.

Growth. On the surface, local grain businesses' desire for growth seems to follow the dominant neoliberal economic growth paradigm. Yet, the shared objective also seems to be the growth of the local grain *economy* (the economic network) in Arizona rather than the individual businesses. The vision is not for any individual business to outcompete the others and dominate the local market; instead, it is about adding more nodes and links to increase the overall impact. And there is a lot of potential for the local grain economy in Arizona to grow: for example, a fourfold growth in local grain production would only result in meeting 3% of flour consumption in the state, or a fourfold growth in local malting production would still only supply around 10 of the over 100 craft breweries. While there is considerable diversity in perspectives among the businesses engaged in the local grain economy, the common departure from the conventional growth paradigm aligns with the collaborative and cooperative nature of alternative food networks (Renting et al., 2003).

Supply-Chain Transparency. As the local grain economy in Arizona developed and became more differentiated in its operations, the network has added nodes and links. The result is that grain supply chains may not be so “short,” taking up to four links (farm → handler → mill → bakery → consumer), or five if restaurants or retailers are inserted as the consumer point. This is stretching one of the key tenets of alternative food networks: the direct connection between producer and consumer, although the strength and validity of such connections has been called into question (Mount, 2012). It is observable in the marketing and sales of local grain products that the further up the chain the supply-chain actors are, the less visible and known they are to consumers. While the bakeries and breweries are well known (maybe even for using local grain), the processors might be somewhat known, but the farmers are often invisible. Additional marketing efforts in the local grain economy with support from local food advocacy groups (such as Local First Arizona) could help address this issue to avoid falling back into one of the key challenges of conventional food chains, namely, that people do not know where their food comes from.

Consolidation. In the initial few years of supply-chain development in the local grain economy in Arizona, the growers were diverse: they included micro community organizations, small ecovillage farms and independent growers, and a couple of larger established farms looking to transition from conventional grain production. As the network evolved, there has been some consolidation toward a smaller number of the larger, conventional farms. In order to develop stability and reliable supply, contracts from mills to grain handlers to farms have been growing in volume and value. This is a consequence of financial investments and establishment of privately owned grain hubs that need a reliable network of growers to maintain quality and quantity standards. There is some concern that there are not enough farms and that this is a vulnerability for downstream businesses should, for example, one of the farms drop out suddenly. There is also the possibility of unhealthy concentration, which would counter the overall alternative

food network's objective to support a variety of local farms.

Out-of-State Sales. An estimated 20% of local intermediate products (flour, cleaned grains) produced in Arizona are sold out of state. There is no indication that processors particularly want to grow the export market, and the overall sentiment within the network is to keep it local. However, there is national demand for the high quality and unique products the Arizona processors are producing, and in the absence of stronger local demand, it seems a necessary part of their business. Out-of-state sales, particularly online retail, were a significant factor in developing the Phoenix milling business when it struggled to reach viable volumes in the first few years. Similarly, both grain handlers have pursued sales to out-of-state artisan mills and bakeries and microbreweries to support their bottom line. In reality, businesses participating in alternative food networks often operate as hybrids, partly within and partly outside the network (Mount, 2012). However, out-of-state sales become a problem when they are pursued at the expense of in-state sales, resulting in local product scarcity and price increases, as well as exporting embodied water (in particular in naturally water-scarce environments such as Arizona). It can also be argued that when products are nationally available in larger volumes, they lose their local appeal in the place of origin: they are no longer perceived as special.

There are additional challenges for the local grain economy in Arizona to maintain resilience, high quality, local identity, and other beneficial features of a functional alternative food network. There is the issue of *standardization*. As the artisan bakers in Arizona learn how to work with White Sonora and other flours and collaborate with the local mills, there is a move toward the standardization of products, e.g., there are now standard bread flour mixes, blending various grains. Could this trend mean slipping back toward a centralized milling industry with three standard types of flour? There is also the issue of *aggregation*. While one mill in Arizona is a vertically integrated farming-handling-milling operation, the other receives grain from multiple growers and the original farm iden-

tity is not always preserved. Currently, the malting has only one source but plans to add more once the processing capacity can accept it. With expansion to meet higher demand, there will be pressure to make processing as efficient as possible, which might jeopardize the preservation of source identity. And finally, there is the issue of *corporatization*. The idea that large corporations will need to be involved to significantly scale up the network was suggested by some supply-chain actors, as it has also been for alternative food networks in general (Clark & Inwood, 2016; Stevenson & Pirog, 2008). This already exists in the local grain economy in Arizona to some extent, with one mill's products being carried by the regional stores of several national retail chains.

In summary, the above are all well-known challenges that emerge alongside the growth and success of local food economies and alternative food networks (Mount, 2012). Consumer education, training, supportive local policies, investment and infrastructure development, and collaboration and cooperation can go some way to ensure the beneficial features of an alternative food network are maintained (Diamond & Barham, 2011; Lutz & Schachinger, 2013), many of which were also mentioned by participants in this study. Yet, hybridity might be necessary for building an alternative food network (Mount, 2012; Tregear, 2011), and some strategies might deviate from the purist vision of a sustainable local grain economy (Lutz & Schachinger, 2013; Nost, 2014). Examples from the local grain economy in Arizona include transporting grain out of state and back to have it malted, or blending Arizonan White Sonora with imported flours to achieve a functional mix, or brewing a beer with only minor local grain content. It would be important, however, to ensure that the core values and goals are maintained and even strengthened.

As noted in the Research Methods section, there are limitations to the study. Data completeness was further curtailed when the COVID-19 pandemic began a couple of months into the data collection process. Mills and bakeries became extraordinarily busy, and breweries scrambled to adapt, resulting in very limited time to respond to requests for further information. A more general

point is that government at any level does not collect the data needed to monitor and analyze alternative food networks. As experienced by ourselves and others (King, Hand & Gomez, 2015; Thompson, Harper & Kraus, 2008), economic datasets, such as those collected by federal and state agencies, do not include data with the granularity, specificity, and completeness that is needed to track the activities and throughput of local supply chains. Data collected by federal and state agricultural agencies, for example, on in-state vs. out-of-state crop sales, and to which sector (e.g., animal feed, milling, malting), would allow a high-level picture of upstream production in a local grain economy. Yet, such general data would still not suffice for in-depth supply-chain studies. More promising would be a self-governed, collaborative effort centered on primary processors, with participation by producers and downstream processors and retailers, to establish a specific data collection and reporting program for the local grain economy.

Conclusions

This study offers an account of Arizona's local grain economy—its size, structure, and evolution—and an initial assessment of its sustainability. Over the past decade, this economy has formed a functional alternative food network; in some sectors it is already stable, while in others it is still quite dynamic (with new and existing businesses). Sustainability has been a driving factor from the beginning, with good achievements and still a great deal of potential for improvement. It seems the network is reaching another critical stage, in which issues of growth, consolidation, transparency, standardization, aggregation, and corporatization will require deliberate strategies to maintain sustainability.

The profile we constructed of the local grain economy in Arizona can serve as a basis for further development. It raises questions for future partici-

patory research, including what were the success factors at each stage of the economy's evolution, what is the vision for the next decade, what are strategies to navigate the issues currently faced and move toward such a vision, as well as detailed research on aspects of its current state, such as a more robust determination of local economic multipliers and a more comprehensive sustainability appraisal. The study also provides a focus to convene the local grain economy stakeholders in Arizona to reflect on values, goals, challenges, and directions, and to develop coherent and collaborative development efforts. Continuous monitoring and evaluation, as outlined here, would provide evidence-based data for policy advocacy and fundraising.

Beyond its immediate value to the local grain economy in Arizona, the approach used in this study could be of value to other regions to conduct similar analyses of local grain economies. The various data collection and analyses on production quantities, supply-chain networks, network development, local economic impact, and sustainability offer a pragmatic framework to improve understanding of the current state and identify future possibilities. It may also, by extension, be applied to other types of alternative food networks. Perhaps of most value, however, is that application of the framework by researchers in other regions would allow for cross-case comparisons that could yield robust insights into local grain economies in general. 

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Universal free school meals through the Community Eligibility Provision: Maryland food service provider perspectives

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Abstract

Since 2014, the Community Eligibility Provision (CEP) school meal funding option has enabled high-poverty schools nationwide to serve universal

free breakfast and lunch. Evidence suggests that CEP has benefits for student meal participation, behavior, and academic performance. This qualitative study explores perspectives among food service staff ($n=28$) in CEP-participating school districts in Maryland on (1) implementation barriers, (2) implementation best practices, and

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(3) impacts on students, school operations, and the broader food system. Perceived benefits of CEP include increased meal participation, reduced student stigma and financial stress among parents, and improved staff morale. Most participants did not report any change in wasted food or relationships with local or regional farms associated with CEP adoption. Implementation barriers, including concerns regarding CEP's impact on federal, state, and grant education funding, provide insight into potential policy interventions that may promote uptake. Best practices, including strong communication with parents and creative strategies to boost student meal participation, can be adopted by other districts.

Keywords

Community Eligibility Provision, Food Waste, Implementation Science, Nutrition Policy, School Meals, Universal Free Meals, Wasted Food

Introduction

Among children, food insecurity, defined as limited or uncertain access to nutritionally adequate, safe, and acceptable foods (U.S. Department of Agriculture, Economic Research Service [USDA ERS], 2019), is associated with developmental delay and poor academic performance, including low test scores and attendance rates (Alaimo, Olson, & Frongillo, 2001; Glewwe, Jacoby, & King, 2001; Jyoti, Frongillo, & Jones, 2005). Food insecurity is also associated with a range of adverse physical and mental health outcomes (Alaimo, Olson, Frongillo, & Briefel, 2001; Cook & Frank, 2008; Gundersen & Ziliak, 2015; Ryu & Bartfeld, 2012; Weinreb et al., 2002). In 2018, one in seven U.S. households with children experienced food insecurity (USDA ERS, 2019). Estimates suggest that since the beginning of the COVID-19 pandemic, rates of food insecurity for households with children have doubled (Bauer, 2020).

Two federal school-based nutrition programs of the U.S. Department of Agriculture (USDA)—the National School Lunch Program and School Breakfast Program—have been consistently shown to decrease household food insecurity (Bartfeld & Ahn, 2011; Huang & Barnidge, 2016). Through these programs, in 2019, nearly 30 million lunches

and 15 million breakfasts were served each day at low or no cost to students (USDA ERS, 2019). Prior to the COVID-19 pandemic, almost half of U.S. public school students qualified to receive free meals (because their household incomes were below 130% of the federal poverty level) or reduced-price meals (because their household incomes were between 130% and 185% of the federal poverty level) (Fox & Gearan, 2019). With the recent rise in unemployment, particularly among racially and ethnically diverse populations, the number of children eligible for free or reduced-price meals (FRPM) is now likely much higher (Congressional Research Service, 2020). Despite high rates of food insecurity among FRPM-eligible students, school meal participation among eligible students has been low: in 2015, 43% of eligible students participated in school breakfast and 81% participated in school lunch (Fox & Gearan, 2019). Barriers to participation in school meal programs include stigma among students and challenges for parents completing meal applications due to limited English language or literacy skills (Moore, Hulse, & Ponza, 2009; Poppendieck, 2010).

To address these barriers, as part of the Healthy, Hunger-Free Kids Act of 2010, Congress authorized the Community Eligibility Provision (CEP) (Public Law 111–296. Healthy Hunger-Free Kids Act of 2010, 42 USC 1751, §203., 2010). High-poverty schools that opt into CEP serve universal free breakfast and lunch to all students, regardless of household income. CEP is an alternative to the traditional USDA model of using applications to certify students annually for FRPM based on household size and income.

Individual schools, groups of schools, or entire school districts can opt into CEP if their aggregate identified student percentage (ISP) is 40% or greater. The ISP is the percent of students directly certified for free meals based on existing administrative data, such as participation in the Supplemental Nutrition Assistance Program (SNAP). State education agencies conduct direct certification data matching between school enrollment lists and existing administrative databases at least once per year and are required to notify districts which schools are eligible or near-eligible for CEP each spring. Participating schools

must be recertified for CEP every four years.

In CEP schools, federal meal reimbursement rates are calculated based on the ISP. The ISP multiplied by 1.6 determines the percentage of meals served that are reimbursed at the “free” rate (on average, \$3.41 for lunch,¹ \$1.84 for breakfast), while the remainder of meals served are reimbursed at the lower “paid” rate (on average, \$0.32 for lunch, \$0.31 for breakfast) (School Nutrition Association, 2019). For example, a school with an ISP of 62.5% would be reimbursed at the “free meal” rate for all meals served ($62.5\% \times 1.6 = 100\%$), whereas a school with an ISP of 50% would be reimbursed at the “free” rate for 80% of meals served ($50\% \times 1.6 = 80\%$), and at the “paid” rate for the remaining 20% of meals served. Schools with ISPs below 62.5% aim to make up the difference in federal reimbursement through reduced administrative overhead and improved meal participation, leading to greater economies of scale.

CEP was phased in over a three-year period in 10 states and the District of Columbia, and then became available nationwide beginning in school year (SY) 2014–15. By SY 2019–20, 30,667 schools, or approximately two-thirds of eligible schools, offered CEP, serving 14.9 million children (Food Research & Action Center, 2020). Maryland began offering CEP in SY 2013–14, the third year of the phase-in period. In Maryland, six public schools participated in CEP in the first year it was available and 24 participated the next year. Maryland schools were hesitant to adopt CEP due to uncertainty about how it could impact state compensatory education funding: under CEP, schools no longer collect applications for FRPM, which provide data that the state has historically used to determine compensatory education funding levels for schools (Maryland State Department of Education, 2015). Maryland allocates approximately \$1.3 billion annually in state compensatory education funding to schools that serve a high proportion of economically disadvantaged students (Maryland Association of Boards of Education, 2019). To address concerns regarding potential loss of funding, in May 2015, the Maryland General Assembly enacted

the Hunger-Free Schools Act of 2015, which guaranteed a minimum state compensatory education funding rate for schools participating in CEP (The Hunger-Free Schools Act of 2015; Maryland HB 965, 2015). By the following year (SY 2015–16), 198 new schools had opted into CEP. By SY 2019–20, 236 Maryland public schools were participating in CEP; there were 63 individually eligible schools (schools with ISPs 40% or greater) that did not participate (Maryland State Department of Education, 2020a).

A growing body of literature has explored the impact of universal free meals on student health, behavior, and academic performance. A recent synthesis of quantitative studies evaluating universal free meal programs, including CEP, found strong evidence of increased meal participation rates; limited but promising evidence of benefits for on-time grade promotion, food security, and weight outcomes; and mixed evidence of improvements in attendance and test scores (Hecht, Pollack Porter, & Turner, 2020). The impact of universal free meal programs on the broader food system is understudied. Two previous studies have considered the relationship between universal free breakfast programs and wasted food; in both, food service staff reported perceived increased food waste associated with the program implementation (Bernstein, McLaughlin, Crepinsek, & Daft, 2004; Blondin, Djang, Metayer, Anzman-Frasca, & Economos, 2015). The impact of universal free meal programs on the relationships between schools and their local or regional farmers has not been examined in the literature.

Only one study to-date has qualitatively explored perceived barriers to CEP implementation (Logan et al., 2014). That study, published by the USDA in 2014, focused on states participating in the phase-in period and included surveys of district administrators and interviews with State Child Nutrition Agency directors. The study found that two leading barriers to implementation were lack of time during the initial implementation period for districts to learn about CEP and the uncertainty about the financial implications of CEP both for meal reimbursement and for education funding

¹ All currencies in this article are in U.S. dollars.

traditionally allocated based on FRPM data. While the USDA has since worked to provide guidance to eligible schools about CEP and its potential financial impacts (USDA Food and Nutrition Service, 2015), these and other barriers may persist.

This study assesses perspectives on barriers and facilitators to CEP implementation among food service staff in districts that have adopted CEP in Maryland. The focus is on barriers to implementation that may be addressed through policy or programmatic changes, as well as best practices that can be used by other school and district administrators across the country. Further, this study explores perspectives on how CEP may influence the broader food system, including wasted food and relationships between schools and local farmers. Findings may help guide targeted strategies by advocates, policymakers, and state education agencies to promote CEP uptake and ease implementation.

Methods

Recruitment and Sampling

Semistructured in-depth interviews ($n=28$) were conducted with food service staff in Maryland schools and districts participating in CEP stratified by two informant categories: 9 food service directors (FSDs) at the district level and 19 cafeteria managers (CMs) at the school level. Both FSDs and CMs were interviewed in order to gain a holistic picture of CEP implementation at the administrative and school levels. In many school districts, CMs are responsible for overseeing day-to-day meal service operations, as well as inventory management and staffing for their school cafeteria. FSDs work closely with CMs to oversee the budget and strategic operations for all school cafeterias in their district, including menu planning and communication with families. In most districts, FSDs play an important role in deciding whether and how to implement CEP. Under the traditional USDA reimbursement model, FRPM applications are also typically processed centrally in the district office.

In Maryland, 12 public school districts and 240 public schools participated in CEP during SY 2018-19. A list of all CEP participating schools in SY 2018-19 was retrieved from the Maryland State

Department of Education website (Maryland State Department of Education, 2020a). Twelve FSDs, one from each participating district, were invited to participate in this study. A separate CM sampling frame was created with CMs from all 240 participating schools. To provide insight into how implementation potentially differed across school levels and geographies, the CM sampling frame was stratified by school level based on National Center for Education Statistics classification (elementary, middle, high, other [e.g., grades K-12]) and district to create 48 mutually exclusive and exhaustive strata (National Center for Education Statistics, US Department of Education, 2020) (Table 1). Twenty-two of these strata had no schools—for example, in four counties, only elementary schools participated in CEP, so the middle school, high school, and other school strata were empty. Using a random number generator, one CM from each of the 26 remaining strata was sampled. Between one and four CMs were interviewed per district: in districts with schools from only one stratum (e.g., only elementary schools) participating in CEP, one CM was sampled, and in districts with schools at all four levels participating in CEP, four CMs were sampled. If a CM declined to participate or was unreachable after six attempts via email or telephone, a new CM within the same stratum was randomly selected, if available. Participants were eligible if they were ≥ 18 years, could speak English, and worked at a CEP-participating school or district.

The overall response rate was 76%. Three FSDs declined to participate; one cited a district policy limiting outside research and two did not provide a reason. In one district where the FSD declined to participate, researchers were asked not to contact the CMs. In the two other districts where FSDs refused, two CMs declined to participate without explicit permission from the FSD, and there were no other CMs in the same stratum to sample. In another district, two CMs were unable to be reached but were replaced by CMs in the same stratum.

Data Collection

Semistructured in-depth interviews were conducted from July 2019 to February 2020. An interview guide was developed based on a review of the liter-

Table 1. Participating Food Service Directors and Cafeteria Managers by District and School Level^a (n=28 participants)

School District	Food Service Director	Elementary School Cafeteria Manager	Middle School Cafeteria Manager	High School Cafeteria Manager	Other School ^b Cafeteria Manager
County A	✓	✓	N/A	N/A	N/A
County B	✓	✓	✓	✓	✓
County C	X	X	X	X	X
County D	✓	✓	N/A	N/A	N/A
County E	✓	✓	✓	✓	N/A
County F	✓	✓	✓	✓	N/A
County G	✓	N/A	N/A	N/A	✓
County H	X	✓	X	N/A	N/A
County I	✓	✓	N/A	N/A	N/A
County J	X	✓	X	✓	N/A
County K	✓	✓	N/A	N/A	✓
County L	✓	✓	N/A	N/A	N/A
Total participating	9	10	3	4	3

^a Check mark indicates a participant from the stratum participated in the study. X indicates no participant in the stratum participated in the study. N/A indicates there was no school within the stratum to sample. A total of 19 cafeteria managers were interviewed representing 20 schools (one cafeteria manager served two schools).

^b Other school level (e.g., K-12)

ature related to policy implementation and school nutrition (see the Appendix). Eight experts from across the country reviewed the interview guide for content validity. The interview guide was pilot tested for clarity and ease of administration with two FSDs at districts implementing CEP outside of Maryland and was revised based on their feedback.

CMs were asked about the process of implementing CEP at their school and factors that facilitated or hindered implementation. They were also asked about perceived consequences of CEP implementation, including impacts on cafeteria operations, staff workload, staff morale, student behavior, wasted food, and purchasing relationships with local or regional farmers. FSDs were asked the same questions, plus questions related to why the district decided to implement CEP, who was involved in the decision to implement CEP, and the budgetary impacts of CEP.

