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Scaling up through economies of community

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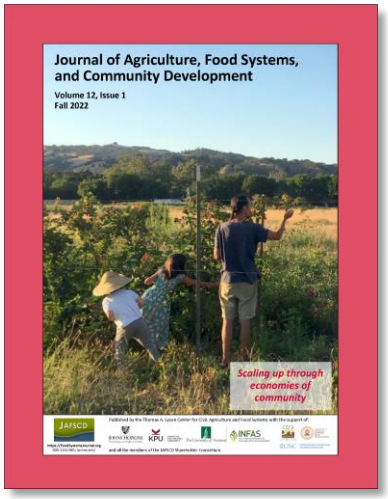

On our cover: Kanoa Dinwoodie (at right), the owner and operator of organic-certified Feral Heart Farm in Sunol, California, shows children how to properly harvest blackberries. Kanoa specializes in seed production and diasporic Asian crops. He participated in the "agroecology encounters" research described in author Antonio Roman-Alcalá's commentary in this issue, "Five practical strategies for those who work for food systems change."

Photo by Antonio Roman-Alcalá

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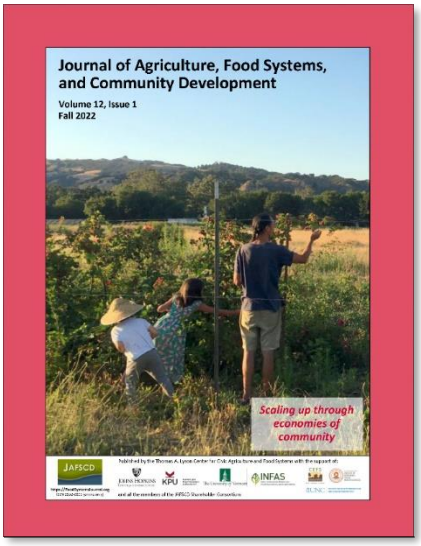
IN THIS ISSUE
DUNCAN HILCHEY

Scaling up through economies of community



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This fall of 2022 issue includes open-call papers on a wide range of food systems topics, with a cluster focused on the concept of economies of community. Economies of community occurs when stakeholders in a collective action project or program scale up, not by growing individually, but by growing as a group—by treating each other as equal partners, maintaining transparency in communications and in other transactions, and generating regular feedback for continuous improvement. Several examples of economies of community are provided in this issue.

We begin with THE ECONOMIC PAMPHLETEER column, in which **John Ikerd** makes crystal clear to us how affordability and accessibility of good food for all could well be a key to the ecological, social, and economic sustainability of local and regional food systems.

Next are commentaries from activist-scholars. Freshly minted Ph.D. **Antonio Roman-Alcalá** offers an optimistic view of the future of food systems in his *Five practical strategies for those who work for food systems change.* Similarly, **Marco Ginanneschi** proffers a thoughtful take on regional food systems as a "third way between the corporation model delivering standardized food and our idealized imagery of vegetable growers and home chefs" in *Manifesto for a regionally oriented food industry*.

In our first peer-reviewed paper, entitled *Economies of community in local agriculture: Farmers in New London, Connecticut, respond to the COVID-19 pandemic,* **Rachel Black** and **Adalie Duran** show how direct engagements between consumers and producers made it possible to nimbly make adjustments to thwart some of the worst impacts of the pandemic.

On our cover: Kanoa Dinwoodie (at right), the owner and operator of organic-certified Feral Heart Farm in Sunol, California, shows children how to properly harvest blackberries. Kanoa specializes in seed production and diasporic Asian crops. He participated in the "agroecology encounters" research described in author Antonio Roman-Alcalá's commentary in this issue, "Five practical strategies for those who work for food systems change."

Photo by Antonio Roman-Alcalá

Next, **Ronan Le Velly**, **Mathieu Désolé**, and **Carole Chazoule** use a hybrid intermediated beef value chain in France to underscore three characteristics of partnerships in *How to create an intermediated local food system partnership? Collective performance, collective negotiation, and collective learning*.

Continuing our informal theme, **Laura Florick** and **Chul Hyun Park** apply Darnhofer's farm resilience framework to reveal how a group of local farming operations and smaller-scale value chain partners appeared to be more able to adjust to challenges posed by COVID-19 in the Northwest region of Arkansas than other farmers with less community collaboration in *A pilot study exploring the impacts of COVID-19 on small-scale direct marketing farmers in Northwest Arkansas and their responses to the pandemic.*

Next, *Communication and building social capital in community supported agriculture* by **Ella Furness**, **Angelina Sanderson Bellamy**, **Adrian Clear**, **Samantha Mitchell Finnigan**, **J. Elliot Meador**, **Susanna Mills**, **Alice Milne**, and **Ryan Sharp** reveals how CSAs are fertile ground for building food system resilience through bridging capital (connecting people who do not know each other) and bonding capital (building personal relationships), as well as linking capital, which connects people of different social statuses.

In her reflective essay entitled *Sustainable food procurement by the University of California's health systems: Reflections on 10 years and recent COVID-19 challenges*, **Sapna Thottathil** describes the results of the sustainable procurement goals and practices of the University of California's healthcare system from 2009 to 2021—a relatively long stretch of data to study in the food systems literature.

The above papers reveal the power and potential of economies of community. However, an economies of community approach still has vulnerabilities to external threats. In *Adaptations and innovations: Analyzing food system organizations' responses to the ongoing COVID-19 pandemic*, **Colleen Hammelman** and **Dylan Turner** discover that while many positive innovations and quick responses were generated during the height of the pandemic, ongoing challenges from the mainstream food system that limit the ability of stakeholders to pursue transformational change.

In the next group of papers, we shift the issue's focus to food system policy analysis, although one might draw connections to the role government can play in fostering economies of community.

Amy Carrad, **Lizzy Turner**, **Nick Rose**, **Karen Charlton**, and **Belinda Reeve** find that local government policies are emerging to support resilient food systems, but still need encouragement and financial support from larger state and federal government to be sufficiently robust in *Local innovation in food system policies: A case study of six Australian local governments*.

In *Sustaining New England's iconic tourism landscapes: An exploratory study to examine perceptions of value from farmers and fishermen,* **Caroline Paras**, **Tracy Michaud**, and **Matthew Hoffman** put the spotlight on how traditional dairy farming and loberstering industries could benefit from and maximize their contribution to the regional economy through public investments in agritourism and "aquatourism."

Next, **Chantelle Dacunha**, **Eric Ng**, and **Sarah Elton** present an analysis of Canada's new national Food Guide and see the potential for nationwide transformation in diet equity and sustainability in *The School Food Solution: Creating a healthy school food environment with Canada's Food Guide.*

And finally, In their reflective essay, *A decade of the* Missouri Hunger Atlas: *Information for action*, **Steven Henness**, **Bill McKelvey**, **Darren Chapman**, **Gloria Mangoni**, and **Mary Hendrickson** discuss the process of creating their state-of-the-art Atlas, the choice of indicators and data acquisition, the evolution of the *Atlas* over time, and how various groups use the *Atlas* or policy and action.

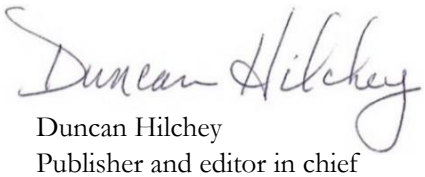
We wrap up this issue with two book reviews. **Lars Chinburg** reviews *Perilous Bounty: The Looming Collapse of American Farming and How We Can Prevent It* by Tom Philpott. And **Matthew Hoffman** reviews the newly revised edition of Philip Howard's *Concentration and Power in the Food System*.

In this issue we learn that food system–based collective action projects and programs can benefit from economies of community approaches. The cases presented in this issue clearly show that building scale through social capital in local food systems not only helps address a short-term crisis like a pandemic, but

when combined with other capitals supplied by government and business sectors, communities can move closer to the goal of sustained, long-term food security and equity.

Let us hope that another pandemic is not necessary to teach this lesson.

Peace, health, and happiness to all,



Duncan Hilchey
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THE ECONOMIC PAMPHLETEER
JOHN IKERD

The challenge: Making good food accessible

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In a previous column, I made the case that enough wholesome, nutritious, and sustainably produced food is affordable for everyone (Ikerd, 2022). However, the fact that good food is *affordable* for everyone doesn't mean good food is *accessible* to everyone or easy to locate, acquire, and prepare. For many, accessibility is a greater obstacle than affordability, and those who face the greatest challenges of affordability also face the greatest challenges in accessibility.

As I pointed out in my previous column, farmers receive an average of only about 14% or US$1,120 of a typical US$8,000 household food budget. The rest, US$6,880, goes to pay the costs of processing, packaging, transportation, advertising, and other marketing costs (Ikerd, 2022, p. 3). Some of these marketing costs are necessary to transform farm commodities into finished food products and thus cannot be avoided.

Also, prices paid to local farmers may be higher because their costs of production may be higher than costs of industrial production. Sustainable farming is "management intensive," meaning that productivity depends more on farmers'

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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*

management skills and less on purchased inputs, equipment, and technologies (Ikerd et al., 2021). Unlike industrial farming, the size of sustainable farms cannot be increased by simply investing more capital. The direct costs per unit of production may be less, but it is more difficult to scale up sustainable production. Thus, sustainable farmers often need higher prices to cover higher per-unit costs of labor and management.

Regardless, if fewer meals are eaten away from home and unnecessary marketing costs are avoided by buying more fresh and minimally processed food locally, even households that rely on government food assistance can afford enough good food. Home gardens can reduce the need to buy food and increase the affordability of good food acquired elsewhere.

However, the foods sold by local farmers typically are not as convenient or easy to locate, acquire, or prepare as foods purchased in restaurants and supermarkets. Even raw and minimally processed foods in supermarkets aren't as accessible as highly processed and pre-prepared foods. For example, it may cost anywhere from US$0.75 to US$1.50 to make a loaf of whole-wheat bread from scratch at home. A similar loaf would cost anywhere US$2.50 to US$5.00 in a supermarket or artisan bakery (Stephanie, 2017). However, the potential savings are irrelevant if the consumer doesn't know how to make bread or doesn't have an oven. The raw and minimally processed foods provided by local farmers or supermarkets is not accessible unless consumers have the capability to locate, acquire, and prepare food at home.

Economist Amartya Sen was awarded a 1998 Nobel Prize for his work in welfare economics linking individual capabilities with individual freedoms. Sen referred to "poverty as capability deprivation" (Sen, 1999, p. 87). His work documented that increasing individuals' capabilities increases their abilities to earn incomes, and abilities to earn higher incomes increase opportunities to further expand individual capabilities. However, simply affording opportunities for education and employment, for example, does not ensure access to education and employment. Many people with inadequate incomes are incapable of accessing the opportunities available to them to work or to learn. Individual capabilities depend not only on individual physical and mental abilities, but also on social, familial, and cultural motivation.