Interviews occurred by phone and lasted 30-55 minutes. All participants provided informed verbal consent. Recordings were transcribed by a third

party and all identifying information was redacted prior to analysis. Participants received \$20 gift cards. This study was reviewed and determined to be non-human subjects research by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board. The Institutional Review Board for Baltimore City Public Schools also approved this study (IRB #2019-074).

Data Analysis

Data were analyzed using ATLAS.ti (version 6.0, ATLAS.ti GmbH, Berlin, Germany). Using a phronetic iterative approach (Tracy, 2013), the research team developed an analytic codebook composed of 8 coding families and 105 codes. Two researchers coded transcripts, meeting regularly to discuss findings and reconcile differences. After coding, data were extracted and analyzed. Relevant codes were categorized according to emergent themes, which were mapped onto the Consolidated Framework for Implementation Research (Keith, Crosson, O'Malley, Crompton, & Taylor, 2017). This

framework was selected because of its focus on identifying actionable findings to improve implementation. The framework outlines five major domains that may impact implementation: the intervention characteristics, the inner setting (i.e., features of the implementing organization), the outer setting (i.e., features of the external context or environment), characteristics of individuals involved in implementation, and the implementation process (i.e., strategies or tactics that might influence implementation). There were no strong themes uniquely related to one domain—characteristics of individuals involved in implementation;

thus, this domain was eliminated, and findings presented below are organized according to the remaining four domains.

Results

Participant Characteristics

Nine FSDs and 19 CMs participated in this study, representing 10 school districts (in one district, an FSD declined to participate, but CMs from the district participated) and 20 schools (one CM served two schools). Characteristics of participating FSDs, CMs, and the districts and schools they represented are summarized in Table 2. All three districts in

Table 2. Characteristics of Participating Food Service Directors and Cafeteria Managers (n=28) and the Districts and Schools They Represent

Food service director (n=9)	
Years in current role, mean (range)	7.9 (2–21)
Years in school food service, mean (range)	11.8 (5–21)
Districts represented by food service directors (n=10)^a	
Years since first school in the district adopted Community Eligibility Provision, mean (range)	4.7 (2–7)
District-wide adoption, n	3
Cafeteria manager (n=19)	
Years in current role, mean (range)	10.3 (1–27)
Years in school food service, mean (range)	16.3 (1–36)
Schools represented by cafeteria managers (n=20)^b	
Years since school adopted Community Eligibility Provision, mean (range)	5 (2–7)
School level (n)	
Elementary	10
Middle	3
High	4
Other	3
Maryland Meals for Achievement participant prior to adoption of the Community Eligibility Provision ^c (n)	
	9
Funded through Title I ^d (n)	
	13
Charter (n)	
	1
Locale ^e (n)	
Urban	10
Suburban	3
Town	4
Rural	3

^a Ten districts were represented in this study. In one district, the FSD declined to participate, but two CMs participated.

^b A total of 19 cafeteria managers were interviewed representing 20 schools (one cafeteria manager served two schools).

^c Maryland Meals for Achievement is a universal free breakfast in the classroom program in Maryland that pre-dated the Community Eligibility Provision.

^d Title I of the Elementary and Secondary Education Act provides financial support for academic programming in schools with a high percentage of families with low income.

^e Locale is classified according to the National Center for Education Statistics designation.

Maryland that had opted into CEP districtwide were represented. Nine CMs worked in schools that, in the year prior to adopting CEP, participated in Maryland Meals for Achievement, a universal free breakfast in the classroom program in Maryland that launched in 1998 (Maryland State Department of Education, 2020b).

Barriers and Best Practices for Implementation

FSDs and CMs discussed perceived impacts of CEP and factors that may impact ease of CEP implementation at each level of the adapted Consolidated Framework for Implementation Research. FSDs and CMs also outlined best practices for CEP implementation. (Table 3).

Intervention Characteristics: Perceived Relative Advantages and Disadvantages of CEP

Stakeholder perceptions of the CEP program itself, including of its complexity and advantages relative to the traditional meal reimbursement model, may influence implementation (Keith et al., 2017). This section presents FSD and CM perceptions of CEP’s relative advantages and disadvantages, including its impact on cafeteria operations, menu

offerings, wasted food, student and staff morale, parental financial stress, and the broader school community.

Perceived impact on cafeteria operations. Overall, attitudes toward CEP were positive across participating FSDs and CMs. Most FSDs characterized CEP as an administrative change, with few implementation challenges and little ongoing required maintenance. Most FSDs reported that the decision to adopt CEP was based primarily on financial considerations, coupled with a desire to feed hungry students. In Maryland school districts, Food and Nutrition Services operate financially independently from the rest of the district and FSDs are responsible for maintaining a balanced budget. One FSD highlighted the importance of the bottom line when considering adopting CEP:

You know, we balance many facets of feeding kids and balancing budgets and pleasing parents and Board members and public, and health and wellness, nutrition. There’s a lot of facets that you have to balance, but, at the end of the day, it is a business. – FSD 7

Table 3. Cafeteria Manager and Food Service Director (n=28) Recommendations for Community Eligibility Provision (CEP) Implementation Best Practices

Recommendations when considering adopting CEP
Adopt the CEP district-wide, if possible, even if the district aggregate identified student percentage will not yield reimbursement for all meals at the higher reimbursed “free” rate, as savings in administrative overhead and economies of scale may make district-wide adoption financially feasible.
If district-wide adoption is not possible, pilot the CEP in a small number of schools and closely monitor the financial impacts.
Adopt the CEP in schools that feed into one another to reduce parental confusion by ensuring that siblings are in schools with the same CEP status, and that students in participating elementary or middle schools advance to participating middle or high schools, respectively.
Use resources such as food service directors in other districts and administrators at the state education agency, as well as online resources from U.S. Department of Agriculture and the Food Research & Action Center.
Recommendations once the decision to adopt CEP has been made
Communicate clearly with parents, administrators, and the broader community to reduce confusion and generate buy-in.
In the first few weeks after the CEP is introduced, order extra food and monitor participation closely; adjust ordering and staffing accordingly.
Boost student participation using innovative strategies such as improved menus and classroom parties while weighing potential impacts on health and nutrition.
Eliminate PINs and switch to a headcount process, which may lead to faster lines and more time for children to eat.

For adopting schools, CEP impacted both revenue (e.g., federal meal reimbursement and sales of à la carte menu items [snacks and entrees sold separately from the main meal service]) and expenditures (e.g., food, labor, and equipment costs). Most FSDs reported positive budget impacts associated with CEP participation; however, two FSDs reported losing money due to CEP. One of the FSDs who reported a financial loss explained that in their first four-year CEP cycle, they had a higher aggregate ISP, and thus a higher reimbursement level, which led to a budget surplus. The FSD went on to say that since recertifying with a lower ISP, they have run a deficit. The second FSD who reported a loss stated that their Board of Education subsidizes their budget deficit associated with CEP participation, a cost the Board knew it would incur when it decided to adopt CEP but considered worthwhile. Districts that experienced budget gains have used that money to pay down past debts or reinvest in their program. One FSD described how their district handled its budget surplus:

It helps to support some of the [non-CEP] schools that maybe don't do as financially well ... So a lot of this extra revenue is going just to that. We're buying new ovens. We're buying new refrigeration. We're buying new serving lines, serving lines that are breaking down and falling apart. So, all that extra revenue is going right back into our program and mostly going back into our infrastructure.
– FSD 3

Some financial savings associated with CEP may come from reduced administrative overhead. Most FSDs reported that CEP has decreased the amount of time and money they spend collecting, processing, and verifying FRPM applications. Reductions in administrative burden appeared to be greater among districts that opted in district-wide, and lower among districts in which only a small proportion of schools participate in CEP.

Nearly all FSDs and CMs reported that CEP led to increased student participation in school meals, especially lunch. A few FSDs and CMs noted that gains in participation were concentrated

among students who were previously eligible for reduced-price meals or with household incomes at the borderline for FRPM eligibility.

I would say that our participation probably jumped up about 10 percentage points, because more reduced kids and full-pay kids that maybe didn't buy lunch decided, 'Well, I'll get a lunch if it's free.' ... It was a bit of a savings for them at home. – FSD 3

Notably, however, most CMs at schools that were previously participating in the Maryland Meals for Achievement universal free breakfast in the classroom program reported small or no gains in breakfast participation. Additionally, several CMs in schools that had very high meal participation rates prior to CEP adoption reported small or no gains in meal participation. One CM at a school that offered meals prepared off-site noted that their school did not experience a change in participation, which the CM attributed to students “hating” the school food.

Most CMs reported their total workload had stayed the same or decreased due to CEP. Many CMs reported that CEP streamlined their interactions with students at the point-of-service by removing the need to collect and process cash payments and eliminated the need to call or send letters home to parents of students with unpaid meal debt. A small number of CMs, however, reported that because CEP increased the total number of students participating in school meals, their staff experienced an increase in total workload associated with preparing more meals. With a few exceptions, most of these CMs added that staffing increased correspondingly (either by hiring new employees or transitioning part-time staff to full-time) to accommodate the increased meal participation rates.

Even considering the increases in student meal participation, about half of FSDs and CMs reported that the lunch line moved faster because cafeteria staff no longer needed to process payments. Some schools switched from requiring students to enter PINs to using a simple headcount to track the total number of students participating in meals; CMs at these schools more frequently re-

ported faster line flow and more time for students to eat their meals.

Districts that continue to use PINs explained that they did so in order to track students with allergies or to maintain the habit of entering PINs, in case a student transfers or advances to another school in the district without CEP. Only one FSD reported slower lines due to increased student participation; that FSD's district continued to use PINs at the point-of-service.

Perceived impact on menu offerings and wasted food. With a few notable exceptions, most FSDs and CMs did not report a change due to CEP to the healthfulness of the menu, the types of foods that students were served and ate, or the practices or policies related to purchasing from local and regional farmers. In most districts, menus are set at the district level, leaving CMs in CEP schools little flexibility to customize the menu. Two CMs, however, reported that with the introduction of breakfast in the classroom and grab-and-go breakfast service (changes that were implemented to increase participation), their schools began to serve more packaged and processed foods, which they perceived to be easier to distribute, but often less healthy. On the other hand, one FSD reported an increase in the total volume of fruits and vegetables they were able to purchase from local farmers due to increased student meal participation. Another FSD reported that due to increased revenue associated with CEP, they were able to offer healthier items that were previously too expensive.

While most FSDs and CMs reported no difference in the perceived amount of food that students wasted following adoption of CEP, there were both reports of positive and negative changes from a small number of participants. One FSD reported less wasted food in their district because students had more time to eat. Another FSD reported an increase in total waste produced due to higher meal participation, but no change in per-student waste. A CM reported that the switch to offering breakfast in the classroom, which was made to increase participation rates after CEP adoption, led to an increase in food waste. That CM explained that perishable food that is sent to classrooms but not

consumed must be discarded because it has been left at room temperature and may be spoiled (as opposed to if the meal had been served in the cafeteria, where it might have been temperature-controlled):

When delivering the breakfasts in the morning, we have to send out enough breakfasts to cover for every student who is enrolled in the school, but each day there are ... [some students who do not eat the school breakfast, and their] meals are having to go into the waste bin, because we can't take them back in and keep them, and then reuse them after just sending them out. So, I think that creates some more waste as well. – CM 17

Perceived impact on student and staff morale. Most FSDs and CMs considered the greatest benefit of CEP to be that it enabled them to feed more children. Nearly all CMs expressed gratitude that CEP had eliminated meal payment and debt, which can be stressful for parents and children alike, particularly for those with household incomes at the borderline between free and reduced-price eligibility. Most CMs described how, before CEP, they regularly encountered children whose parents had forgotten to fill out the FRPM application form or could not afford to put money into their accounts. Prior to CEP, most schools had policies that allowed students without money in their accounts to charge up to a certain number of meals, and then were required to serve students with unpaid meal debt an alternative to the hot meal such as a cheese sandwich. A few FSDs reported that a desire to eliminate this practice of providing students alternative meals, known as “meal shaming,” was one of the driving factors that led their district to adopt CEP, and several FSDs and CMs reported that eliminating meal shaming had boosted both staff and student morale:

Since we had this program, the kids are very happy. We're happy too because we won't be hearing the kids say, 'I don't have no money and can't pay my lunch. My dad don't have no job. Ma don't have no income. My house no food.' ... The kids really like coming to school

because they say, ‘We come to school, I won’t be hungry.’ – CM 20

I think it has been positive for [cafeteria staff]. I think that no one likes to be put in a position when you’re taking meals away from students. I think that’s pretty demoralizing as a worker.
– FSD 5

A small number of FSDs and CMs noted that CEP led to an improvement in student behavior and health. One FSD said that a school administrator had reported that he had received fewer student complaints of headaches related to hunger since the introduction of CEP. A few FSDs and CMs also reported a decrease in stigma associated with participation in school meals. Several CMs remarked that students from households with low income appeared less embarrassed when moving through the lunch line:

I’m just glad ... all of the students is on the same level that they can come in and don’t feel embarrassed about getting a free lunch...it’s nothing to them now. You don’t have to hear nobody in line discussing, well, ‘I don’t have my money.’ Or, you know, ‘Can you loan me this?’ ... It feels good. – CM 12

When the kids do come through, it probably is better because the kid in front of them doesn’t know if they got a free lunch and this kid was paying. So, I think it stopped some bullying and not getting kids picked on. – CM 18

Perceived impact on parents and broader school community. Several FSDs and CMs reported receiving strong community support for CEP and positive feedback from parents, teachers, and administrators. Many CMs described speaking with parents who were relieved that they no longer had to complete FRPM application forms or pay for student meals. One CM drew attention to how CEP helped circumvent the literacy and language barriers that prevent parents of income-eligible children from completing FRPM applications. Several CMs also noted that students were often from families with very low income, and that eliminating payment cut

down on stress for parents making hard trade-offs between paying for school meals and other bills.

Inner Setting: School and District Implementation Climate

Characteristics and climate of adopting schools and districts can determine implementation success (Keith et al., 2017). This section presents perceptions among FSDs and CMs regarding how engagement from leadership and the resources and practices that were in place prior to CEP influenced implementation.

Leadership engagement. In all districts, FSDs took responsibility for leading the charge to adopt CEP, a role that typically included researching the financial implications of adoption and persuading other decision-makers. Across districts, FSDs had varying levels of autonomy regarding CEP adoption. In a small number of districts, the FSD held ultimate decision-making power regarding adoption. In most cases, however, FSDs shared decision-making power with the district superintendent or financial officers, or final decision-making power rested with the Board of Education. In districts in which the FSD did not hold primary decision-making power, FSDs emphasized the importance of being well-prepared to answer questions about the potential financial ramifications of CEP, including impacts on state and federal education funding.

Only one CM reported being consulted in the decision to adopt CEP in their school; the rest learned of the program only once the decision had been finalized. FSDs pointed to other champions, including principals, who helped encourage expansion of CEP into new schools. One FSD explained how principals throughout their district were pushing for CEP in their schools:

[Principals of] schools that didn’t have CEP were approaching me and saying, ‘Do I qualify for CEP? If I qualify for CEP, I want to be in CEP.’ ... They were advocating on their own. One of the reasons why they were advocating is because they saw the importance of every child eating for free. They saw the issue with not having to deal with negative balances and

not having to deal with free and reduced applications. – FSD 1

Other potential champions, such as vice principals, teachers, parent associations, and school nurses were not mentioned by any FSDs.

Existing internal resources and practices. Most FSDs and CMs reported having sufficient equipment, space, and staff to accommodate increased meal participation. Some CMs hired more staff or increased labor hours for existing staff to handle the increased participation. A small number of schools also made changes to equipment, including replacing outdated ovens and refrigerators and adding new serving lines and milk coolers. No CMs or FSDs mentioned cafeteria seating capacity constraints as an issue; several noted that their cafeterias were built to provide seating for students who previously packed their lunch. Some FSDs reported taking each school's equipment and kitchen capacity into consideration when deciding which schools to include in CEP adoption and waiting to make changes to staffing and equipment until they could see how CEP impacted meal participation rates.

CMs at schools that were previously participating in Maryland Meals for Achievement often reported having an easier time with implementation of CEP because they were already accustomed to serving universal free breakfast. Similarly, schools that had high proportion of students eligible for FRPM prior to CEP often described implementation as straightforward, with only minor changes in participation rates:

It was fairly easy. It wasn't any trouble. ... We had been doing the [universal free] breakfast meals, so it wasn't that hard, and the majority of my students anyway, they were already free, so it wasn't difficult for me. – CM 6

Outer Setting: Funding and External Resources

The external context, including federal and state policies and the political climate outside of implementing schools and districts, may influence CEP implementation (Keith et al., 2017). This section describes how policies that impact education fund-

ing and reimbursement rates influence implementation decisions and highlights the external resources that FSDs and CMs used to support themselves through the implementation process.

Federal, state and grant education funding. All FSDs described concerns, both resolved and ongoing, among school and district administrators regarding how CEP may impact federal, state, and grant education funding. Schools participating in CEP no longer collect FRPM applications data, which previously served as the basis most districts used for allocating federal funding through Title I of the Elementary and Secondary Education Act (financial support for academic programming in schools with a high percentage of families with low income (Skinner & Aussenberg, 2016)). FRPM data have also traditionally been used to determine state compensatory education funding and some grant funding (for example, for student loan forgiveness programs for teachers).

FSDs reported that the fear that CEP adoption would negatively impact their state compensatory education funding was a key barrier that prevented them from adopting CEP earlier. Most FSDs reported that their districts only felt comfortable adopting CEP after Maryland passed the Hunger-Free Schools Act of 2015, which fixed state compensatory education funding rates for CEP schools and thereby alleviated this concern.

Similarly, most FSDs reported that administrators in their districts were hesitant to adopt CEP due to concerns about its potential impact on Title I funding. Title I funding is allocated to school districts based on U.S. Census poverty data; therefore, the amount of federal funding each district receives is not influenced by CEP participation. However, districts must then distribute the funds to individual schools, a process that is often done based on FRPM data. A few FSDs said that after switching from using FRPM data to using ISP data to allocate funds in their district, some schools reported experiencing a disproportionate loss of Title I funding. For example, schools with a higher proportion of families with low income that are not participating in SNAP and other federal programs (e.g., immigrant families) often have lower ISPs and may experience a disproportionate change in

the amount of Title I funding they receive. One FSD explained:

[Collecting free and reduced-price meal applications] is an incredibly important data collection process for the district in terms of garnering resources for things that are outside school meals. ... So what happened with Title I is ... we found that many of our schools that were high English language learner were dropping out of Title I at a disproportionate rate. And these students were not being counted, simply because those families are less likely to be on SNAP. This has obviously gotten worse as the years have gone by. – FSD 5

Some FSDs explained that principals whose schools had experienced reduced Title I funding continue to raise concerns about the loss of FRPM application data. One FSD also highlighted that loss of FRPM application data also presents a challenge for schools and teachers applying for external grants, which often use FRPM data as a proxy for poverty.

Schools that participate in CEP are prohibited from using USDA funds to cover the administrative costs associated with collecting and processing FRPM applications. CEP schools may collect alternate income forms using other district general funds, however, and a small number of FSDs reported that they currently collect these alternative income forms or plan to do so. One FSD explained that their district plans to use alternative income data to monitor the proportion of FRPM-eligible students that are captured by the ISP, as well as to report school-level poverty rates on funding applications:

This school year coming, we are going to ask those CEP schools, even though they're on CEP ... we're gonna ask those parents to fill out free and reduced applications, because we wanna get an accurate to-date picture of where we stand in those communities, and that's more for the compensatory education funding. ... So, we are gonna ask folks to fill out an application, full well knowing that it's not gonna have any effect on whether or not their

kid is gonna get a free meal. We just wanna collect it for the purposes of having data.
– FSD 3

Reimbursement rates. Most FSDs explained that a school's ISP, which determines the rate at which it is reimbursed for meals served, was the most important criterion they considered when deciding which schools in their district would participate in CEP. Most FSDs were concerned about their ability to continue to participate in CEP due to dropping ISPs (and thus, reimbursement), and a few had already removed some schools within their districts from CEP or planned to in the upcoming year. FSDs attributed falling ISPs to declining national participation in SNAP and other federal assistance programs (i.e., programs from which data is drawn to calculate ISPs) associated with economic growth and increased employment at the time of study. Several FSDs also hypothesized these changes may also be driven by federal policy changes that have limited participation in federal programs and a political climate in which immigrants are concerned that federal program participation may jeopardize their immigration status.