First, people must be highly motivated to change their individual food systems. Eating habits are difficult to break and food addictions even more so. Many people will not change their routines for acquiring and preparing foods unless they become convinced their current diet is threatening their health or actually making them sick. While it may be difficult to prove that specific foods are causing specific illnesses, there is little doubt about the link between changes in the typical American diet and increases in the rates of obesity, diabetes, hypertension, heart disease, and other diet-related illnesses. Parents should be encouraged to ask themselves whether they are willing to risk sentencing their children to lifetimes of chronic illness rather than devote the necessary time and effort to change the family's food system.

Many people will not change their routines for acquiring and preparing foods unless they become convinced their current diet is threatening their health or actually making them sick.

A lack of time is perhaps the most frequent excuse for not seeking out good food from local sources or preparing more meals from scratch at home. A lack of time is also a frequent excuse for not learning to process and prepare raw and minimally processed foods at home. However, a lack of time is actually a lack of the capability and opportunities to make effective use of time. Government programs should treat the time spent acquiring, processing, and preparing nutritious foods at home the same as time spent at work. In fact, the public benefits of time spent acquiring and preparing good food may be greater than that of the time spent earning money. Time spent learning to select and prepare nutritious raw and minimally processed foods should be treated the same as time

spent in job training—and may be even more important.

Home economics courses should be required in public schools to teach both boys and girls to select, process, and prepare nutritious food as well as to select, maintain, and use tools and appliances that empower people to do things for themselves. Affordable kitchen appliances, such as slow cookers, vegetable steamers, air fryers, and toaster ovens, make preparation of most basic meals at home far quicker and easier than in times past. New multicookers combine several different functions in a single appliance. Family mealtimes could be expanded to include food preparation—a time when family members share and practice their food preparation skills. Increasing individual and family capabilities for self-reliance not only reduces living costs, but also increases the self-esteem and earning capacities of family members.

Changes of this nature are currently not possible at state or federal levels, but they could be made within local communities. Government food assistance agencies and the large private food charities have been captured by corporate defenders of the industrial agri-food status quo (Fisher, 2017). They are unwilling or unable to tell the truth about the current food system and thus are unable to motivate fundamental, systemic change. However, people have the capability to change their own local food systems, if they choose to do so. As I have explained in previous columns, public utilities could be used to empower local communities to protect local food systems from the extractive and exploitative pressures of the industrial agri-food system (Ikerd, 2016).

People have the capability to change their own local food systems, if they choose to do so.

Increases in individual capabilities lead to increases in incomes, which lead to further increases in capabilities, which lead to further increases in income—in a virtuous spiral upward to nutritional and economic security, beyond the need for government assistance. A virtuous spiral to nutritional security could provide a template for increasing opportunities and capabilities to meet other basic needs for housing, transportation, healthcare, and other essentials for a desirable quality of life. The affordability and accessibility of good food for all could well be a key to ecological, social, and economic sustainability.

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JAFSCD COMMENTARY

Five practical strategies for those who work for food systems change

Antonio Roman-Alcalá *
California State University East Bay

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In 2021, I completed my Ph.D. dissertation research on Californian food movements (Roman-Alcalá, 2021b).[1] That participatory research process deepened my preexisting engagement in these movements as an organizer, urban farmer, policy advocate, educator, and writer. You can find the 400 pages of details online, but the main thrust of the research concerned how various subsectors of food movements describe and manifest "emancipatory" politics, and how they do and do not work across various lines of difference. Secondarily, it concerned how food movements oppose—but also potentially intersect with—resurgent right-wing politics. Converging across differences is an essential challenge and task in order to fundamentally transform the food system, push back right-wing gains, and achieve a broader emancipatory political agenda. In this short commentary, I offer some insights on these topics from the research and my over 18 years of involvement in emancipatory (food) politics.

Movements in California are obviously diverse, and they describe and manifest emancipatory politics in differing ways. Importantly, though, I char-

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Author Note
This commentary is adapted from my "dissertation-as-zine" (Roman-Alcalá, 2021a).

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Thanks go to my Ph.D. supervisors, my colleagues and comrades along the journey at International Institute of Social Studies (ISS) and elsewhere, and to all the movement organizers and activists with whom I have learned and sought change over the decades.

[1] See the full dissertation (Roman-Alcalá, 2021b) at http://hdl.handle.net/1765/137011; the defense presentation at https://eur.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=a3424b89-a700-4bcb-bdb4-adf700ebfcf6; and the "dissertation-as-zine" (Roman-Alcalá, 2021a) from which this commentary is adapted at https://www.iss.nl/en/media/2021-12-antonio-roman-alcala-diss-zine

acterize recent movements in California as moving toward more radical positions regarding race, capitalism, and the state—perhaps because of the increasing influence of perspectives of people of color (POC). In short, POC influence has shifted white-dominated food movement spaces and has increased the prominence of racially aware, capitalism-critical, and state-skeptical trends.

Because right-wing power is rooted in racialization, capitalism, and state power, these radical positions are well-suited to address the deeper origins of right-wing power to the extent that they can be shared across differences and brought to bear on practical political decisions and investments. Instead of reinforcing problematic institutions that reproduce inequalities and Othering[2] (such as capitalist enterprises or colonial-racist state structures), these politics can create new institutions of production, distribution, moral economies, and political decision-making; build and deepen the relationships that are essential for any long-haul struggle; and through processes of open-hearted dialogue (outside the structures of policy and funder mandates), they can effectively connect the various forms and experiences of marginalization, including that based on race, ethnicity, geographic origin, economic class, gender, radical political views, sexual orientation, and age. Such processes of dialogue can create a larger sense of "We" that nonetheless recognizes differences internal to that "We."