External resources. FSDs described using a range of resources to guide them through the CEP implementation process. Most FSDs reported that the support they received from the Maryland State Department of Education was especially valuable. Several FSDs described conversations with the Maryland State Department of Education staff that helped them work through the logistics of CEP implementation and its financial implications. Only one FSD reported challenges working with the Maryland State Department of Education; they described encountering administrative obstacles when working with agency staff on CEP and other programs.

A few FSDs also used resources created by the USDA and Food Research & Action Center, including fact sheets, webinars, and a customizable calculator to estimate the financial impact of CEP on meal reimbursement. FSDs also reported drawing on support from FSDs in other adopting districts in Maryland and neighboring states. A

handful of FSDs of smaller districts described waiting for other districts in the state to implement first so they could learn from their experiences:

We kind of let other counties figure that out so that we didn't have to be the guinea pig. ... We saw them figuring out how to make things work. We also saw the legislature understanding what's going on and trying to adapt the regulations—Maryland regulations—to help allow the program to operate easier with less loss of income. So, it was really just watching them and then trying to utilize what they had already started. – FSD 2

Implementation Process: Implementation Strategies

This section presents strategies that FSDs and CMs highlighted as crucial to successful CEP implementation: using innovative approaches to boost school meal participation; communicating clearly and early with relevant stakeholders; launching CEP as a pilot in a small number of schools; and taking proactive steps to prepare for increased meal participation (Table 3).

First, FSDs and CMs described using diverse strategies to grow participation in the meal program. High meal participation rates, particularly among schools whose ISPs are below 62.5% (and thus not reimbursed for all meals served at the free rate), is critical to achieving adequate economies of scale to remain financially solvent. A small number of FSDs and CMs reported shifting their meal service delivery style to encourage increased participation, including offering breakfast in the classroom and grab-and-go meal options. Others described working to draw in more students through improvements to the menu; identifying favorite dishes through focus groups and taste tests; offering more fruits and vegetables; and offering more hot meal options. A few FSDs and CMs also reported increasing participation in the reimbursable meal by eliminating à la carte sales or only allowing à la carte sales after all students had been served the reimbursable meal. One CM described seasonally decorating the carts on which breakfast meals were delivered to the classroom to get students excited as well as offering pizza parties in the classroom to draw in new students:

We said, hey, why don't we [offer pizza parties], since we can basically treat every student to a slice of pizza and a meal, and this exposes those other kids who are still packing for whatever reason ... Maybe a little bit of extra work goes into that. But I feel like it pays dividends in the long run for many reasons, like I said, not just the participation issue but making sure that those students, you know, are aware that maybe school lunch isn't quite so bad. – CM 7

Second, FSDs emphasized the importance of good communication with school administrators, parents, and the broader community. A small number of FSDs and CMs reported that parents were confused about how CEP functioned, particularly when they had children who transferred or advanced from a CEP school to a non-CEP school within the district, or when siblings attended schools with and without CEP. Schools participating in CEP are no longer required to collect FRPM applications from students, yet one FSD described misunderstandings among school administrative staff about whether students were required to complete FRPM applications, which may have contributed to confusion among parents.

CMs largely reported that they did not engage in communication with parents about CEP (except when asked directly or when confused parents tried to send in money to pay for their child's meals), but rather left communication to FSDs and school principals. FSDs described using a range of channels to communicate with parents about CEP, including the school website, newsletters, robocalls, media coverage, signs throughout the school, emails and letters, social media, and announcements at Back-to-School nights.

One FSD described also taking parental confusion into account when selecting which schools in the district would adopt CEP; in their district, they adopted CEP in schools that were linked feeder schools (i.e., offering CEP in an elementary school and the middle school into which the elementary school fed). Most FSDs and CMs noted that parental confusion decreased over time as the community came to understand the program better.

A few FSDs recommended implementing CEP

in a small number of schools at first, monitoring the impact on budget and meal participation rates, and then expanding the program to other schools in the district. One FSD explained that it was easier to sell CEP to their Board of Education as a pilot program:

We presented the CEP Provision to our Board of Education as a pilot program. ... And then, each year after that, we started bringing more schools into the program. ... The pilot piece came in as a test to make sure that we could pull off the program and that it would not be an impact to other departments in the school district, such as our Title I department and our finance department when it came to [state compensatory education] funding. – FSD 1

Finally, several CMs described a short adjustment period when CEP was first introduced during which they constantly monitored food inventory and staffing to ensure they were meeting the increased demand for school meals. CMs explained the importance of ordering enough food in the first few weeks to serve the entire student body and then recalibrating their orders to more accurately meet the demand after a few weeks. Most CMs had been in their role for many years and felt confident in their ability to successfully navigate these changes.

Discussion

Overall, FSDs and CMs reported positive perceptions of CEP implementation and highlighted several benefits of CEP, including its potential to increase meal participation, reduce student stigma, alleviate financial stress among parents, and boost staff morale. Though FSDs and CMs provided mixed reports about the impact of CEP on their overall budget, line flow, and workload, all expressed gratitude for CEP and a desire to continue participating. FSDs and CMs also described several best practices that can be adapted by other districts and schools.

Perceptions regarding the ease of CEP implementation and the degree to which CEP affected key outcomes appeared to differ, in part, based on district and school characteristics. Districts and

schools that were previously participating in the Maryland Meals for Achievement universal free breakfast in the classroom program or that had a large proportion of students previously receiving FRPM often described CEP implementation as easier than others, but also saw less dramatic shifts in outcomes such as meal participation rates. Districts that opted into CEP district-wide also found implementation easier and saw greater benefits, including reductions in the administrative work associated with processing meal applications. FSD and CM perceptions were highly complementary, with no instances in which most CMs felt one way and most FSDs another, suggesting that, by-and-large, FSDs have a clear picture of the relevant day-to-day operations within schools.

Perceptions among some FSDs and CMs that CEP produced improvements in student behavior, decreased stigma, and fewer instances of bullying are supported by emerging quantitative research indicating that CEP adoption may lead to fewer disciplinary referrals (Gordon & Ruffini, 2018; Kho, 2018). Unlike two previous studies that examined universal free breakfast programs, however, most FSDs and CMs in the present study reported no perceived change in wasted food (Bernstein et al., 2004; Blondin et al., 2015). Changes in wasted food in the context of universal free meal programs have not been assessed quantitatively; future research should use methods such as plate waste measurement to estimate changes in wasted food. Considering food waste is pervasive—both in the US overall, and in school meal programs in particular (in most studies, 30% or more of food served in schools is wasted)—strategies to reduce wasted food in the school context should also be further explored (Shanks, Banna, & Serrano, 2017). Reports of financial impacts of CEP on food service budgets differed across districts; quantitative research is needed to measure the impacts of CEP on districts' budgets. Analyses should consider changes in food service operational costs and revenue, as well as federal, state, and grant education funding, and the degree to which these impacts differ based on school and district characteristics.

Most participants reported that CEP did not lead to change in policies and practices related to

purchasing from local or regional farmers. At the same time, a small number of participants reported serving more processed and packaged foods. Schools experiencing increased revenue and meal participation rates due to CEP participation have a unique opportunity to source more whole foods from local producers. A robust statewide farm-to-school initiative could help CEP districts connect to more local producers; currently, the Maryland farm-to-school program has no designated funding (Maryland Department of Agriculture, n.d.). Schools may be able to emulate districts such as Novato Unified School District in Novato, California, which implemented policies that aimed to not only increase sourcing of local foods but also to decrease wasted food and reduce consumption of ultra-processed foods (Brenner, 2018).

Among schools with ISPs below 62.5%, maintaining high meal participation rates is critical to making CEP financially sustainable. Some of the strategies that FSDs and CMs described as successful in growing meal participation rates, however, may have negative unintended consequences for student health and nutrition. For example, while research does show that breakfast in the classroom is associated with increased meal participation, there is mixed evidence regarding the impact of breakfast in the classroom on diet quality and obesity (Baxter et al., 2010; Polonsky et al., 2019; Soldavini & Ammerman, 2019; Van Wye, Seoh, Adjoian, & Dowell, 2013). Food service staff at CEP-participating schools seeking to grow meal participation rates should weigh potential nutritional impacts.

Implications for Policy and Practice

FSDs and CMs highlighted barriers and facilitators to implementation at each level of the adapted Consolidated Framework for Implementation Research, providing insight into potential policy and programmatic interventions that may promote CEP uptake. First, among the chief barriers to CEP adoption cited by FSDs were concerns regarding the financial impacts of CEP on federal, state, and grant funding. This barrier was also identified in the USDA report assessing implementation during the initial rollout of CEP (Logan et al., 2014); the current study provides evidence that this

barrier persists despite USDA guidance issued in the intervening years that outlines alternate strategies districts can use to allocate Title I funding (United States Department of Agriculture Food and Nutrition Service, 2015). Indeed, some districts in this study were already collecting, or were considering plans to collect alternate income forms to document FRPM eligibility, an administrative undertaking that requires considerable time and money, and which CEP was designed to eliminate. Schools using alternative income forms may also be unable to gather complete and reliable information because parents have less incentive to complete the form since it does not directly affect their child's ability to receive school meals. To alleviate concerns about loss of FRPM data, USDA, state education agencies, and anti-hunger advocates could consider new strategies to strengthen and clarify messaging about CEP's impact on Title I funding. Given FSDs reports that the state education agency and FSDs from other districts served as key resources during the implementation process, using these messengers to educate FSDs and other administrators at prospective CEP schools about financial implications may help promote uptake. Grant funders could also consider using alternate measures of poverty in place of FRPM eligibility data such as ISP or composite measures using multiple types of poverty data (*Toward an Accurate Count of Low-Income Students*, 2019).

Second, most FSDs reported feeling comfortable adopting CEP only after Maryland passed legislation that protects CEP schools from a change in state compensatory education funding. In other states with low CEP adoption rates, anti-hunger advocates and policymakers could explore if similar state-level legislative changes may also encourage participation among late adopters. Laws used in other states to promote CEP adoption, such as California's SB 138, which requires schools with ISPs above 62.5% to participate in a universal free meal provision and to use Medicaid data to directly certify students, could also be considered to promote uptake (California State Senate Bill 138: Universal Meal Service - School Nutrition, 2017).

Finally, this study found that declining ISPs were of major concern to districts considering recertifying for an additional four-year cycle of

CEP or adding new schools to CEP. Due to rising rates in unemployment and increased participation in federal benefit programs associated with the COVID-19 pandemic, however, ISPs have risen for SY 2020-21 (Rosenbaum, 2020). As a result, some schools have become newly eligible for CEP and, for others, CEP has become more financially favorable. Importantly, however, ISPs declines during the study period may have been attributable in part to policies that make it more challenging for income-eligible families to enroll in public benefit programs (for example, the Categorical Eligibility for SNAP proposed rule (Revision of Categorical Eligibility in the Supplemental Nutrition Assistance Program (SNAP), 2019)) or promote fear that participation in these programs will negatively affect immigration status (for example, the revised Inadmissible on Public Charge Grounds final rule (U.S. Citizenship and Immigration Services, 2020)). The Inadmissible on Public Charge Grounds rule was rescinded in March 2021 (Kruzel, 2021), but future policies could be examined to avoid negative impacts on school meal access. Improvements to direct certification systems that identify students as categorically eligible for free meals are also warranted nationwide to ensure ISPs accurately reflect student need; in SY 2016-17, states failed to certify an average of 8% of children directly eligible for free meals (United States Department of Agriculture, 2018). Additionally, 19 states are authorized by USDA to use income data available in Medicaid administrative records in their direct certification systems; research suggests that extending this practice to other states, including Maryland, may increase ISPs and better reflect poverty levels in different communities (Hulsey et al., 2019).

With the recent dramatic rise in poverty and hunger among households with children due to the COVID-19 pandemic, school meal programs serve an increasingly important role in feeding children. Because CEP schools were serving universal free meals prior to the pandemic, many were able to quickly adapt to COVID-19-related school closures by setting up emergency universal free meal distribution sites or providing meal delivery to all students at home (Kinsey et al., 2020). In light of ongoing COVID-19-related school closures, the USDA has authorized states to request waivers to

serve universal free meals through the USDA Summer Food Service Program or Seamless Summer Option through September 30, 2021 (United States Department of Agriculture, 2020). Given the nation is likely to continue to grapple with social and economic ramifications of the pandemic long beyond the end of the school year, adoption of CEP has been identified as a strategy for schools to continue to serve universal free meals into the future. The best practices for implementation identified in this study can guide these schools as they launch their CEP programs.

Limitations

This study has some limitations. First, nearly one quarter of contacted FSDs and CMs declined to participate in this study. While the FSDs and CMs who declined to participate in the study represent schools and districts that are demographically similar to participants, those that declined may be different in unobservable ways. This study is strengthened by inclusion of perspectives from FSDs and CMs representing ten of the twelve CEP-participating districts in Maryland, and a range of geographies, school levels (elementary, middle, high, and other), and number of years participating in CEP. Second, this study only included districts and schools that were participating in CEP in SY 2018-19. Future research should consider the perspectives of those districts or schools that are eligible for CEP but not participating, as well schools that previously participated in CEP but have since opted out of the program.

Conclusions

This study is the first since nationwide rollout of CEP to qualitatively explore implementation in schools and the only study to include perspectives from both FSDs and CMs, who provide unique insight into CEP implementation at the school and district levels. Barriers to CEP implementation identified in this study, including concerns regarding CEP's impact on federal, state, and grant funding, and declining ISP rates provide insight into policy interventions that may promote uptake. Best practices for implementation identified in this study, including strong communication with parents, creative strategies to boost student meal

participation, and elimination of PINs to streamline flow through the lunch line, can be adapted by other districts. Strategies to grow meal participation should, however, be designed with potential impacts on nutrition and health in mind. Finally, this study adds depth and nuance to the growing body of quantitative literature that has documented the benefits of CEP for student health, learning, and behavior (Cohen, Hecht, McLoughlin, Turner, & Schwartz, 2021; Hecht et al., 2020). Further quantitative research on the impact of CEP on

school finances and other components of the food system, including wasted food and purchasing relationships between schools and local and regional farmers, would complement findings presented in this study. Considering the potential benefits of CEP, policymakers, advocates, and state education agencies could use results from this study to better support successful implementation in schools that have adopted CEP, and design strategies to encourage adoption among eligible schools. 

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Appendix. Guide for In-Depth Interviews

Interviewer: The questions I am going to ask you today are about the Community Eligibility Provision, the provision of the National School Lunch and School Breakfast Programs that allows schools/school systems like yours to serve universal free meals to all students. Your school/school system participates in the Community Eligibility Provision. Because of the provision, all students at participating schools receive school meals for free without having to turn in any forms to prove their income.

Introductory Questions:

1. What is your current role in your school/school system?
2. How long have you worked in your current role? In this school system?
3. Your school/school system has been offering universal free breakfast and lunch through the Community Eligibility Provision (CEP) since [X year]. Did your school/school system offer universal free breakfast or lunch to students through a different program before that? (for example, Maryland Meals for Achievement)
4. [Food Service Director only] Do all of the schools in your school system participate in CEP?
 - a. If no, why not? If no, how did your school system decide which schools would adopt CEP?
 - b. If your school system phased in CEP, how did you decide which schools would adopt first?
5. [Food Service Director only] Tell me about the process of deciding to adopt CEP in your school system. Who was involved in making that decision? What factors did you consider when deciding to adopt CEP?
6. [Cafeteria Manager only] How did you first learn that your school was considering making the switch to CEP? Were you consulted about the decision? What did you think of the decision?
7. I am interested in understanding how you felt about how the switch to offering universal free meals. Can you tell me what you think about how the switch to universal free meals went?

Facilitators and Barriers:

1. Can you tell me about any factors that have helped or made it easier for your school/school system to make the switch to offering universal free meals? To operate the program now? (e.g., champions, positive budget impacts)
2. Was there anyone in your school/school system that championed, or pushed, the change to universal free meals?
 - a. If yes, what did that champion do?
3. Can you tell me about challenges your school/school system faced in making the switch to offering universal free meals, if any?
4. Are there any ongoing issues your school/school system faces in serving universal free meals? (e.g., community buy-in, student participation)
5. How, if at all, did you communicate with parents and students about the switch to universal free meals?
6. [Food Service Director only] Can you comment on any schools in your school system that had a harder or easier time than others making the switch to offering universal free meals? What do you think has made it harder or easier for some schools than others?

7. Can you tell me about the feedback you've received about the switch to universal free meals, if any, from people in your community such as parents, students, teachers, principals? [*Prompt: Has there been any confusion?*]

Operational Impacts:

1. What impact has offering universal free meals had on the total number of students participating in breakfast? Lunch? An estimate is ok.
2. [If they experienced an increase in meal participation] Did your school/school system have the resources such as staff, cafeteria space, and equipment to handle more students participating in the school meals?
 - a. If no, how have you addressed these resource limitations?
3. [Food Service Director only] How, if at all, has the switch to universal free meals affected the administrative work required to operate the school meals program?
4. [Cafeteria Manager only] When your school first started offering universal free meals, before you knew what the impact might be on your participation rates, what steps, if any, did you take to prepare and get ready for the switch? [*Prompt: How did you think about decisions like how much food to order and how many staff to have working in the first few weeks?*]
5. What did food service staff at your school/school system think about the change to offering universal free meals? What do they think now?
 - a. What impact has offering universal free meals had on your food service staff? (e.g., workload, attitudes, cohesion)
6. [Food Service Director only] In what ways has the switch to universal free meals impacted your overall school system budget? [*Prompt: i.e., through changes in participation rates, staffing needs, reimbursement, snack sales*]
 - a. If positively, how has your school system used the increased
 - b. revenue?
 - c. If negatively, how has your school system compensated for the decreased revenue?
 - d. If no change, how did you maintain your budget with the change in the reimbursement structure?
 - e. What impact has offering universal free meals had on your snacks sales?
 - f. What impact has the switch had on your unpaid meal debt? Have you changed any of your practices as a result? (e.g., giving students a different meal who could not pay?)
7. How has the universal free meals program affected meal service operations at your school/school system?
 - a. What changes, if any, have you made to your meal counting process? (e.g., headcount, point-of-service) Why did you chose to use this process?
 - b. What impact has offering universal free meals had on the way that students move through the cafeteria line? On the amount of time they have to eat?
 - c. What changes, if any, has your school system made to the way in which breakfast and lunch are served (e.g., breakfast in the classroom, grab and go) because of the switch to universal free meals?
 - d. What changes, if any, has your school system made to types of food you serve because of the switch to universal free meals?

- e. What impact has offering universal free meals had on the amount of food each student eats? The healthfulness of the foods they eat?
 - f. In your opinion, what impact, if any, has offering universal free meals had on student attitudes or behavior?
8. What changes, if any, have you noticed in the amount of food discarded each day since your school/school system began offering universal free meals? [*Prompt: have the number of bags of trash you collect daily changed?*]
 - a. If yes, how? Why do you think this has changed?
 9. Does your school/school system have relationships with any local or regional farmers?
 - a. If yes, what impact has offering universal free meals had on your school/school system's ability to purchase from local or regional farmers?
 10. [Cafeteria managers only] What strategies, if any, have you used to try to increase participation in your meal program because of the switch to the universal free meals program?

Other School Concerns:

1. [Food Service Director only] To your knowledge, has the switch to universal free meals impacted Title 1 distributions to schools in your school system?
2. Some schools use their free and reduced-price meal applications to certify students to receive other education benefits such as such as discounted prom tickets or yearbooks. To your knowledge, have administrators at your school/school system raised concerns about the impact of not collecting free and reduced-price meal applications on their ability to administer these benefits?
3. [Food Service Director only] School systems need to re-apply to participate in CEP every four years. Does your school system plan to re-apply? Why or why not?
 - a. If yes, what challenges, if any, do you foresee with the process of re-applying?
4. [Food Service Director only] Can you comment on changes, if any, you've seen to your identified student percentage (ISP), or the number of students categorically eligible for school meals since you first opted in? How often do you perform direct certification match searches?

Closing:

1. Do you have any advice for other schools/school systems considering making the switch to universal free meals?
2. Which resources, if any, have you or schools in your school system used to guide you in the switch to offering universal free meals? (e.g., websites, toolkits, advocates, groups) Are there any other resources you would have liked to have to guide you?
3. Is there anything else you would like to share with me regarding how the universal meal program has been rolled out at your school/school system?

Civic agriculture in review: Then, now, and future directions

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Abstract

“Civic agriculture,” a term first coined by rural sociologist Thomas Lyson, refers to forms of agriculture that occur on a local level, from production to consumption, and are linked to a community’s social and economic development. Sixteen years since its original articulation, the term “civic agriculture” has taken on greater significance in research, political activism, and community organizing. Grown from the roots of civic community theory, civic agriculture functions as a new branch of civic community theory that is ripe for theorization. In revisiting the foundations of the term, this review paper seeks to consolidate current and future research in the field of civic agriculture with a focus on its link to social welfare. This begins by reviewing the foundations of civic

community theory and discussing how they influence research related to civic agriculture. As we report in this paper, there remain considerable gaps in understanding of how civic agriculture can be fomented by—or is related to—indicators such as demographics, concentration of power, community cohesion, and civic engagement. Consequently, the assumed links between local food systems and social welfare must continue to be studied to determine correlation and causality. This understanding is particularly important during this time of global pandemic, when the flaws and inequities of global supply chains are exposed and where, in many cases, civic agriculture met the increasing interest in local food. The COVID-19 pandemic has amply demonstrated the fragility and instability of global food supply chains, making the need for local food systems more significant and more relevant to communities across the world.

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Keywords

Civic Agriculture, Civic Community, Social Welfare, Civic Engagement, Food Democracy, Local Food Systems

Civic Agriculture in Review

Over sixteen years ago, Thomas Lyson (2004) published his seminal book on “civic agriculture,” tying together his and other scholars’ work on the concept of a “civic community”¹ to formulate a term that encapsulates agriculture into the social and economic context of community. He and others drew from a body of knowledge around civic community theory, which posits a close connection between thriving locally oriented businesses and other demographic indicators to social welfare.² Since then, there has been an ongoing application of civic community theory to explore connections between and among these indicators with agriculture and, in particular, with food systems embedded at the local level. This application has led to a new branch of study, civic agriculture theory, which has since been examined and tested in different scenarios with varying methodology.

This growing body of research has not only strengthened our understanding of food systems, but has also helped justify and inform the promotion of local food systems throughout the United States and elsewhere. These works have become particularly relevant in the context of both the COVID-19 pandemic and in light of the civil unrest related to racial inequity and injustice. These contexts have amply demonstrated the fragility and instability of global food supply chains and the systemic inequities in access to food and other basic services. This review provides a theoretical framework to analyze the accuracy and efficacy of the

claims of civic agriculture theory, with a closer look at indicators described by various contributors to civic community theory. Studies employing demographic, civic engagement, community cohesion, and economic concentration³ indicators to demonstrate the positive effect of civic community on social welfare will be analyzed to better understand how civic agriculture shapes social welfare. Furthermore, this work closely considers research from both before and after the publication of Lyson’s seminal piece to determine the theory’s application in future research and public policy and to explore how it can further inform and strengthen our understanding of the relationship between farms, food, and community.

Food is not just a commodity; it is a determination of well-being and expression of social identity. Scholarly studies have demonstrated the positive effects of locally oriented businesses and manufacturers on social welfare, substantiating the claim that civic agriculture is also positively related to social welfare (Goldschmidt, 1978; Irwin & Tolbert, 1997; Lyson, Torres, & Welsh, 2001; Mills & Ulmer, 1946; Lyson & Tolbert, 1996; Tolbert et al., 1998; and more). Bringing light to these connections is a crucial step toward utilizing food systems to build just, equitable economies. Many studies have shown the relationship between civic agriculture, community involvement, activism, and empowerment. Nonetheless, further studies are needed to measure and confirm the direct relationship between civic agriculture and social welfare. A deeper understanding of the social impact of food systems is critical to building a stronger socio-economic fabric in the United States. Consequently, the purpose of this literature review is to systematically consolidate and analyze studies that document

¹ Tolbert, Lyson, and Irwin (1998) discuss civic community in their article “Local capitalism, civic engagement, and socioeconomic well-being,” in which they employ the term to describe the link between the performance of political institutions and the character of civic life.

² *Social welfare* is a broad term that can encompass many aspects of a community’s welfare. In order to maintain consistency and clarity throughout the paper, we will utilize the term *social welfare* as an umbrella term to refer to the specific aspects of social welfare analyzed across the studies reviewed, which include civic welfare, socio-political systems, community well-being, community cohesion, economic equality, and local capitalism.

³ *Economic concentration* is a term utilized in civic community theory originally derived from Mills and Ulmer (1946), and further explored by Blanchard and Matthews (2006), who defined it as “(1) the concentration of employment into a small number of businesses; (2) the share of employment accounted for by non-local business owners; and (3) the industrial concentration of business activity” (p. 2247).

the relationship between local food systems and community well-being. We utilize civic community theory as a framework to organize the studies that are material to civic agriculture theory and identify opportunities to better understand how civic agriculture shapes social welfare.

Methodology

For this literature review, we employed integrative review methodology to critique and synthesize the current state of literature available on civic agriculture (Torraco, 2005). The review is rooted in the original conceptualization of civic agriculture theory and its origins in civic community theory, and draws from more contemporary literature to document how civic agriculture theory has evolved in the last two decades (Snyder, 2019). Since civic agriculture theory is an adaption of civic community theory, it is important to determine whether studies on civic agriculture carried out after the formation of the theory affirm and operationalize civic community theory. We also use this review to offer opportunities for future study to strengthen both the theory and practice of civic agriculture.

We reviewed the canon of studies that have been conducted to identify and test possible indicators of civic community, and that are considered foundational in the development of civic community theory. From these papers, we created a comprehensive list of indicators employed by the authors to connect locally oriented businesses and manufacturers to social welfare, and aggregated this list into five categories: demographics, municipal

services, concentration of power, community cohesion, and civic engagement (see Table 1). The civic community theory articles reviewed and divided into the five general categories are listed in Table 2.

To more systematically compare civic agriculture theory to civic community theory, we organized the five general indicators utilized across civic community theory studies (demographics, municipal services, concentration of power, community cohesion, and civic engagement) to include consequential published works on civic agriculture theory that refer to these indicators. To find these papers, we performed a comprehensive search of social, behavioral, political, and economic science peer-reviewed articles concerning civic agriculture theory using Web of Science, Google Scholar, and ProQuest databases, using the terms “civic agriculture,” “local food” and/or “civic engagement,” “civic community,” and “food democracy.” Articles referring to local food systems in relation to social welfare were added to our database of articles. Subsequently, the articles were reviewed for relevance to civic agriculture theory with a focus on the effect of local food systems on local, socio-political systems. From that subsequent database of articles, a targeted snowball search of literature from each article was performed in order to find any further relevant studies relating to the relationship between local food systems and social welfare.

These published works were then organized into the five categories of indicators aggregated from civic community theory studies in order to compare the indicators of civic agriculture theory

Table 1. Aggregated Civic Community Theory Indicators

Aggregated Indicators	Demographics	Municipal Services	Concentration of Power	Community Cohesion	Civic Engagement
Indicators employed across civic community theory studies	Employment	Sanitation	Industrial concentration	Community welfare	Voter turnout
	Income	Number of parks	Unionism	Poverty	Associational membership
	Education	School achievements	Demographic conformity	Community attitudes	Third places
	Health indicators	Recreation opportunities		Social capital	Volunteering
	Religion			Crime	Civic activities
	Home ownership			Nonmigration	

Table 2. Foundational Works in Civic Community Theory Examining Social Welfare

Foundational Works	Demographics	Municipal Services	Concentration of Power	Community Cohesion	Civic Engagement
Mills & Ulmer (1946)	✓	✓	✓		
Fowler (1958)	✓		✓	✓	
Goldschmidt (1978)	✓	✓			
Putnam (1994)	✓			✓	✓
Lyson & Tolbert (1996)	✓		✓	✓	
Irwin & Tolbert (1997)	✓			✓	✓
Tolbert, Lyson, & Irwin (1998)					✓
Irwin Tolbert, & Lyson (1999)				✓	✓
Lyson, Torres, & Welsh (2001)	✓		✓	✓	✓
Humphries (2001)			✓		✓
Tolbert, Irwin, Lyson, & Nucci (2002)	✓			✓	✓
Robinson, Lyson, & Christy (2002)			✓		
Tolbert (2005)					✓
Lyson (2006)	✓			✓	✓
Blanchard & Matthews (2006)					✓
Lee (2008)			✓	✓	✓
Lee (2010)				✓	
Lee & Thomas (2010)				✓	
Blanchard, Tolbert, & Mencken (2011)	✓		✓		

to the indicators employed to measure civic community theory. This integrative methodology allows for the identification of gaps in the current literature of civic agriculture theory as a subset of civic community theory (Torraco, 2005). Furthermore, it allows for the identification of variation between the theories that may need to be further studied. For example, we were not able to populate the category of municipal services indicators with civic agriculture literature. In our review we did not identify any studies of civic agriculture that look at municipal services as an indicator.

Of note, although there are diverse, and sometimes fraught, implications of the word “community” when used in reference to civic agriculture or civic community theory, we employ the term as is espoused in the work Tolbert (2005), who defines

the term as an implied “focus that is bounded spatially and/or socially by a collective sense of place” (p. 1313).

A total of 159 papers were reviewed under the topics of civic community and civic agriculture theory. We present the results of this review in two parts. First, we distill the seminal works on civic community theory to identify the relevant indicators to apply to a burgeoning body of scholarship on civic agriculture theory. Then, we present the articles in our database determined most material to the topics of local food systems and social welfare. These articles are organized in the categories deduced from civic community theory article in the second part of this analysis in order to determine the current state of the theory and areas necessary for further study.

What is Civic Agriculture?

In creating the theoretical framework for “civic agriculture,” Lyson et al. (2001) make the connection between small, locally oriented production enterprises and their symbiotic success with community engagement and social welfare.⁴ Drawing from the literature on civic community theory, Lyson embeds the foundation of civic agriculture in socio-economic theory. As defined by Lyson (2004), civic agriculture

is a locally organized system of agriculture and food production characterized by networks of producers who are bound together by place. Civic agriculture embodies a commitment to developing and strengthening an economically, environmentally, and socially sustainable system of agriculture and food production that relies on local resources and serves local markets and consumers. (p. 63)

At the foundation of civic agriculture is community problem-solving (Lyson, 2005). Due to the inherent focus at a local scale, the concerns of production, marketing, distribution, and food security are site-specific and thus are dependent on a community’s ability to communicate, organize, and address these issues. This focus on civic problem-solving within community-oriented food systems integrates DeLind’s (2002) depiction of civic agriculture with an emphasis on agriculture’s ties to place. Not only does the generation of economic activity serve as a focal point of community well-being, but community ties, identity, and responsibility towards a place must also be integral to civic agriculture to create equitable development (DeLind, 2002).

As a branch of civic community theory, civic agriculture theory was initially developed from the government-commissioned studies of Mills and Ulmer (1946) and Goldschmidt (1978) out of concern for economic concentration. The U.S. Senate Small Business Committee commissioned both studies to analyze the impacts of large-scale indus-

trial operations and farming organizations on local communities. Mills and Ulmer (1946) categorized three pairs of cities with similar demographic features but with different average business sizes. The study broadly concluded that small business cities offer a more balanced economic life and higher social welfare for citizens (Mills & Ulmer, 1946). The authors hypothesized that urban centers with many small-scale operations depended on the community and other small businesses for their success, and, therefore, were inextricably linked to the community’s well-being.

Following findings of Mills and Ulmer (1946), Dr. Walter Goldschmidt of the University of California at Los Angeles analyzed two agricultural communities in the industrialized specialty-crop hub of California’s Central Valley. One was characterized by the presence of large farms in its area and the other by moderately sized farms. Goldschmidt (1978) found (1) the small-farm community supported more independent business establishments than the large-farm community; (2) residents of the small-farm community had a better average standard of living than those in the large-farm community; and (3) services, schools, parks, and civic organizations were more plentiful in the small-farm community. He concluded that large-scale farms, which may have absentee owners, do not share common goals of community well-being and civic engagement with the local community.

Moreover, this theory has become increasingly relevant in recent years as the U.S. has seen both the percentage of small businesses and the percentage of the population employed by small businesses decrease significantly from 1993 to 2015 (U.S. Bureau of Labor Statistics, 2016). This may signal a downward trend in community well-being across the country. However, at the same time, the country has experienced tremendous growth in civic agriculture. For example, the number of registered farmers markets in the U.S. increased almost 400 percent over the same time period (U.S. Department of Agriculture Economic Research Service [USDA ERS], 2014). The extent of civic agri-

⁴ The term “small” is utilized in this context in reference to independent ownership and number of employees in accordance with the U.S. Small Businesses Association definitions (U.S. SBA, 2019). However, there is no consensus in the definition of small businesses across the works presented in this review.

culture's role in filling the void of civic enterprise has yet to be fully examined.

There have been some works that challenge the findings of civic community theory, and consequently, civic agriculture theory. A study in 1958 found cities with high concentration of industry, employment, and absentee ownership tended to have slightly higher welfare than those with the opposite characteristics (Fowler, 1958). However, the study was conducted in only one state with different measurements of small versus large businesses and social welfare than those utilized by Mills and Ulmer (1946). Hayes and Olmstead (1984) laid out an important critique of Goldschmidt (1978), pointing out that there were factors such as development timeline and natural resources that may have also affected land prices. Nonetheless, the authors did not replicate a study to disprove the findings with new methodology, so it cannot be confidently discredited.

More recently, Humphries (2001) found that self-employment was the strongest indicator of community engagement, but also that individuals who reside in communities with fewer independent business owners are not less politically engaged than those who do. These findings are interesting to further explore as they display contradicting results to the prevailing works in civic community theory. Although commuting is negatively associated with political participation, and self-employment is positively associated, the concentration of independent or retail establishments does not have a statistically significant effect on political participation. Different indicators of locally oriented businesses exhibit varying results on political participation. Consequently, although providing important criticisms of the foundational literature, these studies cannot conclusively discredit the cumulative body of work on civic community theory.

Origins of Civic Agriculture Theory

After a shift away from studies of small businesses and social welfare in favor of industrialization, a surge of research emerged under the seminal works of Mills and Ulmer (1946) and Goldschmidt (1978). Working under the shadow of globalization, a handful of academics concerned with community-based social welfare outcomes deliberated

these concepts of large versus small, local versus global, concentrated versus distributed. These studies examined the emerging idea that locally facing, small businesses and manufacturers have a positive relationship with social welfare. Rather than proposing free-market neoliberalism as the path for economic development, civic community theory argues that the public domain is more significant than individual self-interest and that the strength of a community lies in its institutions that mediate social capital (Lyson & Tolbert, 2003).

One of the first works to articulate the relationship between business size and social welfare came from Piore and Sabel (1984), who assert that craft manufacturing fills a gap in product markets that are rejected by mass producers. Craft manufacturers are able to produce artisan and specialty products for which there is not a high enough demand to mass produce and may only be desired in a specific place. Therefore, despite the industrialization of the U.S. economy during and after both World Wars and amid a shift toward globalization, small businesses have remained a constant and growing part of the U.S. economy and provide an important source of stability in communities. Craft or specialty goods fill a hole in the market for those who are seeking out an alternative to the industrial system, one that is based in place and history. Robinson et al. (2002) found that community economies represented by local, craft production that is locally operated and independently owned were positively associated with social welfare when compared with community economies that center around globalization and mass production.

In succeeding studies of business size, Lyson and Tolbert (1996) conducted an analysis of 2,235 nonmetropolitan counties to determine both the impacts of small (15–25 workers) and large (>250 workers) manufacturers on socio-economic well-being to conclude that although the data demonstrated some positive effects of large manufacturing establishments, such as lower inequality, the presence of small manufacturing is associated with lower poverty rates and higher income levels. In the same vein, Tolbert et al. (1998) measured the number of associations, small manufacturing establishments (<20 workers), and *third places*—locations that people can gather and socialize (e.g., pubs, cof-

fee shops, barber shops, etc.)—and compared them to social welfare indicators (Oldenburg, 1991). Their findings indicate that although local capitalism indicators had negative effects on inequality, demographic indicators, such as education, were a more accurate prediction of socioeconomic well-being. Findings also revealed that small businesses are associated with decreased migration, lower unemployment, and reduced income inequality. More recently, Rupasingha (2017) found evidence that microbusinesses are associated with local income growth, but not enough to claim causal effects.

Tolbert et al. (2002) employed the unit of small towns (2,500–20,000 residents) to measure the number of businesses and third places against social welfare indicators. Their results showed that the number of self-owned and -operated businesses and third places is positively associated with social welfare in both metro and non-metro small towns. They also found that towns with a higher number of small, independently owned businesses and an abundance of public meeting spaces had higher levels of social welfare, defined by higher median income, lower poverty rates, nonmigration, and lower unemployment. Lyson (2006) followed this work with a test of Mills and Ulmer's (1946) study, examining 25,000 manufacturing-dependent counties and discovered that counties with an economy organized around smaller-scale enterprises (<1,000 workers) were associated with more favorable social welfare measurements—including an economically independent middle class, less economic inequality, higher education outcomes, and lower crime rates—when compared to counties organized around large-scale corporations (>1,000 workers).

Studies show that civically engaged communities are associated with lower incidences of violent crime and all-cause mortality in counties across the country (Lee, 2008, 2010; Lee & Thomas, 2010). Similarly, an analysis of population health in relation to business size in 3,060 U.S. counties found that the presence of large retailers has a detrimental effect on age-adjusted rates of mortality and the

presence of obese adults (Blanchard, Tolbert, & Mencken, 2011). Of note, race is glaringly absent as a variable of differentiated analysis. Targeted studies with a focus on race as an indicator, rather than a control, will be important to carry out in regard to the effects on civic community.

Along with health indicators, crime rates, and income, nonmigration is also used as an indicator of civic community richness. The longer one lives in a community, the higher likelihood they have of holding a larger number and diversity of social ties (Tolbert, Mencken, Blanchard, & Li, 2016). Studies have found that counties and states with higher numbers of small manufacturing, retail firms, and civic associations have lower levels of migration (Irwin & Tolbert, 1997; Irwin, Tolbert, & Lyson, 1999; Stroope, Franzen, Tolbert, & Mencken, 2017). Self-employment has also been demonstrated as an indicator of civic engagement. Business owners have a greater stake in the local community and invest accordingly (Mencken, Smith, & Tolbert, 2020). Alternatively, economic concentration is negatively correlated with electoral politics and protest activities, pointing to lower civic participation in areas of high economic concentration (Blanchard & Matthews, 2006).

When examining how agricultural enterprises affect social welfare, Lyson et al. (2001) measured the relationship between the scale of farming operations and the social welfare of residents. They found that agriculturally dependent counties with a high percentage of residents who operate small, commercial businesses and are civically engaged have higher levels of social welfare.⁵ They posit that the presence of a strong middle class with high levels of civic engagement is associated with relatively higher levels of social welfare in an agricultural county. Furthermore, activities of civic agriculture have an association with the specific social, economic, and demographic characteristics of the communities they serve (Lyson & Gupta, 2004), especially in comparison to activities centered on commodity agriculture. The prevalence of civic versus commodity agriculture within a county has profound effects on the communities in which they

⁵ Lyson et al. (2001) define “agriculturally dependent counties” as counties with at least 75 percent of land in farming and at least 50 percent of gross county sales in agricultural goods and services.

are present, either bolstering civic growth and social capital, or pushing toward a more globalized and concentrated system (Besser, 2009).

In an effort to explore the significance of local-versus global-facing firms on social welfare, Tolbert (2005) measures how locally oriented establishments affect civic behaviors, such as associational membership, visitation to local retail establishments, and voting habits. When controlling for state median income and population, he found that the locally oriented establishments are positively associated with small manufacturing establishments, associations, public gathering places, and voter turnout. Furthermore, locally oriented establishments were found to have negative correlations with rates of poverty, infant mortality, and crime, although authors can only determine correlation and not causation.

More recently, Clark and Record (2017) studied the levels of civic engagement of local farm owners to determine if there was a significant difference between owners whose farms were locally facing, or community-oriented and selling to local customers, compared to owners whose farms were utilizing intermediating markets or were globally oriented. The results demonstrated that owners of locally facing farms were more engaged both civically and politically. These findings display the impact of globalized markets on a community's civic engagement. When the end-consumer of a firm's product is not in the community, the owner and the business's model do not depend on the well-being of the community, and the firm can be less invested in the community. On the other hand, locally facing firms are dependent on the community and have a direct stake in community matters; therefore, they are more likely to engage.

Despite the original authors utilizing municipal services as an indicator of social welfare, no proceeding authors followed suit. Lyson (2006) employed municipal services only as he replicated Mills and Ulmer's (1946) original study. Although it is unknown why municipal services were not considered significant to pursue in further studies, it may be an indicator that should be analyzed in future studies to reveal more robust findings to strengthen civic community theory.