My research encourages us to value *non-state* positions in social movements, and not to dismiss these as inadequate (as much U.S.-focused literature on 'neoliberalism' in food movements does)—whether because they operate at a small scale, do not seek change primarily through the state, or use entrepreneurial strategies at times. This dissertation does encourage a cautious eye toward how and when groups involve themselves in state government and small business. This caution builds on previous criticisms of the "nonprofit industrial complex," of seeking change merely through forming farm and food enterprises that are viable within existing capitalist relations, and of the de-radicalizing effects of reformist government processes. Still, while engaging policy, nonprofit forms of organization, and social entrepreneurship can temper the transformative potential of food movement groups, the radical efforts I saw in fieldwork actively worked against this de-radicalization when they engaged in those strategies.

Knowing that the issues of addressing state power, creating viable food production units within the existing economy, and funding social change work will not simply go away because they are compromised and complicated, I propose five practical strategies for those who work for food systems change and want to advance the convergence of diverse movement sectors into a stronger, more unified political force. In brief, these strategies or approaches are: (1) doing the work of making change with humility (especially when the existing structures of power benefit you, at the expense of others), (2) starting work at the interpersonal level but always keeping in mind the structural conditions and issues, (3) sparking and advancing explicit dialogue on the relationships between dynamics of capitalism and Othering, (4) accompanying redistributive *talk* (which currently seems popular) with redistributive *action,* and (5) accepting and embracing the generative nature of conflict.

Let me offer more details on these.

1. **Working with humility:** The unpredictability of how movement convergence and political change occur demands an openness and humility from movement participants who seek collaboration across differences. Simply said, we can not always know how social change will happen, and so we should not act so certain about our particular approach. This humility is extra important for those with status and privilege, as the playing field is already stacked against those from marginalized and Othered backgrounds, and is tilted against more radical political positions and tactics. Hence: if you work on policy, or on USDA-funded projects to train new farmers, and if you are white, or well-educated, or upwardly mobile, you should *especially* be humble about your preferred 'the-

[2] "Othering" is a process whereby certain social groups are dehumanized, often to enable their exploitation in society; it can be racialized and/or be based on gender, sexuality, or many other markers of human difference.

ory of change' with regard to the work being done by other groups.

2. **Combining the personal and structural:** In this humility, action is rooted in relational (individual and interpersonal) work, but must move 'up' from there, recognizing that social structures always weigh upon us. That is to say, we are most effective when we connect with people, work with people, and build real and reciprocal relationships. This is the deep work of organizing, in contrast to the light touch of advocacy that simply displays grievances (e.g., online petitions or performative marches). But only working locally, with people you know or build relationships with, is not enough: we must bring into our discussions, strategies, and activities thinking about the social structures that influence how this relational work advances. This includes considering the structural influences on us as individuals, on our organizations, on the political environment, and on our options to try something new. This can also include being a bit more generous of spirit to others with whom you might not be on the 'same page,' but may at least be in the same book. When we acknowledge that larger forces make our (radical) food movement work very difficult, we can be less critical of others around us for their supposed blame for 'our' (collective) lack of success.

3. **Explicit dialogue on Othering and capitalism:** It is essential to pursue *explicit* dialogue to surface beliefs, values, tensions, and alignments—particularly with regard to various axes of Othering and effects of capitalism. From pursuing this work myself, I know that too often movement groups and nonprofits are discouraged from projects of 'aimless talk.' Dialogue between groups that is not directed toward policy outcomes or 'win-win' solutions desired by elites are rare in *funded* food movement work. We must make radical questioning of our conditions and our solutions common, in organic farming training programs, in food-justice grocery stores, in food co-ops, in urban farms, and so on. As Fred Moten and Stefano Harney (2013) describe it, we need to "renew our habits of assembly" and "study" together—this has *always* been the seedbed of movements for radical change.

4. **Redistributive action:** Lately, it has become more popular to call out injustice and to use the right words to describe it. A prominent example of this is the new prevalence of "land acknowledgments," where people introduce events at universities, think tanks, and the like by acknowledging that the event is taking place on unceded territories of this or that Native tribe. I call this "redistributive talk" because it redistributes (to some degree) the space of thought and discussion toward those who have been receiving very little for generations. This may be a good thing, but as many of my Indigenous sources told me, land acknowledgments are problematic when taken as a 'checkmark' to-do, unaccompanied by any action. Discourses to counter Othering must be accompanied by actions that redistribute resources, and language cannot serve as the main barometer of activist success. For land acknowledgments, these can be ended by pointing to active local Indigenous struggles and getting people to involve themselves. Action beyond words is especially needed that works against unequal relations *within* movement sectors *and between them,* and that builds in the here-and-now resources for collective action and community resilience. This is why mutual aid work, and the building of infrastructures of food and care outside the money economy (or at least, padded from it), are so important.

5. **Accepting conflict as generative:** Both dialogues about inequalities and injustices—and redistributive actions to rectify those—can elicit conflict, discomfort, and negative reactions. But these are necessary elements to transformative change, especially for the relatively privileged, and so movement participants should be less fearful of this generative conflict. Sometimes, they might even plan for it, and know that to the extent that the powerful are becoming uncomfortable, they are likely

doing their activism well.[3] Here I am inspired by the examples from a new book about scholar-activists against industrial agriculture in California. It is called *In the Struggle* (O'Connell & Peters, 2021), and I recommend it for those interested in how we can use knowledge, organizing, and institutional positions to bring down the empires of harm that characterize most of our contemporary food systems.

I hope that these five principles can help others navigate more effectively the uncertain, complex, and often emotionally taxing process of making social change. While it may seem at times like we face worse conditions than ever before, this research reminded me of historic precedents for today's struggles: that we are not alone, and that this road has been traveled before. And in exploring food movements today, the research gave me a surprising sense of possibility. For as the food movements of today are perhaps more radical than they have been in decades, they also appear readier than ever to counter divisive right-wing politics of racism, xenophobia, and authoritarianism, and to construct a radically different world. While that task has never been easy, it remains essential.