Through the aforementioned studies, this

canon of literature has served as a foundation of civic agriculture theory. We break down the main concepts and indicators related to social welfare in Table 2. In the remainder of the paper, we explore how these indicators intersect with civic agriculture in order to corroborate how, as a branch of civic community theory, civic agriculture relates to various indicators of social welfare.

Concentration of Power

Civil Society and Community Capitalism

Since proponents of civic agriculture have theorized that the economic benefits claimed in civic community theory apply correspondingly, researchers have set out to corroborate the assertion at the community level. Based on findings in civic community theory, there is an expectation that a decentralization of economic and social power inherent in the proliferation of small, independent businesses will result in more equal distribution of wealth and power. In civic agriculture studies, researchers have honed in on farmers markets as a manifestation of business diversity and as spaces for entrepreneurship, business innovation, market research, enterprise diversification, and business incubation (Cameron, 2007; Feenstra, Lewis, Hinrichs, Gillespie, & Hilchey, 2003; Gillespie, Hilchey, Hinrichs, & Feenstra, 2006; Hinrichs, Gillespie, & Feenstra, 2004; O'Hara & Coleman, 2017). Farmers markets create a unique and visible place for small businesses and community members to test new ideas, generate feedback, and learn from other vendors. They also have direct economic impact on the downtown areas of towns and cities. Shoppers who would normally not visit the downtown area or frequent the stores are drawn to the market, which results in increased sales for neighboring businesses (Abel, Thomson, & Maretzki, 1999; Lev, Brewer, & Stephenson, 2003; Swenson, 2009).

Brown (2002) reported evidence that in the district of the farmers markets, property values increased. Of note, this can lead to concerns of gentrification if those located near the market are not also economically benefiting from its placement. At the same time, reverberating economic benefits may increase the amount of capital available to lo-

cal residents and local governments to invest in community well-being. Another form of civic agriculture, community gardens, has also proved to increase property values, augment community confidence and safety, and increase the availability of fresh produce in lower-income and racially diverse areas (J. Allen, Alaimo, Elam, & Perry, 2008; Sullivan, Kuo, & DePooter, 2004).

In an overview of trends in local food systems in the United States, Low et al. (2015) discuss the overarching impact of local food systems on the U.S. agricultural landscape and economy. The authors found an economic ripple effect in communities where food is purchased locally. A report by the U.S. Department of Agriculture Economic Research Service found that fruit and vegetable farms selling into local and regional markets employ 13 full-time workers per US\$1 million in revenue earned, compared to the three full-time workers per US\$1 million in revenue earned by fruit and vegetable farmers selling elsewhere (Low & Vogel, 2011). Local food production creates skilled, higher-paying employment opportunities, which could indirectly increase household spending (Bauman, Jablonski, & Thilmany McFadden, 2019; Rossi, Johnson, & Hendrickson, 2017; Shideler, Bauman, Thilmany, & Jablonski, 2018). However, it is important to point out that most local farm sales occur on the East and West Coasts in urban areas.

In Europe, farm-to-school programs have been found to increase opportunity for suppliers and contribute profit to the overall economy (Sonino, 2013). In a case study of Hardwick, Vermont, known as “the town that food saved,” Olson (2019) found that the increase in small agriculture related-businesses coincided with a decrease in poverty rates and unemployment. Although the economic impact is not the sole concern of civic agriculture components, it may play a role in producing economically stable, equitable communities—contributing to the creation of small, locally oriented businesses and an independent middle class.

Nonetheless, scholars and practitioners still debate whether local food production is a viable business venture—as the majority of farms struggle, economies of scale may be the most profitable for

the individual farm (Deller, Lamie, & Stickel, 2017). Overall social welfare may benefit more from place-based food production. These findings suggest that local and regional food systems have a significant economic benefit on their communities. Local food businesses stimulate the economy, create jobs, and invest money spent back into the community, signaling a significant opportunity for local governments to invest in community development through local food systems (Bauman et al., 2019; Rossi et al., 2017; Shideler et al., 2018; Sonino, 2013).

Place and Market

One of the hallmark components of civic agriculture is the connection to place. Orientation toward local customers and local demands builds personal relationships (Lyson, 2004). The social connections and economic exchanges of civic agriculture are intertwined, embedding agriculture into the community. Small farmers are dependent on their specific knowledge of place: the earth, the resources, and the people. Cultivation of food locally has the potential to embed consumers into their geographic place, creating an identity associated with community (Cone & Myhre, 2000).

However, several authors have warned against these claims as a “local trap,” otherwise termed as “defensive” or “unreflexive” localism (J. Allen et al., 2008; P. Allen, 1999, 2010; Born & Purcell, 2006; DeLind & Bingen, 2008; DuPuis, Goodman, & Harrison, 2006; Hinrichs, 2003; Mount, 2012). In critiques of civic agriculture, the preoccupation with the “local” is seen as a toothless solution to the neoliberal, global marketplace which does not address the foundations of individualism and profit-driven markets that create inequality and injustice (P. Allen, FitzSimmons, Goodman, & Warner, 2003; Guthman, 2011; Hinrichs, 2000; Jarosz, 2011; Kirwan & Maye, 2013; O’Hara & Stagl, 2001). Furthermore, other scholars are concerned that civic agriculture may be inaccessible and exclusive to parts of the population based on race, class, and location (Alkon & McCullen, 2011; P. Allen, 2010; Godette, Beratan, & Nowell, 2015; Guthman 2003, 2008). Without a grounding in place or focus on community, civic agriculture tends to concentrate less on culture and social ties

and more on market functions (DeLind, 2002; Hinrichs, 2000). Local, direct-market agriculture in itself is market-based. It does not inherently address issues of social injustice. Consequently, ‘reflexive localism’ implies maintaining vigilance about potential injustices that could arise at the community level in a ‘localized’ system (DuPuis et al., 2006). Purchasing local food may not inherently prompt consumers to question inequality or to get involved in their community. It must also change the meaning of consumption to create change (Johnston, 2008; Ostrom, 2008). A robustly contextualized understanding of place that is accompanied by community responsibility to equitable community priorities is pivotal to truly embed a food system in the social well-being of a community.

In their discussion of global versus alternative food markets, O’Hara and Stagl (2001) and Hinrichs (2000) make important theoretical connections between the economic market and physical place. The authors highlight how a globalized food system is socially and environmentally “disembedded”⁶ from its place and people of origin. Alternatively, civic agriculture brings a value, quality, and craft to food that can only be created with an understanding of place (Barbera, Dagnes, & Di Monaco, 2020; Chiffolleau, Millet-Amrani, Rossi, Rivera-Ferre, & Merino, 2019; Wittman, Beckie, & Hergesheimer, 2012). These social ties can be part of what a producer is selling in a market.

Nonetheless, production and consumption cannot necessarily be equated with social ties and civic engagement. DeLind (2002, 2011) cautions that civic agriculture must be applied in a way that incorporates the common good of the greater community over the market interests of the individual. Moreover, market and politically centered strategies cannot lead to the social outcomes local food systems espouse to engender; the community itself must be supported. Civic agriculture can provide the setting for this type of embedding in place and community, vis-à-vis education and policy that support these practices. The production and consumption of a local product in the same physical

space offers a promising unification of market exchange with identity and what DeLind and Bingen (2008) call “placed”-ness (Trivette, 2017). This is an example of what some authors argue is reflexive or adaptive localism (Crossan, Cumbers, McMaster, & Shaw, 2016; DuPuis & Goodman, 2005; DuPuis, et al., 2006; Ross, 2006). In other words, the inherent diversity and complexity within a community is reflected in its civic agricultural markets, relationships, and networks, and recognized as a continually evolving piece in the political process (Hasanov, Zuidema, & Horlings, 2019; Schnell, 2016). Awareness of the realities of neoliberalism, individualism, and exclusion serves as the means toward building a successful and equitable civic agriculture landscape (Tornaghi, 2016).

The reflexivity and adaptability of communities help strengthen civic agriculture markets by embedding social capital into market relationships (Flora & Bregendahl, 2012; Schnell, 2013). Bunkus Soliev, and Theesfeld (2020) demonstrate that a community’s relationship to agriculture is stronger when the density of resident farmers is higher. The authors also found that where there is a greater presence of farms in rural areas, residents describe a more significant attachment to place. In general, locally oriented agriculture plays an important role in strengthening social capital, including social embeddedness, sense of belonging, and access to information (Besser, 2009; Flora & Bregendahl, 2012; Furman, Roncoli, Nelson, & Hoogenboom, 2014; Schmit, Jablonski, Minner, Kay, & Christensen, 2017; Schnell, 2013).

Civic agriculture activities must be mindfully cultivated to create accessible space for marginalized groups. For example, some community supported agriculture (CSA) programs and markets prioritize low-income residents, while certain gardens and farms intentionally bring marginalized groups into civic folds and social networks of a community (J. Allen et al. 2008; Baker, 2004; Cumbers, Shaw, Crossan, & McMaster, 2018; Poulsen, 2017; Smit & Bailkey, 2006). Participation in civic agriculture allows individuals to explore the poten-

⁶ Polanyi (1944, 1957) was one of the first to use the term *disembedded* to describe economic markets where production techniques, knowledge systems, and ecological attributes that create a product in a specific place, become increasingly homogenous and devoid of those specificities in a global market.

tial of collective power (Canal Vieira, Serrao-Neumann, & Howes, 2019; Siegner, Acey, & Sowerwine, 2020), or it can create the chance to regain agency and power in the community (Alkon, 2008; Bornemann & Weiland, 2019; Bradley & Galt, 2014). By creating the conditions under which knowledge, networks, and awareness can be cultivated, civic agriculture can generate both community and social capital. That said, the true impact of civic agriculture on the redistribution of power and resources remains relatively unexplored, and in some cases can consolidate power within a select few. This reveals the need for specific and intentional engagement of marginalized groups to access, deploy, and create new and existing community networks to successfully build civic agriculture in their communities.

Community Cohesion

Cultivating Social Capital

Whether it is starting a new business in a community, establishing a farm, soliciting membership for a CSA, or cultivating a community garden, civic agriculture promotes the growth of social networks as people's paths cross and connect in ways they would not have before. In creating direct-to-consumer businesses for local food, farmers and entrepreneurs are dependent on a host of organizations, individuals, and government sectors to be successful (Canal Vieira et al., 2019; Christensen & Phillips, 2016; Cvijanović, Ignjatijević, Tankosić, & Cvijanović 2020; Hasanov et al., 2019; Hughes & Isengildina-Massa, 2015; Janssen, 2010). Civic agriculture addresses community issues such as rural revitalization, food availability, and social welfare, if built on a foundation of strong networks and interpersonal transaction (J. Allen et al., 2008; Bagdonis, Hinrichs, & Schafft, 2009; Renting, Marsden, & Banks, 2003). At urban farms, gardens, and CSA gatherings, participants find a shared sense of belonging, nurturing the growth of community cohesion, and vocalize its significance (Dunlap, Harmon, & Camp, 2020; Firth, Maye, & Pearson, 2011; Kingsley, Foenander, & Bailey, 2019; Macias, 2008; Sumner, Mair, & Nelson, 2010). It is that desire for social embeddedness and a sense of community that drives many farmers to participate in civic agri-

culture (Migliore, Caracciolo, Lombardi, Schifani, & Cembalo, 2014). In fact, direct-to-consumer farms are dependent on strong farmer-consumer relationships to be successful (Poulsen, 2017).

Not only do network connections foment social integration, but they also create empowerment through the collective sharing of knowledges and individual learning. Gardeners learn new skills, farmers learn to engage their community, volunteers learn to organize, and a broader sense of resources available in the local community is brought to the attention of all involved (Kingsley et al., 2019; Liu, Gilchrist, Taylor, & Ravenscroft, 2017; Prost, 2019; Trauger, Sachs, Barbercheck, Brasier, & Kiernan, 2010). Farmers who engage in civic agriculture are dependent on mutual education with consumers to demonstrate the importance of their craft and receive feedback on their work. These exchanges are shown to increase participation and retention of customers, as well as further their own innovation (Hinrichs et al., 2004; Ross, 2006). Schmit et al. (2017) reveal an increased flow of intellectual capital to rural areas through the networks of local food systems. This original knowledge creates a more robust network and resilience, in which a community is more equipped to address certain problems with newfound social capital (Furman et al., 2014). In that notion of place, the physical space of a farm, garden, or market can become a missing space where community members have an opportunity to meet, work together, and socialize (Firth et al., 2011; Liu et al., 2017; Trauger et al., 2010).

Small, community-oriented farms, gardens, and markets seek to create a space where community members can gather and be considered as contributing to something greater than oneself (Bingen, Sage, & Sirieix, 2011; Chung, Kirkby, Kendall, & Beckwith, 2005; Cox et al., 2008; Flora & Bregendahl, 2012; Poulsen, 2017; Sharp, Imerman, & Peters, 2002). Onozaka, Nurse, and Thilmany (2010) found that consumers who bought directly from farmers felt a larger sense of community in being influenced by others buying practices around them (Low et al., 2015). Moreover, they overwhelmingly felt that their actions “make a difference” for both public and private outcomes (Low et al., 2015), fomenting a sense of personal and

civic efficacy. Civic participation in agricultural systems has been shown to not only to expand the civic imagination of participants to consider issues and opportunities in the community that had not been evident before (Cox et al., 2008, Schugeren-sky, 2003), but also to create an opportunity for community involvement that connects to the larger community social welfare (J. Allen et al., 2008; Niewolny et al., 2012).

Food Democracy and Citizenship

The opportunity for community involvement generates an avenue for individuals to practice civic engagement. Participation in civic agriculture can serve as a form of exercising one's right to engage in community issues. Lang (1999) captured this concept with the notion of "food democracy," which entails individuals taking an active role in food procurement, such as identifying and seeking out local food sources. Hassanein (2003) proposes food democracy as a step toward social, economic, and ecological justice, while relying heavily on residents' participation and engagement (Lyson, 2005) to empower individuals and communities. There is a concurrence that an active attitude of responsibility among community members and within individuals is the cornerstone of more equitable agro-food systems (Cumbers et al., 2018; Kingsley et al., 2019; Levkoe, 2006; Renting, Schermer, & Rossi, 2012).

Shopping at a farmers market, volunteering at a CSA, or working in a community garden can change a relationship from solely customers to active consumers, and can allow individuals to reclaim the opportunity to shape their community (Bródy & deWilde, 2020; Crossan et al., 2016; Hasanov et al., 2019). Marginalized groups are able to find their place and voice in communities through the cultivation of gardens and the act of occupying physical space (Baker, 2004; Saldivar-Tanaka & Kransy, 2004). Efforts to re-orient the agricultural market to local needs offer consumers the opportunity to increase awareness around community issues and become active to address them (Cox et al., 2008; McIvor & Hale, 2015; Schugeren-sky, 2003). Furthermore, by recognizing the role of the individual and the collection of community members in food systems, people are empowered to turn to collective, community action to problem

solve and look beyond the formal governing body as the responsible figure for community well-being (Baker, 2004; Dunlap, Harmon, & Camp, 2020; DuPuis & Gillon, 2009). In some cases, it can inspire people to consider their involvement as a gesture of activism to reject the industrialized food system (Macias, 2008; Schnell, 2010).

Demographics

Barriers to Civic Agriculture

Many practitioners and scholars of local food systems have expressed continued concern about whether the success and benefits of civic agriculture are predetermined by demographics, and in particular, race, income, gender, and education (see, among others, Alkon & McCullen, 2011; P. Allen, 2010; Colasanti, Conner, & Smalley, 2010; Guthman, 2008). Studies over the years documenting the demographics of participants in civic agriculture reveal mixed findings. Overall, studies of CSAs (Cone & Myhre, 2000; Lass, Bevis, Hendrickson, & Ruhf 2001; Ostrom, 2008; Schnell, 2010), farmers markets (Alkon & McCullen, 2011; Byker, Shanks, Misyak, & Serrano 2012; Cvijanović et al., 2020; Wolf & Berrenson, 2003) and local food sales (Feldmann & Hamm, 2015; Godette et al., 2015; Martinez et al., 2010; O'Hara & Low, 2016; Thilmany, Bond, & Bond, 2008) show that participants tend to be white, wealthy, female, and college-educated, and are generally located in the Northeastern U.S. or West Coast near a metropolitan area. Although indicators of wealth and social class (such as proximity to a farmers market or a flexible work schedule) are often associated with greater access to local food, (Abelló, Palma, Anderson, & Waller, 2014; Galt et al., Bradley, Christensen, & Munden-Dixon, 2018; McGuirt et al., 2014; Zepeda & Nie, 2012), some scholarship posits that these demographics are not the only driver of local food consumption patterns (Guptill, Larsen, Welsh, & Kelly, 2018; Thilmany et al., 2008; Galt et al., 2017; Galt, Bradley, Christensen, & Munden-Dixon, 2019). Rather, ideological and emotional considerations should also be considered as potentially stronger indicators than demographics (Beagan, Power, & Chapman, 2015; Lombardi, Migliore, Verneau, Schifani, & Cembalo, 2015;

Zoll, 2018). In certain areas, people of diverse socioeconomic backgrounds solicit farmers markets (Sadler, Gilliland, & Arku, 2013). Although demographic indicators undoubtedly play an important role, race, income, education, and others have not been proven to be the conclusive determinants of civic agriculture involvement.

Tegtmier and Duffy (2005), among others, found that farmers who start CSAs or sell direct to consumer tend to be college-educated, middle-aged, and are located on the East or West Coast. These farms tend to be small, and cultivated with organic, biodynamic, or ecosystem-focused practices (Lass et al., 2001; Wells & Gradwell, 2001). A noticeable income gap has been observed between the producers and the consumers of local food (Ostrom, 2008; Schnell, 2010). Most farmers struggle to stay afloat financially and to keep members coming back every season (Ostrom, 2008; Schnell, 2010). These factors may reduce the type of farmers and residents participating in local food systems to a specific subset, limiting the impact of civic engagement and community building to a certain socio-economic group. Godette et al. (2015) points out that the contextual factors surrounding a community must be considered in creating a local food system—not only demographics, but also geography, infrastructure, and markets. Farmers are often more dependent on their relationships with the consumers than consumers are on farmers (Ostrom, 2008). This creates an unhealthy power balance that can cause farmers financial and social distress.

Indicators such as religiosity and social views are underexplored indicators of civic agriculture. There remains a dearth of research of the role that faith-based member organizations such as churches can have in facilitating engagement of its members or employees in civic agriculture. For example, instances of civic agriculture mediated by church leaders and congregations exist across the U.S., but are uncommonly documented and analyzed as a way to strengthen relationships between consumers and farmers. Often farm-to-institution programs rely on the farmer mediating the relationship with consumers, but leaders or administrators in these organizations can play an instrumental role in influencing the success of these initiatives by substanti-

ating other incentives or rationale for participating and benefiting from civic agriculture. For example, faith-based organizations can inject other considerations for individual or community participation in civic agriculture, such as stewardship, giving, or other principles central to that religion.

Civic Engagement

The hypothetical connections between civic agriculture and civic engagement have been thoroughly assessed, albeit through indirect means. Only a handful of studies have attempted to directly examine the relationship. Both Obach and Tobin (2014) and Carolan (2017) produced studies demonstrating that individuals engaged with civic agriculture tend to have increased levels of civic engagement compared to community members who only utilize conventional food systems. Obach and Tobin (2014) found consumers in New York state engaged in civic agriculture tend to also be more politically engaged and willing to volunteer than those who do not participate in civic agriculture. Carolan (2017) conducted a longitudinal study comparing the civic engagement of alternative and conventional eaters in Colorado and found that individuals who participate in civic agriculture are more likely to be active citizens in their community than conventional eaters. Though the values of civic engagement may already be inherently present in participants of civic agriculture, Carolan (2017) found that continued practice in civic agriculture can strengthen those beliefs.

Pole and Gray (2013) distributed a survey to CSA members in New York state to measure levels of community engagement in relation to their CSA experience. Contrary to previous research, they found that CSAs do not necessarily generate or promote a sense of community among members. However, respondents displayed a high level of civic participation either at the CSA or within their community. Clark and Record (2017) studied the levels of civic engagement of local farm owners to determine if there was a significant difference in owners whose farms were community-oriented and were selling to local customers, compared to owners whose farms were utilizing intermediating markets or were globally oriented. The results demonstrated that owners of locally facing farms were

more likely to be engaged both civically and politically than their counterparts. Collectively, these studies document a correlation between civic agriculture and civic engagement but none effectively addresses the issue of causality. There may be even be a mutually re-enforcing effect between civic agriculture and civic engagement, warranting further study of this relationship.

Conclusion

All the work included in this review shares the view that food—from its production to its consumption—is a product of complex environmental and social interactions. These interactions can be at multiple scales that range from locally grown and locally consumed food to food that is globally traded and sold. For many, access to food is not only a determinant of well-being, but it is also an expression of social identity. In this work, we consolidate the wealth of scholarship that has demonstrated the positive effects of the former (locally grown and locally consumed food) on community well-being as a crucial, empirically grounded foundation toward utilizing food systems to build just, equitable economies. In addition, the many studies presented here illustrate the relationship between civic agriculture, community involvement, activism, and empowerment, and can be used to inform a roadmap to instill place-ness in food systems that yield obvious and immediate benefit to communities at a local scale.

This work also identifies significant gaps in our understanding of the connection of municipal services and the role of institutions in civic agricul-

ture, as well as a need to better elucidate the direct relationship between civic agriculture and civic engagement. The connection of these concepts to civic agriculture remains unclear and underexplored. We encourage both practitioners and scholars to help uncover these deficiencies through experience and exploration, as they may be key to improving the benefits of civic agriculture, especially in rural, low-income, and racially diverse communities. However, the collective evidence presented here reveals a clear association between civic agriculture and social welfare, both rural and urban, through increased social capital, embedded community-based economies, and as an outlet for civic engagement and political empowerment. In order to increase democratic engagement and build stronger communities, local governments, organizations, and individuals should explore supporting civic agriculture as a means to increase social welfare. 

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COMMENTARY

Agritourism around the globe: Definitions, authenticity, and potential controversy

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Abstract

This commentary identifies the variability in definitions of agritourism that exists in a variety of different countries, discusses reasons why this variability might produce problems, and provides

examples of efforts to harmonize these definitions, including an ongoing international dialogue on the topic.

Keywords

Agritourism, Definitions, International, Consensus, Research, Collaboration

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The practice of gathering on farms, ranches, and vineyards may be as old as the invention of agriculture. Modern or proto-agritourism probably started in South Tyrol, Italy, during the second half of the 19th century, when aristocrats escaped heat in the summertime and went to stay at mountain farms (*villeggiatura/Sommerfrische*/summer retreat). Similar patterns of migration are well documented in South Carolina, where wealthy plantation owners migrated from the Lowcountry to the Upcountry for the summer. Over the past 35 years, that practice has been named, defined, legislated, and marketed as the concept of agritourism and has spread throughout the globe.

In 1985, the first national law to recognize and define agritourism (*agriturismo*) was passed in Italy. It focused on overnight stays that support the restoration of farm buildings and the diversification of income sources for working farms in rural areas. Today, agritourism—and several related terms and concepts—can be found throughout the world with a variety of definitions and practices. In many places, the operational definition of agritourism has grown to embrace a wide variety of related forms of rural tourism that vaguely resemble the original concept of being closely linked to working farms.

Differences in how agritourism is conceived and defined influence the larger policy and regulatory environment around agritourism enterprises, whether and how they are linked to potential supporting organizations, and how they are viewed in the eyes of consumers seeking various levels of authenticity in their agritourism experience. Additionally, how agritourism enterprises are defined and identified by government(s) and policymakers determines how they are treated by taxing and regulating authorities. If the definitions are too loose, they can result in an erosion of overall tourism product quality. If too restrictive, they can result in agritourism being considered too elitist or too small to matter. This has led to confusion and controversy as agritourism has grown in popularity and has been appropriated (some would say co-opted) for marketing and other purposes.

Having a consistent global understanding of agritourism would be useful for developing policies, conducting research, and implementing programs that support working farms and rural com-

munities. Some countries have opted for more restrictive definitions of “authentic agritourism” than others. In many cases, the decisions concerning definitions of agritourism have been thoughtfully considered. In other geographies, this conversation is only just beginning.

The Institute for Regional Development at Eurac Research in Bolzano, Italy, is collaborating with a group of colleagues around the globe to develop a shared understanding of agritourism with an emphasis on authenticity. They hope to better understand the motivations for inclusion or exclusion of various definitional elements so they can help support decisions by agritourism leaders and inform policy related to agritourism.

They are building on a foundation of previous work examining definitions of agritourism. A widely used typology by a team in Scotland posited a comprehensive view of agritourism based on existing literature perspectives (Phillip, Hunter, & Blackstock, 2010; see Figure 1) and was subsequently developed with empirical perspectives from across Scotland (Flanigan, Blackstock, & Hunter, 2014; see Figure 2). In each of these theoretical frameworks, the nature of interaction and authenticity (in terms of place and activity) were found to be important discriminators of different types of agritourism products. A researcher based in Italy argued for a stricter definition of authentic agritourism, separate from countryside tourism (Streifeneder, 2016; see Figure 3). Using this narrower authenticity definition, “pure” agritourism operations are largely focused in and around a working farm. Other peripheral activities, such as rural tourism activities, even if on a farm, are not considered authentic.

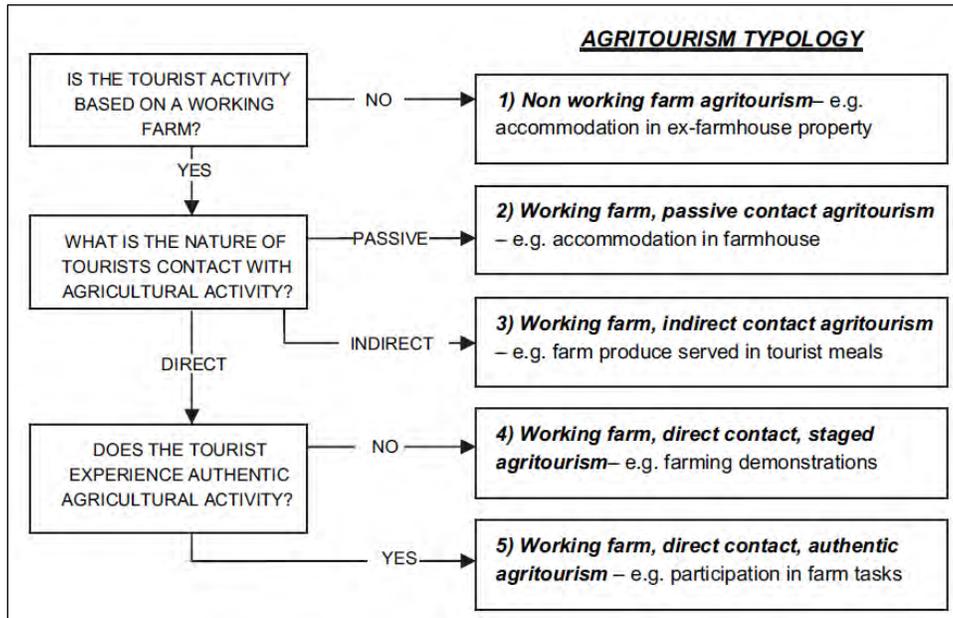
In response to the conflicting definitions, a multistate team in the U.S. created a conceptual framework for understanding agritourism: the core of agritourism consists of activities that are deeply connected to agriculture and take place on a working farm (Chase, Stewart, Schilling, Smith, & Walk, 2018; see Figure 4). There seems to be general agreement about the core, but less agreement within the periphery, as some consider these activities to be included in agritourism while others do not.

Several of those involved in this work were able to participate in the First World Congress on

Agritourism in Bolzano, Italy, November 2018. There, Thomas Streifeneder, the conference host, advocated for an emphasis on “authenticity” in agritourism. Several presenters, including Lisa Chase, shared a variety of definitions and under-

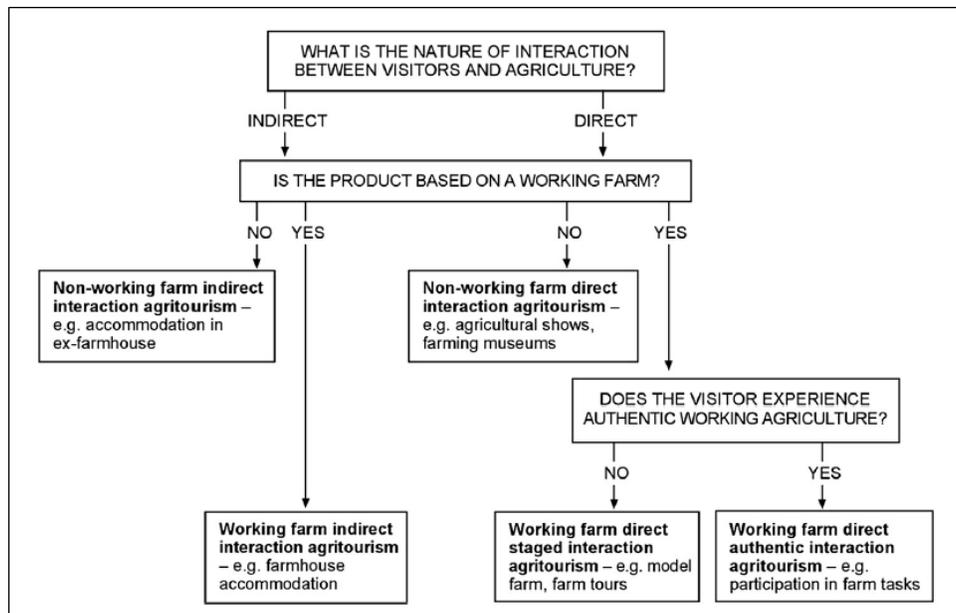
standings of agritourism from around the globe, including those that were considered more or less traditionally authentic. In Scotland, definitions continue to evolve. The concept is becoming increasingly operationalized as connections to food pro-

Figure 1. A Typology for Defining Agritourism



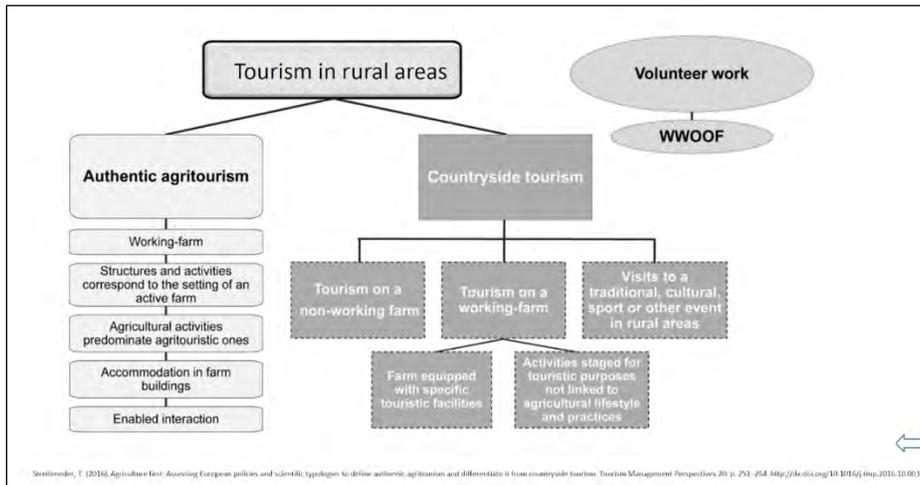
Source: Phillip, Hunter, & Blackstock (2010).

Figure 2. A Revised Typology for Defining Agritourism



Source: Flanigan, Blackstock, & Hunter (2014).

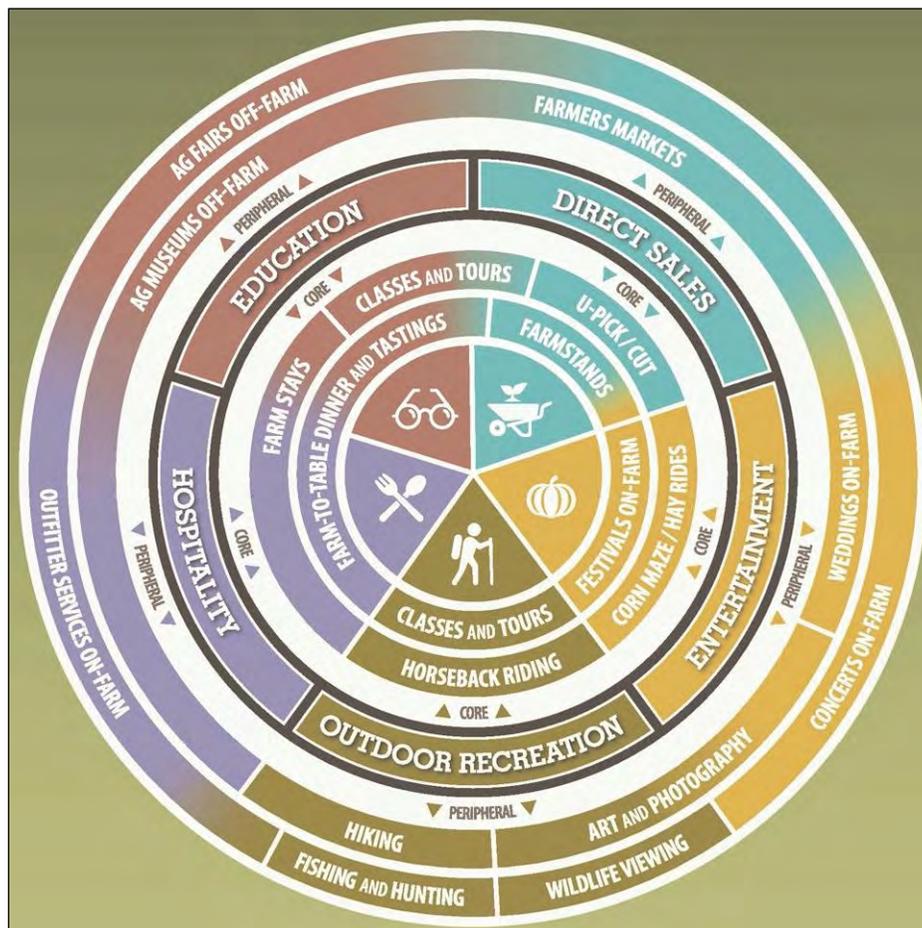
Figure 3. Distinctive Features of Authentic Agritourism and Countryside Tourism



Adapted from Streifeneder (2016, p. 259).

Figure 4. Conceptual Framework for Understanding Agritourism in the U.S.

In the U.S., the core activities are generally accepted as agritourism, while the peripheral tiers contain activities that may or may not be considered agritourism and can lead to misunderstanding and controversy.



duction and food tourism, and more strict requirements for agritourism products to be based on a working farm were recently endorsed at the country's first conference, held virtually in 2020.

One result of the Bolzano World Congress was the expansion of a USDA-funded project focused on better understanding agritourism in the United States. Through connections developed at the World Congress, this project is being extended into selected European and South American countries and Canada. Plans underway for international agritourism scholars to work collaboratively may also pave the way for discussion and resolution of persistent definitional issues.

As agritourism grows in popularity around the

world, it is becoming increasingly difficult to “police” the usage of the term and the corresponding quality of experiences. In response, certification programs have been developed in some regions (e.g., Red Rooster in South Tyrol; <https://www.redrooster.it/en/>) to provide some measure of quality control for consumers and a level of professionalism for suppliers.

The process of developing a clear, consistent definition of agritourism is underway, and perspectives and voices from around the world are invited to participate. As this research continues, input from agritourism practitioners, scholars, policy-makers, and others is necessary to help inform this work. 

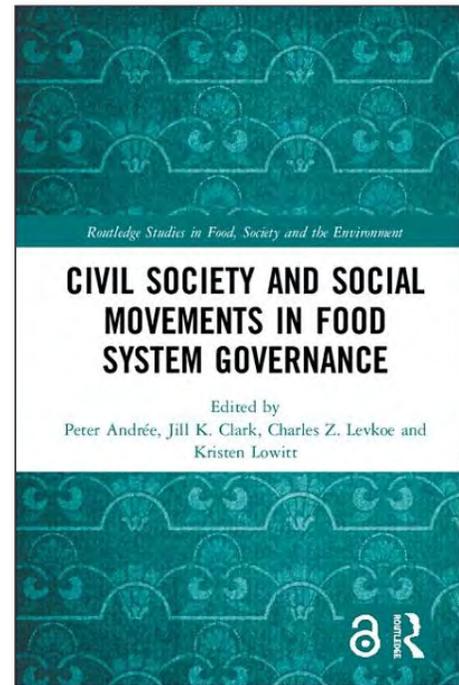
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Tackling food systems from a broad spectrum

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Review of *Civil Society and Social Movements in Food System Governance*, edited by Peter Andrée, Jill K. Clark, Charles Z. Levkoe, and Kristen Lowitt. (2019). Routledge. Available as open access ebook and hardcover; 216 pages. Publisher's website: <https://www.routledge.com/Civil-Society-and-Social-Movements-in-Food-System-Governance/Andree-Clark-Levkoe-Lowitt/p/book/9781138588073>



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Through an in-depth exploration of food movement actors' capabilities to transform decision-making from local to international levels, the authors of *Civil Society and Social Movements in Food System Governance* examine the significance of their involvement, while exploring the intersectionality of governance, social movements, and systems thinking. The premise of the text sets a tone for the need to fully understand the trajectory of food

systems governance, especially since food systems movements are gaining significant momentum at the local, regional, and international levels. The editors note that “these movements seek to reinforce, build on, and scale up innovative, place-based initiatives” (p. 1).

Many of the chapters stem from the work of

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the Food: Locally Embedded Globally Engaged (FLEdGE) action research collaborative. Many researchers and program evaluators, like myself, understand that action-oriented inquiry is key to understanding food systems throughout the world. FLEdGE provides an opportunity for community partners and researchers through this book as a means of inspiration, motivation, and transformation of food systems. Through the work of FLEdGE, collaboration provides an avenue for sharing knowledge and research capital for sustainable change through its robust network of stakeholders interested in food systems work across the world. Thus, this book provides a glimpse into FLEdGE's commitment to food systems change.

The diverse backgrounds of the authors contributed to the value of this book. For example, among the 16 contributors, six are practitioners. Having such an extensive number of practitioners contribute to a book on food system governance was fascinating. In many food systems, practitioners contribute more to the transformation than academicians. But since they focus more on grassroots efforts than on publishing, their viewpoints are not always shared. Oftentimes, academicians report on the work that practitioners are doing in their communities or within specific food systems, like in Mississippi, where the prevalence of food insecurity affects so many households. This book's inclusion of contributions from both academics and practitioners creates a wealth of knowledge to understand governance among contemporary food systems. For example, Chapter 7, *Indigenous Self-Determination and Food Sovereignty through Fisheries Governance in the Great Lakes Region*, includes five contributors, three of whom are practitioners. Furthermore, this chapter includes a discussion about Indigenous people from practitioners who are members of the Indigenous community. The contributors know first-hand how governance is affecting their food systems, and the readers are exposed to the viewpoints of both researchers and community partners. Readers are shown the applicability of the theories that are discussed through the lenses of the practitioners.

Instead of continuing the trend of only identifying challenges that affect the governance of food systems, *Civil Society and Social Movements in*

Food System Governance creates a unique experience that includes discussions of opportunities and implications. For example, chapter 5 provides examples for community partners and researchers to fully grasp what opportunities could be available in food systems and how policy directly affects food movements. Researchers and practitioners gain valuable insight about government-led policy-making processes and can further use this information to inform significant food systems change. Additionally, this chapter provides important insight on how to effectively influence food policy, despite the tension and different goals and objectives among the stakeholders. This unique spin on discussing food system governance proves to be very useful for food movement actors and addresses the gap in the food systems literature about opportunities. Furthermore, *Civil Society and Social Movements in Food System Governance* demonstrates the critical role that governance, social movements, and system thinking play in the ultimate transformation of contemporary food systems.

Civil Society and Social Movements in Food System Governance contributes to readers' understanding of governance processes within a food system. Readers are prompted to reflect on the food movements affecting their surrounding communities. By discussing specific cases, readers are exposed to the way that food systems on the local level experience transformation. This book also sheds light on the significance of co-governance in food systems transformation. Contributors present an intense argument that co-governance remains necessary to create a consensus among all stakeholders within a food system. This can be applied to food systems in Mississippi and promote collaboration among community partners, political figures, community members, and researchers. Many chapters illuminate how power-sharing mechanisms contribute to co-governance in food systems. For example, chapter 5 outlines initiatives that include co-governance in a collaborative policy-making infrastructure.