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[3] Not that in my use of 'powerful' here, I mean specifically structural power (like holding public office, being a boss in a firm, managing the labor of others, holding celebrity power), not simply being 'privileged' according to this or that group identification, which is too often the focus of conflict today. Movements are better off choosing enemies wisely, and not see(k)ing them everywhere (and especially not identifying enemies based primarily on externally vetted identity markers).

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JAFSCD COMMENTARY

Manifesto for a regionally oriented food industry

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In the movie *Snowpiercer*, Oscar-winning Korean filmmaker Oscar Bong Joon-ho portrayed the future of food as a brown gelatine bar made of insect proteins (Ramos-Niaves, 2021). According to Jacques Attali (2019), unless the current system changes, within a few years the great majority of people will eat only standardized and processed food. No pleasure will be left to their palate. Only the rich will be able to afford healthy, diverse, and tasty food.

It is a matter of fact that feeding a planet[1] that will soon be inhabited by 10 billion people requires an increase in yields and production levels (Marsden & Morley, 2014). If this is the future of agriculture, downstream processing could end up being managed by a few multinational corporations —the "food masters" (Liberti, 2016)—who are interested only in reducing the unit costs of production while delivering a limited set of standardized products to the world market. In this framework, food distribution will be greatly simplified, with stores competing solely for the best locations and paying no heed to the quality and variety of the product range.

Will it end like this? Not necessarily. We can still do something to avoid this outcome.

According to the European Union, consumers want food that is fresh, less processed, sustainably sourced, and possibly coming from shorter supply chains (European Commission, 2020). Considering an average food shopping receipt, these aspirations look "idealized."[2] In Italy, as in other nations, our shopping carts feature a high number of ready-to-eat meals, packaged products, and snacks. Forced to abandon the idea of producing directly what they eat, today's wealthier consumers satisfy their need for more natural foods *away from home*: for

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[1] "Feeding the planet" was the slogan of the 2015 World Exposition hosted by Milan, Italy.
[2] "Nous nous nourrissons de nutriments, mais aussi d'imaginaire [We feed on nutrients, but also on imagination]" (Fischler, 2001, p. 14).

example, dining in short-chain holiday farms (*agriturismo*), in hyperlocal restaurants (De Chabert-Rios & Deale, 2018), or at the table of star chefs who grow their own vegetables.

In this context, the food industry is still perceived as being mainly responsible for the loss of naturalness (Román et al., 2017), hyper-processing, and standardization of food. Its role in food safety and preservation is frequently forgotten, much like its contribution to feeding a world population grown from 3 billion in 1960 to 8 billion in 2022. The structure of the Italian food industry, however, is fundamentally different from the multinational corporation model: it is composed of more than 50,000 manufacturing companies with an average size of 8 employees (Cirianni et al., 2021).

Today, the ecological transition and its European underpinnings—the Green Deal and the Farm to Fork Strategy—pressure the components of the food supply chain to focus on sustainability, a circular economy, and zero climate impact. Our way of producing food is undergoing an unprecedented paradigm shift. Considerable funds will be employed to bring about this green revolution. However, the means to implement the transition are still a matter of debate. For Italy, it is a unique opportunity to strengthen the connections between agriculture, processing, distribution, and consumers' aspirations. Thinking regionally can help change the current food system in a strategic way (Ruhf & Clancy, 2022).

Despite being known as one of the best destinations for food lovers, when it comes to regional consumption of locally produced food, even Italy starts behind the curve. For example, recent research (Ferraresi & Turchetti, 2022) highlighted that Tuscan foods, produced entirely or in part in Tuscany, represent only 18% of the Tuscan diet,[3] a percentage common to most other Italian regions[4] (except Lombardy, Emilia Romagna, and Trentino Alto Adige, which are all above 25%). Such a low percentage has a series of explanations and can be fully understood only by considering the structure of national consumption and the functioning of the agricultural market, which is being pushed by the European Union to be more competitive. This number is not a direct expression of food self-sufficiency (Clapp, 2017), but it is closely linked to the way arable land is used at the regional level. In Tuscany, arable land is mostly devoted to grapevines and olive trees due to a widespread belief that these crops offer the highest economic return, thanks to exports, when compared to alternatives (see Figure 1).

This kind of specialization had been economically and socially valued until globalization was challenged first by the pandemic and then by the war in Ukraine. It has been a winning development model so long as regular trade flows allowed (a) the smooth functioning of long supply chains, (b) economic convergence among countries, and (c) the constant reduction of food prices everywhere (environmental costs excluded).

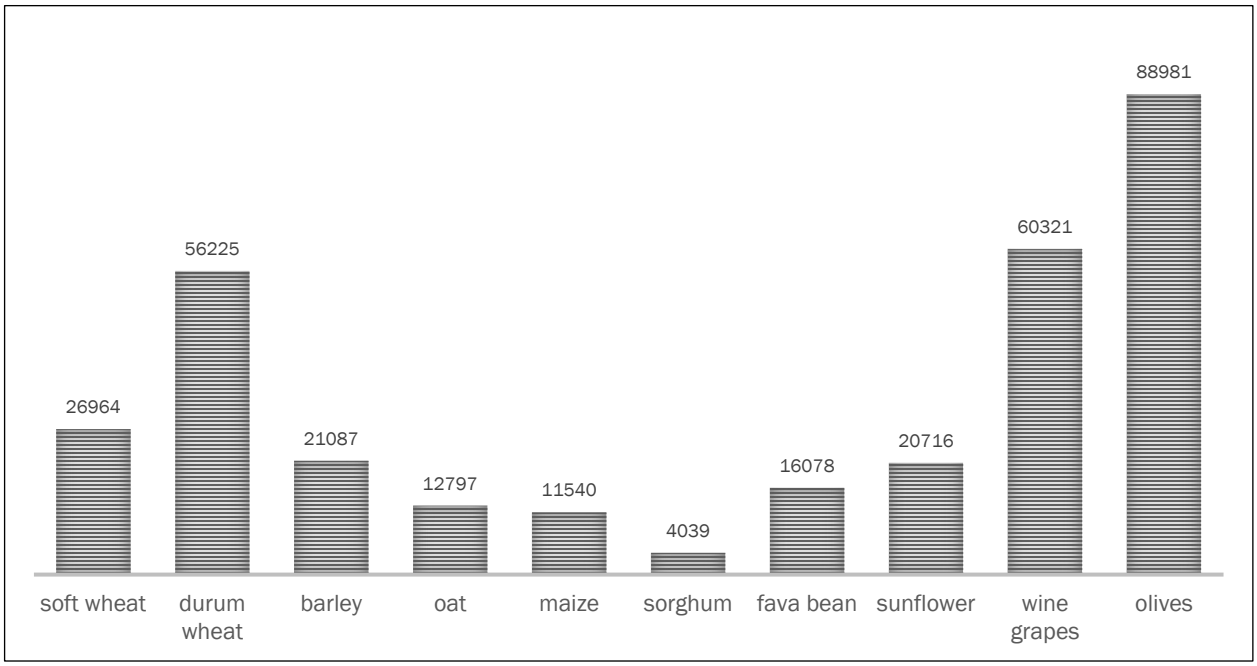
Nowadays this model shows several weaknesses (one being food security) and looks fragile. It is a model in which local food must be reintroduced and its consumption increased. Tuscans, and all Italians with them, should pursue a minimum objective of 25% of consumption supplied by regional food. This number is also an approximation of the level of intra-supply chain collaboration that can be reached by economic actors at the local level.

The need is for a cultural initiative to strengthen national and regional food supply chains. The initial step consists of building a common language for farmers, processors, and distributors. The fundamental word of this new lexicon is "territory." Consumers ask for local food, while farmers control crop management in the local territory: the challenge is to fill the gaps in processing and distribution. The keystone of the whole project is "gastronomic heritage." Several quality champions already contribute to the appeal and international diffusion of the food mark "Made in Italy": they are the 315 PDO (protected designation of origin), PGI protected geographical indication), and TSG (traditional speciality guaranteed) food products

[3] More precisely, Tuscany directly supplies only 18% of the food requirements of its 3.7 million inhabitants (alcoholic beverages not included).

[4] Italy is divided into 20 regions that enjoy political and administrative autonomy.

Figure 1. Top 10 Crops in Tuscany by Growing Area, 2020 (Hectares)



Source: Data processed from https://www.regione.toscana.it/-/agricoltura-in-toscana-dati-sintetici-2018-2020

under the European geographical indication scheme,[5] among which are Parmigiano Reggiano and Prosciutto di Parma. Their production value totals 7.3 billion euros (ISMEA-Qualivita, 2021), a remarkable accomplishment but only a fraction of the 170 billion euro value of the combined Italian agriculture and food industry (Cirianni et al., 2021). Italy needs to play to another asset, its gastronomic heritage, which relies on an array of more than 5,000 agricultural and processed foods drawn from local traditions. These are defined by a 1998 national law[6] that gave the Italian regions the right to list in a national register the names and specifications of local products and recipes—*Prodotti agroalimentari tradizionali* (PATs)—with at least 25 years of history behind them (Ginanneschi, 2022b). It is this varied repository of vegetable species, ingredients, and dishes that Italy must draw on, to bring about the necessary green conversion, increase the consumption of local food, and reach the 25% target share. Lucca's curly black cabbage, Certaldo's onions, Casentino's sheep cheese, the *pici* (a kind of fresh noodles), the *cecina* (a chickpea-flour pie), Lamporecchio's *brigidini* (anise-flavored wafers) or Livorno's *cacciucco* (a traditional fish soup) are just a few high-potential foods from the Tuscan basket of 464 PATs. Every Italian region has its list of champions to deploy.

At the operational level, there are several steps to take: researching PATs' functional properties, selecting the most promising ones, planting new crops, developing special processing techniques, informing consumers, and seeking European Union recognition for a trademark especially devoted to the PATs. Soon the Italian regions will decide on the necessary tools to be adopted to carry out the new Common Agricultural Policy (CAP): the time to implement this project is now.

But above all, for this policy to succeed, the attitude of the food industry is crucial. It will have to work closely with the regions and with farmers, be culturally capable of rediscovering the lost crops

[5] See an overview of the EU geographical indications and quality schemes at https://agriculture.ec.europa.eu/farming/geographical-indications-and-quality-schemes/geographical-indications-and-quality-schemes-explained_en#traditional-speciality-guaranteed
[6] D. Lgs n. 173/1998 (Art. 8)

of our ancestors, flexible enough to process even small product batches, cooperate with artisan producers, be digitally competent but socially aware, and, last but not least, be sincerely committed to the preservation of taste and traditional foodways. This is what I call "a regionally oriented food industry," a third way between the corporation model delivering standardized food and our idealized imagery of vegetable growers and home chefs.