I highly recommend that researchers and community partners, especially those working in food movements, read this book. It could help food movement actors to examine their own impact in decision-making in their current food systems. Since the text includes such an abundance

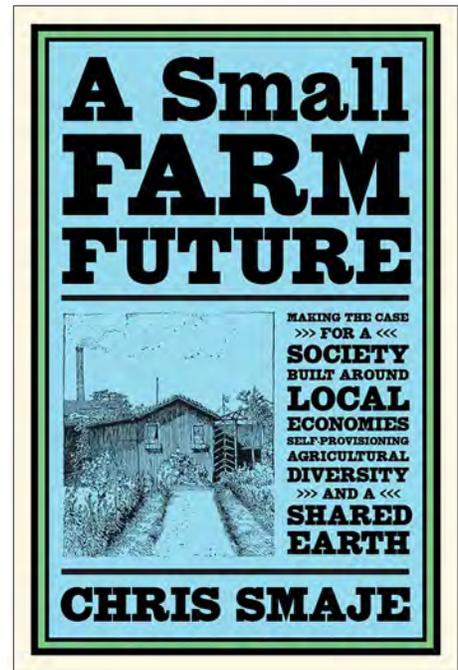
of information related to a variety of governance innovations, it could be used as a guide to continue transforming contemporary food systems. Food movement actors are not the only benefactors of this book. Because it covers a variety of topics, including polycentrism and self-governance, researchers, students, policy-makers, and community members can benefit from reading it. For example, the introduction of *Civil Society and Social*

Movements in Food System Governance explains how the authors define the concept of food movements. The explanation provides a basis for a variety of stakeholders to understand the interconnectedness of the different elements that compose a food system, including movements and initiatives. This interconnectedness also alludes to how political forces and diversity impact food systems. 

Small farms might rescue the future

Review by Hannah Lohr *
 University of Kansas

Review of *A Small Farm Future: Making the Case for a Society Built Around Local Economies, Self-Provisioning, Agricultural Diversity, and a Shared Earth*, by Chris Smaje. (2020). Chelsea Green Publishing. Available as Kindle and paperback; 320 pages. Publisher's website: <https://www.chelseagreen.com/product/a-small-farm-future/>



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In *A Small Farm Future*, Chris Smaje argues that small farms offer humanity's strongest option for a just and ecologically and nutritionally sustainable future. He undertakes three major feats. First, he demonstrates that certain forces are driving humanity toward a small farm future in which local and self-sufficient food production is likely. Second, he outlines the ways in which a small farm future solves most of the world's looming crises (see chapter 1). Without concrete demarcations of small or local, Smaje argues for a future

in which much of the world population works as small-scale farmers creating “local-autonomies” and “a degree of self-provisioning” (p. 9). Third, he depicts what such a small farm future might look like.

Section I (chapters 1–3) begins by outlining 10 major crises related to population, climate, energy, soil, water, land, health and nutrition, the political economy, and culture. In short, these crises are embodied by finite resources that promote unjust and unsustainable consequences. This section demonstrates that these crises cannot be solved by technical, one-shot solutions under the direction of global capitalist progress. Furthermore, Smaje emphasizes a need to envision a future that can address the diversity of crises among an array of global circumstances. This necessarily involves

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what Robert Nozick calls multiple *utopias*, in which solutions are flexible but intentionally driven toward universally just sustainability (chapter 2). A local, small farm future offers the adaptability needed for the variety of world circumstances while enabling widespread farming practices that could reverse climate trajectories.

While Smaje provides much insight into these future utopias and how we might get there, he emphasizes this future would inevitably require “widespread material self-provision” (p. 87) in which individuals, families, and communities become stewards of their material necessities. Importantly, Smaje argues that current cultural and political economic values promote endless consumption at the expense of others. He suggests these might only be dissuaded by engaging with nature itself—something a self-provisioned agriculture would allow. In addition, widespread local economies could also make nutritious food accessible worldwide. Though Smaje recognizes some scholars criticize essentialist views in support of returns to peasantry, his case rests on assumptions that some people today, and arguably more in the future, would want to engage in smallholder farming (chapter 3).

Section II (chapters 4–11) discusses the agro-ecological frameworks such a future might adopt in order to mitigate the crises discussed in section I. Smaje argues that ecosystem farming with low energy and low labor inputs hardly yields high enough outputs, but high input agriculture alongside economic modernization has largely contributed to many of our current problems, exacerbating injustices through much of the world (chapters 4, 5, and 10). Looking to minimize energy inputs while still yielding high outputs, a small farm future will likely involve intensification (most often through human labor), biomimicry inspired by, but not an exact replica of, wild ecosystems (see also chapters 8 and 9), and widely distributed farms across landscapes that feed local communities (chapter 6 and 7). Such widespread farming ecologies would not only help deter crises associated with dwindling resources, they could also drastically reduce emissions that contribute to rising global temperatures, contributing significantly to population and climate crises. Smaje concludes this section with a compelling

case for a small farm future. His model of 2050 England accounts for population growth, effects from climate catastrophes, energy input declines, and caloric nutritional requirements, while also demonstrating that civilization can indeed thrive within an alternative agricultural restructuring (chapter 11).

Despite the plausibility of a small farm future, section III (chapters 12–16) addresses the social conditions in support of and needed for a smallholder agricultural future. Notably, gender inequities that arise in household-level farming would need to be combatted by a shift in both cultural consciousness and institutional safeguards (chapter 12). Furthermore, it would necessarily involve changes in land ownership (chapter 13), capitalist economies (chapter 14), distributions of the population across the land (chapter 16), and religious and scientific values (chapter 16).

The final section (IV) of the book outlines the global political dilemmas facing a small farm future. Recognizing that a transition may seem far-fetched, Smaje demonstrates that the combination of looming environmental and economic crises is likely to prompt a political watershed that promotes a new politics, perhaps in support of local autonomies and equitable outcomes (chapter 17). Although imperfect, civic republicanism, for example, safeguards against prejudice, while lending itself to localism in which values, rather than the sum of individual desires, guide citizens’ behavior (chapter 18). He concludes the book by admitting to the vagueness of his prescriptions but proposing that a multitude of political (among other social and ecological) options might enable a better future (chapter 19). Such a future, Smaje argues, would still involve a return to the land, cultivation of local livelihoods, and less reliance on economic capitalism.

While I think Smaje’s argument is sound, my first criticism stems from his modelling techniques that are based solely on projections for Britain’s 2050 farming. Although he acknowledges some of its shortcomings, amid projections of the changing climate, other regions of the world are likely to experience harsher realities, restricting the generalizability of this model for other regions. Second, despite the array of ground Smaje covers in the

book, his argument for local autonomies and self-provisioned farming fails to address the inadequacies of these structures should disaster strike, wiping out food supplies for a large proportion of a region, or even a single farmer. As anthropogenic warming is expected to worsen disasters in severity and frequency, safeguards for especially vulnerable communities worldwide would need to be in place.

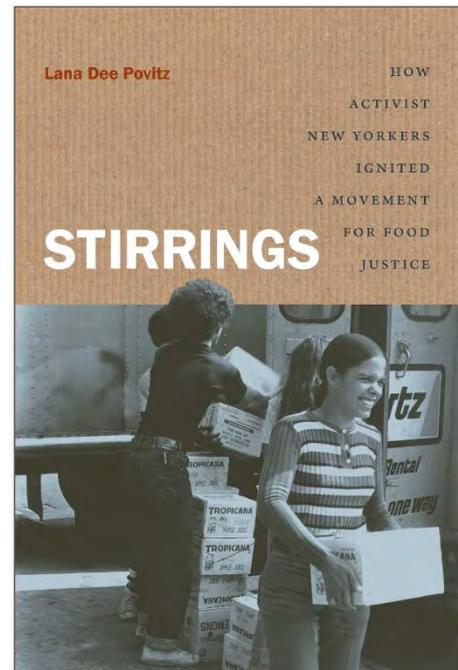
A Small Farm Future provides a critical starting point for scholars and practitioners alike in a range of disciplines including food justice, utopian stud-

ies, agricultural or climate policy, and rural development. It is well suited for advanced undergraduate or graduate seminars in environmental or social sciences. Despite the promising avenues a widespread alternative agricultural future could provide, Smaje is attuned to the realities such a feat would require. His portrayal accomplishes, not only the ecological viability, but the social, economic, and political necessities—in my opinion, a difficult task. 

Stirring up lessons for food activists

Review by Robert A. Kluson *
 Cork, Ireland

Review of *Stirrings: How Activist New Yorkers Ignited a Movement for Food Justice*, by Lana Dee Povitz. (2019). The University of North Carolina Press. Available as ebook, hardcover, and paperback; 360 pages. Publisher's website: <https://uncpress.org/book/9781469653013/stirrings/>



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The book *Stirrings* examines the anti-hunger efforts of the food movement in the latter part of the 20th century for lessons in their successes and failures, as well as relevance to the modern food movement in America. Its six chap-

ters examine four food nonprofits' responses to hunger and its causes in urban New York City (NYC). The diversity of these case studies allowed for multidimensional analyses and insights of how groups of people can work to challenge policy priorities and change social values that cause hunger. The context of the case studies is established in the introduction by recounting the history and politics of the awareness of hunger and poverty in America, the “land of plenty and wealth” during the 1960s, and the subsequent federal government anti-hunger and welfare programs (e.g., War on Poverty and food stamps programs). This context also includes the drastic reductions of these programs, first by the austerity budget measures of the mid-1970s and then by the rise of neoliberal gov-

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ernment policies starting in the 1980s. This information is intended to inform the reader of the *raison d'être* for the rise and diversity of food activism movement described in this book.

At the same time, considering the importance placed by the author on the context of the case studies, it is worth mentioning a couple omissions in this narrative. First, an important part of the chronological linkage between food activism and government policies is the role of the scientific and academic sector in analyses of the extent of hunger in America. For example, the 1984 *Report of the President's Task Force on Food Assistance* conceptually differentiated the concepts of "hunger" and "food insecurity" for the first time. The experts on this task force accepted a very narrow medical definition of hunger (i.e., "actual physiological effects of extended nutritional deprivations" [p. 24]) that could justify the federal government erroneously concluding that hunger was not a policy priority in America. The social definition of hunger as food insecurity (i.e., "the inability, even occasionally, to obtain adequate food and nourishment" [p. 26]) only became integrated in food policy development during the 1990s based on the conclusions of later scientific literature (National Research Council, 2006). Second, there was no description by the author of the concept of food justice itself when introducing these examples of anti-hunger and food activism. Considering that the term is included in the book title, a definition or overview of the criteria for the concept would have contributed important context to the lessons from the case studies. This is a missed instructive opportunity because, while the term is liberally used in the modern food movement, it is still a subject of debate as to its exact meaning and practice (Cadieux & Slocum, 2015).

Chapters 1 and 2 examine the nonprofit United Bronx Parents (UBP) of South Bronx and its activism in addressing community hunger issues through the school lunch program of the NYC Department of Education (DOE). This narrative about the UBP illustrates very well the sources of UBP's strengths and successes. For example, food activists placed importance on having direct linkages to their constituency and between earlier and/or current social activist movements in resist-

ing institutional and political inequalities. This was exemplified in a leadership derived from its constituent poor Puerto Rican community and who had previous experience in progressive labor politics. UBP's strong community ties were explained as based on previous advocacy skills training to resist DOE's history of discrimination that successfully empowered community control of local schools. Finally, UBP's effective management was described as resulting from the hiring of staff with political and public relations skills that provided strategies and program linkages to greater NYC community action groups which effectively mobilized this volunteer-based, grassroots nonprofit.

Chapter 3 examines the nonprofit Park Slope Food Coop (PSFC) located in Brooklyn and its role in providing community access to low-cost healthy foods. The narrative integrates well the activities of PSFC and the social milieu from its beginning in 1973 as part of a counterculture era influenced by the influx of diverse social activist groups starting in the 1960s and continuing into the early 1970s where "members saw consuming better as one way to achieve social and environmental change" (p. 95). As the author states, the story of the PSFC is remarkable because "while it was part of a national trend at this time of such enterprises which typically haven't survived, it has succeeded in becoming today the largest consumer-owned single-store cooperative in the U.S. offering locally-produced, organic foods to its members" (p. 87). The factors of this success were explained by their community organizing and management skills from implementing a structured, labor cooperative model to participatory governance. In addition, PSFC expanded its community ties by responding to the social needs of a demographically changing Brooklyn, such as becoming a community space for social and food activists, and for cultural, education, and political events. Equally important, the narrative about PSFC describes the social changes of that era, such as gentrification, that dramatically reduced the ethnic diversity of Brooklyn that had first attracted activist communities. The author cites this outcome not necessarily to find fault in PSFC but to remind the reader that "prefigurative projects, even when carried out in positive, exciting, and innovative ways, were

not impervious to larger structural forces” (p. 92). Therefore, the author reinforces the importance of PSFC’s prefigurative aspects as described in the narrative, such as cooperation, not being profit-driven, egalitarianism, diversity, tolerance, and ethical sensitivity.

Chapter 4 examines the nonprofit God’s Love We Deliver (GLWD) as an atypical form of food activism which, nevertheless, effectively responded to community hunger. The author describes very well the personal and social background for GLWD providing millions of free, high-quality meals to citywide homebound victims of AIDS starting in the mid 1980s and, as of 2001, to clients with other serious illnesses. For example, the personal and spiritual convictions of GLWD’s leadership demonstrated the potential for organizing with a vision that redefines the extent of and responses to hunger. GLWD’s effective community organizing then was based on reaching out across the religious and political differences among the city-wide public with an uncontroversial message of compassion and service during an era of “fear, lack of medical treatments, societal scapegoating, familial homophobia, lack of legal protection, and government neglect” (pp. 127–128). Very importantly, GLWD’s apolitical activities were explained as strategies in building solidarity relationships that can complement supporting social activists, such as the LGBTQ+ community, in resisting political and social inequality sources of hunger.

Chapters 5 and 6 examine the nonprofit Community Food Resource Center (CFRC) and the strengths of its citywide anti-hunger activities, beginning in 1980 and through the changing political economy of NYC afterwards. CFRC was started by experienced leaders with tenure at UBP and with connections to other citywide successful grassroots food activists. In its beginning, the leadership championed a comprehensive vision of food justice that included job creation and advocacy, e.g., setting up community food enterprises and an office of food policy in partnership with city officials. The author then explains how the cumulative impacts of budget austerities and neoliberal policies, as well as the proliferation of other dire societal priorities, forced CFRC to shift

its focus to a wider range of direct service activities. To this end, the narrative shows how food movements can be severely limited by the repeated failures of politicians to correct the systemic causes of hunger and food insecurity while exploiting food nonprofits as convenient “service providers.” Nevertheless, CFRC’s successes were used to identify its crucial attributes to this background of events. First, as the author describes it, CFRC managed to “weld direct service and advocacy work together so that each reinforced the other” (p. 22). This outcome supported the intention for the book stated in the introduction, that it is a challenge to “the commonly held view of nonprofits as coopting grassroots activism” (p. 5). Second, CFRC’s leadership, both in gender and management style, demonstrated effective alternatives for social and food movements.

I highly recommend this book for both academic and lay audiences, but especially for practitioners of modern food movement in responding across the food landscape of America to a complex of negative impacts by the industrial food system on human health and the environment. Very importantly, it provides the following instructive linkages that can “stir up” more diverse modern food activism and public support for the hunger issues of today and tomorrow. First, these case studies demonstrate that the political issues and social changes of America, in general, and in urban areas, specifically, are common features of the past and present. Second, the narrative demonstrates the community perspective as a reoccurring theme among food activists, as well as a legacy and final statement of advice. Finally, the author uses the familiar concept of *terroir* (as in gastronomy) as an analogy for the source of activism capacity of food nonprofits. In other words, the unique social situations, personalities, and dynamics of food nonprofits will shape their efficacies and structures. Projecting these ideas to present times, the continuing creative and diverse examples of food activism across America in response to hunger needs, such as in the current COVID-19 pandemic, clearly agree with this thesis.

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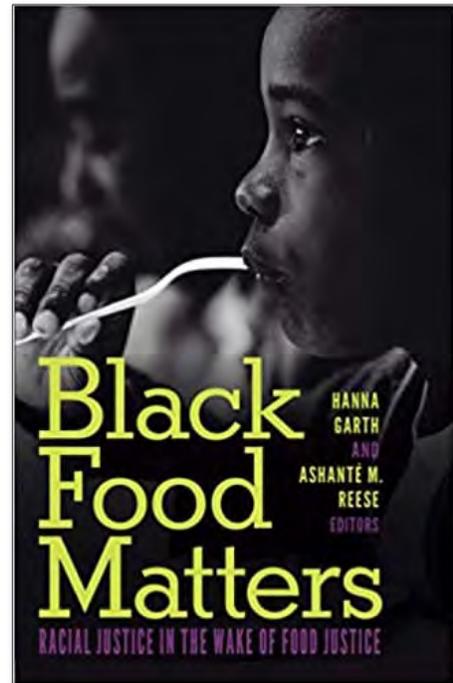
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Sacred recipes: The praxis, power, and politics of Black food culture

Lauren W. Forbes *
 Georgia State University

Review of *Black Food Matters: Racial Justice in the Wake of Food Justice*, edited by Hanna Garth and Ashanté M. Reese. (2020). University of Minnesota Press. Available as Kindle, hardcover, paperback, and audiobook; 308 pages. Publisher's website: <https://www.upress.umn.edu/book-division/books/black-food-matters>



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Garth and Reese's edited volume *Black Food Matters* paints a vivid picture of the evolution of Black food culture as it negotiates the socio-cultural and political complexities surrounding food and race in America. This work centers around the manifestation of Black food in all its stages, from seed to plate, recognizing that it is both a reflection of the lived experiences of Black people in America and an outright rejection of the harm inflicted on them through a persistently anti-

Black structural context. The authors trace the resistance and survival praxis of Black food culture from its earliest origins in the practices of slaves on the Middle Passage to the contemporary practices of local-food-based economies in Black urban and rural communities across the nation. In doing so, each of the authors highlights the ongoing threat that racial capitalism poses to the cultural integrity and socio-economic sustainability of Black communities. Readers are able to draw valuable comparisons between the past and present as they see how Black alimentary and economic autarky have consistently been met with multifaceted exploitation by mainstream, white-dominated society. And yet, the stories told by the book's authors are ones

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of resilience and dignity, highlighting the innovation, adaptability, and fortitude of Black people, as reflected in both African-American and Afro-diasporic food culture.

Setting the book's tone of unapologetic critical inquiry right from the outset (a tone carried, more or less, throughout the book), Garth and Reese highlight the intrinsic ways in which "food justice" is tied to racial justice, suggesting that any efforts to address the former without fundamentally addressing the latter are not only ineffective but often harmful to achieving equity in low-resourced, Black communities. Importantly, they center the widely overlooked notion of Black self-determination in both the shaping of Black spaces and the nature of the food within them—a central theme carried across the book's chapters that starkly contrasts the stereotypical narratives about Black dependency and apathy. The authors mention the inseparability of self from the community, which is consistent with common knowledge of African and indigenous cultural values of communality and family—values that are reflected in Black food practices from cultivation methods to food preparation and consumption practices. From this introductory chapter, another theme emerges that is echoed throughout the book; that is, the simultaneous and wholly paradoxical devaluation and appropriation of "Blackness." I use quotes intentionally here because, at least within the realm of appropriation, it seems to be both the essence of Black identity and the sensationalization of it that are appropriated and capitalized on by neoliberal entrepreneurs and food "visionaries," as are illustrated well in chapters 6 and 7.

In chapter 1, Reese discusses her recent work on food access and food memory among Black residents of Washington, D.C.,'s historically Black communities. She describes the glaring economic disparities of these areas and how the rise of the corporate food regime and subsequent gentrification destroyed local food economies. Reese points to several examples from her research on the resilience of these now divested neighborhoods of concentrated poverty and how visionary local food entrepreneurs are operating small businesses to meet community food needs. Although these businesses are clearly not without their

challenges, they help nourish the community while restoring community ties and a sense of belongingness.

Reese also mentions two interesting concepts that she refers to as a "barometer of authenticity" (p. 38) and "(in)visibility" (p. 39). These concepts are a very useful way to articulate the difference between authentic cultural experiences (food and otherwise) from those like the ones Billy Hall (chapter 6) and Judith Williams (chapter 10) describe happening in Florida and other places where local food cultures are being appropriated by and misattributed to the innovation of largely white chefs. The term "(in)visibility" can certainly be linked to cultural appropriation through a sort-of "hiding in plain sight" narrative of excuse for the misattribution of Black food culture. Reese shows that Black people in these neighborhoods are neither waiting for nor expecting the government to provide the economic support that the neighborhood needs, but rather are taking local development into their own hands in the best way that they know how. Although much of the content of this chapter stems from Reese's previously published work, it does not feel like a repeat of the same content but rather a valuable supplement to it.