This third way can gather support from all sides. However, as with every new idea, there will also be resistance. One could claim, for example, that only direct control over productive land guarantees the real naturalness of food: if this is the dream of a post-industrial society, it is also true that a short chain may derive "from a reduction of the steps in the supply chain shortening the product's route through the agri-food system" (Giuca, 2013, p. 12). Others could observe that there are already too many trademarks in the market and that adding a new category for the PATs risks only increasing consumers' confusion. However, the contrary is actually true. As Fischler (2001) correctly argued, "if we do not know what we are eating, it becomes more difficult to know what we will be but also who we are" (p. 70). In other words, the possibility of recognizing the PATs through a correct advertisement on the food label and on the store shelves can only reduce consumers' anxieties.

To develop a regionally oriented food industry, only a minimum effort is required. As Thaler and Sunstein (2008) would say, it is just a question of gently pushing economic actors in the right direction. One could consider a special set of research and development (R&D) incentives designed for this specific industry or an advertisement campaign to promote the PATs at the national and European levels. In exchange for this small public effort, consumers could have more sustainable foods on their tables, enlarge their spectrum of food choices, and recover old traditions together with a fundamental part of their cultural identity.

This type of food industry that is tradition-linked and local-ingredients-intensive could serve as a stimulus for a biodiversity-friendly and environmentally aware new generation of food processing in Europe and the world.

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Economies of community in local agriculture: Farmers in New London, Connecticut, respond to the COVID-19 pandemic

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Abstract

The COVID-19 pandemic highlighted the weaknesses of the U.S. national food system, with grocery store shelves emptied in March and April 2020 and COVID outbreaks reported throughout the summer of 2020 at meat processing plants across the country. Fleetingly, Americans turned to local farms to ensure they could access food safely in a time of uncertainty. This paper examines the economies of community that formed around local farms and how direct engagements between consumers and producers in the face of the pandemic deepened these economic structures that often put community well-being above profits. Within a capitalist system that prioritizes efficient mass production, economies of community illustrate that solidarity can improve local food system resilience. Based on qualitative and quantitative research carried out in the summer of 2020 in New London County in southeastern Connecticut, this research draws on ethnographic interviews with small-scale farmers who developed innovative ways to feed some of their community's most vulnerable members. Community economies show that we should not only depend on standardized large-scale farms and giant retail distribution; the American food system needs to continue to cultivate small-scale local production in order to improve resilience and food access. At present, the sustainability of producing and distributing food occurs at the farmer's expense. The government needs to support local food producers so they can continue to play an integral part in community well-being.

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Community Economies, COVID-19, Pandemic, Local Food Systems, Small-Scale Farms, Resilience, Food Access, Food Security

Introduction

In April 2020, as the COVID-19 outbreak began to spread throughout the United States, national news highlighted the empty shelves of local supermarkets. For instance, produce and meat sections of stores, which had been brimming with a variety of options, were totally cleared out. Images of these desolate stores became part of common imagery on the television and in papers, causing consumer panic and reported hoarding in the face of scarcity. The COVID-19 pandemic highlighted many of the weaknesses of the U.S. national food system and brought into question its resilience in the face of crisis (Anderson, 2020). As worries about the food supply escalated, we observed that Americans began to look beyond the supermarket for the first time in a long while. For instance, many in New London County turned to local farms to ensure they could access food safely in a time of uncertainty. This was also the case in many other places where local and alternative food systems provided a much-needed food supply during the pandemic (Nemes et al., 2021).

The growing season was not even in full swing in New England when farmers began to find innovative ways to deliver their goods to their new customers while figuring out how to make up for their loss of wholesale sales due to shuttered restaurants. What we witnessed was not only business innovation, but also the values and sense of community that is often at the core of small-scale farming. This paper examines the community economies that local farms and their customers created in this moment of crisis and how direct engagements between consumers and producers in the face of the pandemic deepen these economic structures that often put community well-being above profits. Within a capitalist system that prioritizes efficient mass-production, community economies illustrate that solidarity can improve emergency preparedness and improve local food system resilience. Based on qualitative and quantitative research carried out in the summer of 2020 in New London County in southeastern Connecticut (CT), we draw on surveys and ethnographic interviews with small-scale farmers who developed innovative ways to feed some of their community's most vulnerable members to better understand the strategies that farmers and their customers developed to adapt to the crisis and potential food shortages. This research demonstrates the ways in which local food systems are critical for resilience in the face of food insecurity and financial hardship. However, it also questions the sustainability of a way of producing and distributing food that often comes at the farmer's expense, as governmental support for local food systems remains inadequate and food prices stay artificially low. When investigated further, attempts at achieving food system resilience reveal inequities that a highly subsidized industrial food system has created. Community economies challenge the notion that the best way to produce and distribute food to people is through standardized large-scale farms and giant retail distribution, but it also shows how local food systems struggle to compete with conventional large-scale farming and distribution outside moments of crisis. This research will demonstrate that the interconnection between community members and farmers is a critical element for a more equitable form of resilience.

Much of the initial research on food system resilience and local responses to reduced food access during the COVID-19 pandemic has focused on conventional emergency food resources, such as food pantries (Hege et al., 2021; Schoenfeldt, 2020) and school food programs (Noyes & Lyle, 2021). There is also recent literature that considers how agroecological models might offer a more pandemic-proof food supply by focusing on small-scale, local production (Altieri & Nicholls, 2020). Additionally, studies are emerging that consider the responsiveness of farmers and policymakers to the challenges that the pandemic created for local food systems (Campbell, 2021; White, 2021). Only now are we starting to see work on the role of small-scale farmers in providing emergency food assistance to vulnerable community members and the resilience of these producers in providing food access during a pandemic (Little & Sylvester, 2022). This case study contributes to

the research on the impacts of the COVID-19 pandemic and other disasters on local food system resilience. It also contributes to the literature on community economy and alternate economic forms that function within capitalist systems as mutual aid in times of crisis. The pandemic provided a rare opportunity to understand what alternatives to dominant food distribution systems exist when there are failures of those systems and local actors are obliged to find solutions closer to home.