In chapter 2, Gillian Richards-Greaves takes us on a road trip to a small town in South Carolina. Through small details about her family's history and connection to the land there, she makes the reader feel right at home. She traces the history of the Gullah Geechee community who live in this region and their distinct food culture that has been preserved over generations from the rapacious hands of mainstream American historical actors. On page 56, the author references a beautiful quote by Psyche Williams-Forsen on the communicative and multidimensional power of food—a cultural reality that Richards-Greaves demonstrates by amplifying the voices of community members who are active participants as both producers and consumers in the local food economy. The field- and farm-to-table food culture of this hardworking community gives residents not only the physical nourishment they need but also maintains a connection to Black cultural heritage and community relationships. These critical defenses, she seems to

argue (and I agree), prove important under the constant twin threats of racial capitalism and neoliberal development.

Moreover, in chapters 3 and 4, authors Analena Hassberg and Hanna Garth, respectively, continue in this notion of food as a mechanism of Black self-defense by tracing the “early seeds” (Hassberg, Chapter 3) of modern food justice to its roots in Black liberation in Southern California. Hassberg notes the long history of Black food culture being a means of classification and judgment as well as the myriad abuses of the food system against Black bodies. These abuses are well illustrated through the malnutrition-obesity paradox existing in so-called “food deserts” and the community land loss resulting from externally driven land grabs in low-income neighborhoods. She provides a thorough review and a fresh perspective on the grassroots work of the Black Panther Party’s oft-cited Breakfast Program, relating it both to the work of other contemporary food justice organizations and to the fear-induced responses of the federal government. Garth also helps to illustrate the indelible legacy of the Black Panther Party’s food justice activism by centering the work of Community Service Unlimited—a Los Angeles-based nonprofit that was initially part of the organization. Even more interesting, though, is the author’s self-reflection early in the chapter. She tells an anecdote about an experience she had at a speaking event on healthy food with a local nonprofit and how both her own comments and those of the student participants about their favorite foods were disparaged by the individuals leading the group. Her brief retelling of this story was particularly powerful in demonstrating the subconscious, but nonetheless harmful, effects of anti-Blackness in the so-called healthy food movement. She eloquently states, “I wondered how the organization might be utilizing my Blackness to legitimize its work while at the same time policing the way in which I express my Blackness and engage with Black food culture” (p. 109). This reflection, both critical and familiar, is an important reminder that even the most well-intentioned individuals can reinforce racialized ideologies within the food system.

Chapters 5 and 8 cover the food system and

grocery store context in Detroit, Michigan. In chapter 5, Newman and Jung discuss what they refer to as the “transactional politics” of mainstream food justice and alternative food movements—that is, the centrist, neoliberal approach whereby food insecurity in the city is seen as market failure and a business opportunity rather than a human rights or “human decency” issue. Interestingly, they discuss the “moral meaning of economic exchange,” implicitly suggesting that there is a common standard of human worth which our food systems ought to ascribe. I am not sure it is possible to introduce such a fundamentally metaphysical term as “moral” into the discussion without engaging the disciplines of theology and philosophy in which it originates. One would think that such a basic, taken-for-granted concept as human value ought not to be controversial, but alas, it seems to be so, particularly as it relates to the food system injustices experienced by low-income Black and brown people in America and throughout the Global South. Newman and Jung provide empirical insights from Detroit locals about their perspectives on Whole Foods Market and its dominant presence in the city, ending their chapter with the poignant question, “Can one still participate in the moral economy that has sustained Black communities for generations while adhering to a pure market logic?” (p. 151). More than likely, the answer is no. Monica White’s contribution in chapter 8 seems to assent to this conclusion. In it, she illustrates, through the lens of ecofeminism, how Black women growers of the Detroit Black Community Food Security Network use traditional food cultivation in the city to combat the myriad structural inequities that harm the wellbeing of Black communities.

Furthermore, Billy Hall and Kimberly Kasper’s chapters on Miami, Florida (chapter 6), and Memphis, Tennessee (chapter 7), respectively, remind us of the value of critical self-reflection and personal stories in research. I found the reflexivity of both authors deeply refreshing, given how so much of academia still subconsciously nurtures positivistic research values and norms that eschew subjectivity. Hall’s chapter provides an important reflection on the ways in which Black food culture has been re-branded and repackaged to appeal to an affluent,

largely white “out-of-towner” clientele. As he points out, this relabeling comes with benefits for some local businesses that are included in this new “racial redevelopment machine” (Wilson, 2018, as cited by Hall, p. 160), and creates burdens for many others that, perhaps intentionally, are excluded from it. The strategy being implemented in historic Overtown, rather than in the chapter itself, bears the unmistakable appearance of top-down, neoliberal development with a faint whiff of minstrelsy. Meanwhile, In Kasper’s chapter, I thoroughly enjoyed the “smoke and fire” metaphor that she shares from one of her interviewees. Her chapter gave me a much greater appreciation for and respect of barbecue culture, and she left me convinced that the best barbecue I have ever tasted is mere child’s play compared to the handiwork of Memphis’s legendary pitmasters.

By the time I reached the final chapters on Black land loss (chapter 9) and the Mango Gang (chapter 10), my head, heart, and belly were already full of warm taste memories. I would have liked to

have seen the discussion of the *Pigford v. Glickman* (1999) case discussed in light of current proposed federal legislation like the Justice for Black Farmers Act; however, this was likely not possible given the timing of the bill’s release. Otherwise, I am glad this chapter was included because land justice is so fundamental to the aspirations and vocalizations of Black food systems activists across the country. The final chapter provided an experiential immersion into Caribbean food culture. The author discusses interethnic hierarchy within the broader Afro-diasporic community, which is something worth discussing further, perhaps through other disciplinary contexts.

In all, *Black Food Matters* is an excellent read, illustrating the intersection between Black food studies, urban political economy, and equitable development. I recommend it for any academic or lay scholar interested in these subject areas. Practitioners and community activists may also find it useful in their education and advocacy work. 

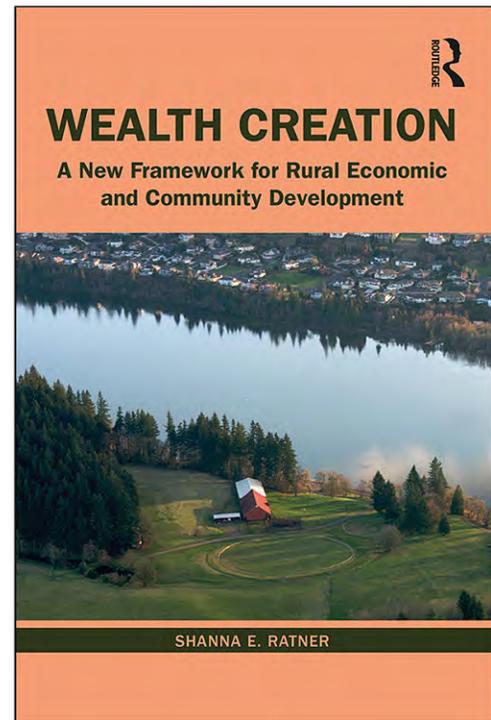
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Thinking better about rural wealth creation and retention

Review by David L. Kay*
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Review of *Wealth Creation: A New Framework for Rural Economic and Community Development*, by Shanna E. Ratner. (2020). Routledge. Available as ebook, hardcover, and paperback; 174 pages. Publisher's website:
<https://www.routledge.com/Wealth-Creation-A-New-Framework-for-Rural-Economic-and-Community-Development/Ratner/p/book/9780367257422>



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For some decades now, the practices of economic and community development have increasingly intertwined. This has largely involved a rebalancing of the economic and community portions of the mix to give increasing prominence to the community side of the ledger. In their decade-and-a-half-old article, *Rethinking Community Economic Development*, Shaffer, Deller, and Marcouiller (2006)

illustrated this in their classification of successive waves of dominant community economic development (CED) theory and practice: export base, business retention and expansion, collaboration and partnership driven, and cluster development.

Shanna Ratner's 2020 book *Wealth Creation: A New Framework for Rural Economic and Community Development* comes from one of the leading developers and practitioners of a fifth-wave approach that is beginning to lay a legitimate claim to the respect of academics, professionals, and community members alike. In 158 pages, Ratner's slim and accessible volume does an admirable job of summarizing a synthetic approach that is both

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informed by theory and steeped in decades of participant-observation and learning-by-doing. The author, often addressing the reader as “you,” as if in the training workshops she has frequently provided, explicitly aims at writing for those with few degrees of separation from CED practice: “policy makers, practitioners in economic and community development, teachers, students [including undergraduates, I would specify], financiers and funders...” (p. viii).

Ratner draws upon a heterogeneous array of applied rural CED and systems research, but typically to support a point in her narrative arc rather than in a more muscular effort to prove the point. The “WealthWorks” approach, as described in the book, has enough of a track record to offer a trove of success stories, and the author generously interleaves her book with insights garnered from case studies, especially those from the Ford Foundation’s eight-year experiments with the approach in Central Appalachia, the Deep South, and the Lower Rio Grande regions of rural America. Readers of this journal will also appreciate that while the phrase “food systems” is absent from the *Wealth Creation* index, the book draws on the WealthWorks focus in these regions on food system and forest products, along with initiatives in the housing, energy, and finance sectors.

I would also remark here that while both the “rural” and the “local” figure extensively and with a strongly positive valence in Ratner’s book and professional history, her centering of the importance of scale underscores her pragmatic commitment to regionalism and her recognition of the significance of globalization, along with her misgivings about autarky. In fact, Ratner’s primary allegiance is to forging connections that serve to overcome systemic inequities, as encapsulated in her assertion that, “Economically marginalized places and people will stay poor unless they are connected to larger economies” (p. 5). Ratner is a Donella Meadows Leadership Fellow, and that tradition of systems thinking offers a thread that binds together the different strands of the book.

As heralded by the logical flow of the book’s chapter titles, a small number of big concepts are arranged to create the framework that defines the

distinctive approach to development presented in *Wealth Creation*. Some among the 10 chapters mapping the territory Ratner will survey highlight her central themes: What is/are Wealth? Wealth Creation Value Chains? How do ownership and control change the game? What does it mean to be demand driven? Other chapters dissect the roles of scale, technology, investors, impact measurement, and value chain coordinators in wealth creation. Many of these are worthy of commentary longer than is possible here, and the readers will appreciate engaging with the text themselves. However, I want to highlight with approval the emphasis given to the “critical roles of wealth creation value chain coordinators and coaches” (p. 138). Ratner both recognizes and advocates that fully equipped organizations and individuals with all the requisite attributes are essential to sustainable development and systemic change, while acknowledging they are scarce. Her experience-based reassurance is that the capacity to grow into these roles is inherent in many local and regional organizations and can emerge if they are offered the right kind of “training, coaching, and support” (p. 145).

Overarching all other concepts marshalled by Ratner is her definition of wealth and its significance in “wealth creation value chains.” Unlike conventional chains that measure the value added at each stage of production in narrow market metrics, wealth creation value chains incorporate the “full range of values consumers want to support” (p. 29). In practice, WealthWorks adapts the “community capitals” precepts developed in the 2000s (Emery & Flora, 2006) which appropriated narrower economic conceptualizations of capital and applied them to a broader array of market and nonmarket assets or capitals (social, natural, etc.) that support CED. Importantly, this enables the deployment of a “wealth matrix” to draw attention to and steer accounting toward the effects of investments in multiple stocks of capital, each of which supports community and individual well-being, and perhaps most crucially draws attention to synergies and trade-offs between capitals. Ratner’s adaptation slightly redefines some forms of capital and adds an eighth (“intellectual” capital), arguing that “investing in intellectual, individual and social capital ... has proven to be the starting

point for wealth creation in the poorest areas of rural America” (p. 11).

Accepting an inclusive definition of wealth leads in a straight line to the need for better wealth measurement, “never a simple quantitative process” (p. 132). The chapter on measurement, in harmony with the overall WealthWorks approach, proposes guidelines and considerations for measurement of each form of capital rather than offering a list of decontextualized “correct” or “best” measures. Ratner’s advocacy for measurement emphasizes not just the accountability that measurement enables, but also its contributions to learning and improvement.

Wealth Creation is full of gestures of boundless ambition, but all are ultimately grounded in an earned pragmatism. An example of the ambition from an apt musing in the preface: “What would happen if we could reinvent capitalism so the invisible hand becomes visible?” (p. viii). In response to her own question, Ratner makes a compelling if challenging case for a thoroughgoing decommodification of market relationships, coupled with an argument for the acceptance of a need for an even more thoroughgoing understanding of (potential) market demand. She aims broadly to “transform the way we think and approach our world and to produce positive changes at meaningful scale” (p. 25). But pragmatism infuses her concluding chapter: “Transforming market relationships cannot happen without building actual relationships between people. . . . WealthWorks is not a silver bullet; it is hard work without guarantees” (p. 157).

As is perhaps inevitable in a brief book of this nature, the reader may sometimes feel that certain ideas and assertions are too scantily clad to be as authoritative or set in context as they might have been in a longer work. What wisdom have WealthWorks practitioners gained that is shared, or not, with practitioners of another increasingly influential approach to systems change, namely “collective impact” (see Hoey, Colasanti, Pirog, &

Fink Shapiro, 2017), for example in comparing the roles of “value chain coordinators” and “backbone organizations”? How should the reader think about the lack of explicit attention to what is known about “entrepreneurship,” whether private-sector or social? What is the relationship between WealthWorks and the Rural Wealth Creation approach that for some years now has been elevated, adopted, and evaluated by the U.S. Department of Agriculture (Pender, Marré, & Reeder, 2012)? Does the book’s worthwhile and important emphasis on measurement of capital stocks, and on changing “mindsets” in order to make “the larger system visible” (and more), demand too much investment in what some might label “capacity building” to make WealthWorks itself scalable? In other words, is the approach too demanding to be institutionalized and routinized, or might it lend itself to being widely reproducible in practice?

During Shaffer et al.’s review of leading CED approaches up to the turn of the last century, they raised into prominence two essential CED tasks threading through all: understanding the full range of choices available and engaging collaborators in building a long-term strategy. These tasks involve exceptional openness to new ideas and new relationships. Each of the tasks, too often approached casually or taken for granted, requires motivation, persistence, adaptability, communication, and an unadulterated commitment to hard work. The wealth creation framework advocated for in Ratner’s book, informed as it is by a community development philosophy, does not offer a cut-and-dried recipe for CED success. However, as emphasized in Ratner’s title, it does offer a valuable framework for those involved in complex development systems. *Wealth Creation* can guide toward success those individuals and organizations working for better, more equitable, and more sustainable personal and community futures—so long as they are prepared to actively embrace the prospect of inevitable challenges and are imbued with a knack for learning by doing. 

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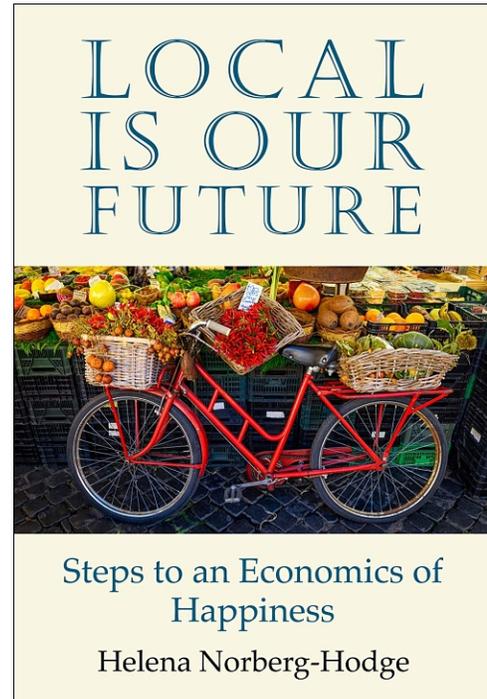
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From globalism to localism: How structural economic shifts can support the local food movement

Review by Emily Duncan *
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Review of *Local Is Our Future: Steps to an Economics of Happiness*, by Helena Norberg-Hodge. (2019). Local Futures. Available as ebook and paperback; 160 pages. Publisher’s website: <https://www.localfutures.org/publications/local-is-our-future-book-helena-norberg-hodge/>



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Local is Our Future was published shortly before the rise of the COVID-19 pandemic, yet it makes a timely contribution critiquing economic globalization given the experiences of 2020. It emphasizes the need for shorter supply chains and champions local food systems by focusing on the

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structural forces that currently control the food system.

In the first three chapters, Norberg-Hodge explains and details the costs of economic globalization, which provides an adept introduction to understanding the structural impacts of financial deregulation on health, food security, environmental consequences, and growing inequality. The fourth chapter covers a topic that might seem unlikely to be included in a book on local futures, as it describes the rise of extremism, yet this is a crucial analysis for current events. This book was published before the Black Lives Matter demonstrations that occurred around the world in summer 2020; however, it provides a contextual

backdrop for how the globalized financial system promotes economic insecurity that can lead to the adoption of a false narrative by the far right, as observed by the backlash to BIPOC (Black, Indigenous, and People of Color) communities demonstrating the need for increased equality.

Chapters 5, 6, and 7 provide arguments for localization through pertinent examples of grassroots initiatives of local food enterprises. This section is important because localization can often be romanticized without describing the actionable steps needed to work toward this goal. In this case, the author clearly lays out the policy changes required to move toward a local future, including updating trade treaties, financial regulation, and taxation policies, among others. These chapters also demonstrate that the local food movement can lead other sectors, such as energy, finance, and education, toward improved governance structures. The eighth chapter spells out common objections to localization, which helps to build the argument for a local future by addressing concerns. These objections to localization include the common perceptions that globalization is needed to alleviate poverty, that cities are more efficient, and that fair trade can ameliorate some of the problems of globalization. Norberg-Hodge addresses these concerns by explaining that, in fact, globalization has led to poverty in many areas, cities require huge amounts of resources for energy and waste disposal, and while fair trade standards can offer guidance, ultimately production should be geared toward local consumption.

The ninth chapter returns to globalization, discussing more evidence of its drivers. It would be better situated perhaps in the opening chapters on this topic, as it feels a bit out of place in the later section of the book. Finally, the last three chapters (10–12) appeal to the reader's emotions through a nostalgic rethinking of past economies, a call for 'big picture activism' and a reiteration of the proposed movement toward an economics of happiness through localization. While a nostalgic strategy is unlikely to appeal to any technologist readers, the 'big picture activism' message has widespread appeal. It is a call for informational campaigns that challenge assumptions about globalization and start to construct a new narrative about the realities of

the economic and environmental crises. Ensuring that people have an understanding of the consequences of globalization is the first step to changing the system. The book finishes with a dialogue between the author and the well-known proponent of small-scale agriculture, Wendell Berry. This conversation does not present new information and primarily serves to agree with the arguments put forward in the book. Berry's contribution stylistically might have been more informative to readers as a foreword to the book or with quotations worked into the chapters.

Overall, while this book is less likely to appeal to an academic audience because it does not feature rigorous peer-reviewed evidence, it is highly useful to provide an introduction to the topic of localization given the straightforward arguments, clear examples, and attention to counterarguments. This book will make proponents of globalized agriculture reconsider the possibilities of local food systems, as Norberg-Hodge draws on important arguments developed by critical food scholars. For example, she highlights the fact that we already produce more than enough food globally, yet close to 800 million people go hungry (Patel, 2012; Tomlinson, 2013) and that there needs to be a focus on a portfolio of solutions that support local food, address unregulated markets through policy, and create more equity in the food system (Fraser et al., 2016). For those working on the frontlines of the local food movement, the clarity of this book is likely to reinvigorate efforts to build and sustain local food endeavors.

A prominent example throughout the book is the author's own experiences observing the changes globalization brought to a small rural community located in Ladakh, in the much disputed territory between India, Pakistan, China, and the Tibet Autonomous Region. This is an example that would be better supported with a critical reflection on positionality, as Norberg-Hodge runs the risk in a few instances of essentializing village life in the Global South. She reveres what she refers to as the "old culture" and assumes that this community was better off without modern developments. As she is a Swedish woman who is not part of this community, it is perhaps a presumptive position that does not capture the nuances of life

in Ladakh. While some of these communities might be exemplary in how they embrace local food systems, there is undeniably also a need for globalized technologies to improve child and maternal health and reduce the drudgery of some agricultural tasks.

This book lays out a clear blueprint for how to take ‘steps to an economics of happiness’ through

changing the structural forces that shape our food system. These arguments help to provide a more balanced approach to advocating for a local food movement, when often consumer agency is placed at the forefront of change. The hope of a more local future based on an economics of happiness is what is most needed in these highly uncertain times.



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