Economies of Community and Values-Added in the Local Food System

During our interviews with farmers in New London County, producers noted that they continued to cultivate their relationships with customers and other farmers, despite the challenges created by the pandemic and the necessity for social distancing. We wanted to understand how they maintained these relationships and what these connections meant beyond the business of growing, buying, and selling food. Our observations showed that market transactions have more than economic value: mutual aid, care, and community well-being were at the forefront of many of these exchanges. Julie Gibson-Graham's concept of community economy (2006) fits well with the ways in which we observed farmers acting at the heart of a resilient local food system, particularly in a moment of crisis. Community economy is a concept that considers economic interdependencies that resocialize economic relations. Gibson-Graham states that "resocializing (and repoliticizing) the economy involves making explicit the sociality that is always present, and this constituting the various forms and practices of interdependence as a matter for reflection, discussion, negotiation, and action" (Gibson-Graham, 2006, p. 88). What arises out of these place-based, personal economic exchanges that we saw happening at farms was an "ethical praxis of being-in-common" (Gibson-Graham, 2006, p. 88).

We chose to analyze our data within the framework of community economy over a community capitals framework (CCF) because a community economy framework more actively draws into question the exploitative functioning of the mainstream capitalist economic system, in particular alienation from production, and refocuses the discussion of a sustainable economy on conviviality and sociality. Community economy points to a more "ethical practice of economy" with a focus on "resocializing economic arrangements" (Gibson-Graham, 2006, p. 79). The process of resocializing local food systems actively constructs new forms of value.

Clark et al. (2020) call for a "reorientation of the term "value-added" to "value(s)-added" to capture facets of food and agriculture development linked to community wealth" (p. 189). This concept of "value(s)-added" looks at the values expressed through supply-chain relationships, particularly in short food supply chains (SFSC), and how bringing farmers closer to consumers contributes to transparency, clearer provenance, and quality. The values that are added through this proximity can include sustainability, commitment to the consumer-producer relationship, and potential supply chain flexibility. These elements of value proved to be particularly valuable during the first part of the COVID-19 pandemic when conventional supply chains were failing.

Socially embedded economic exchanges are also a way to revalue the labor of producing food, and they contribute to local resilience through a commonality of localism: people come to share their attachments to place through such things as their views of land stewardship. When there are opportunities for exchange, people sharing a locality come to realize that they are not all in that place in the same way, and an awareness of inequality develops. At the same time, we consider what Born and Purcell (2006) call the "local trap," which "assumes that a local-scale food system will be inherently more socially just than a national-scale or global-scale food system" (p. 196). Chapman et al. (2019) raise the concern that local systems, as alternative food systems that can lead to incremental change, do not "confront the power of the neoliberal state directly" (p. 117). While this research is concerned with the resilience of local food systems in the face of disruption from a major public health crisis, we note that the COVID-19 pandemic impacted various groups unequally, and resilience is also an unequal phenomenon. We define food system resilience as the ability of local supply chains to provide food for

local populations, in this case, the people of New London County, in the face of disruption (Pingali et al., 2005; Worstell 2020). Gibson-Graham's (2006) community economies encourage the consideration of the response of individual actors and smaller groups, particularly when resilience is uneven and where food insecurity is an issue for vulnerable populations.

During the pandemic, community supported agriculture (CSA) programs connected members but also reached into the broader community to include and offer mutual aid to food-insecure people in the group, acknowledging community interconnectedness. Farmers markets and direct-to-consumer sales from farms became essential services during the pandemic, and they offered some of the few ways in which people remained connected to their communities (Morales, 2020). The partial failure of the national and international food systems spurred social interconnectedness around food production and distribution in many New London County communities. Focusing on social embeddedness and resilience, Gibson-Graham's (2006) concept of community economy provides a useful frame for understanding the social aspects of a resilient, local food system.

Methods

In the summer of 2020 in southeastern Connecticut, remote qualitative and quantitative research was conducted in collaboration with Connecticut College student researchers Emily Driscoll, Melissa Avilez Lopez, and Mary DiMaggio. Normally, this research would have been conducted face to face, but we had to adapt our methods to respond to the pandemic-related health crisis to ensure the safety of research participants and researchers. We moved from what would have been high-touch research methods to a physically distanced, remote form of data collection, which challenged our desire to study social interconnections but also helped us to think through how people were staying connected using technology to overcome physical distance. An online survey was sent out to 50 small-scale farms in New London County. The survey consisted of baseline questions to understand the size, production, and sales methods of the farms. We then asked questions about price and distribution changes the pandemic may have caused. We also investigated farmers' participation in emergency food assistance and collaboration between farmers. In order to define a population for this study, we had to do an inventory of small-scale farms in our study area because there were no available data. We defined a small-scale farm as having 1–10 acres of farmed land, 1–10 employees, and diversified crops. The USDA (2021) defines a small farm as "an operation with gross cash farm income under [US]$250,000" (para. 2), but we decided this definition did not give us a clear idea of what it meant to be a small farmer providing essential food access to the local New London area during the pandemic. For instance, farms producing high-end mushrooms and specialty products such as microgreens contribute to the local economy, but they are not necessarily part of a resilient, accessible food system for all. In addition, many farmers were hesitant to discuss their actual sales figures. We decided to include all farms producing foodstuffs, beyond specialty crops.

This survey garnered only a 5% response rate, and we attributed low participation rates to the increased workload of farmers due to the pandemic and online fatigue. While our survey results were statistically inconclusive, the responses we received gave us information from which to develop questions for qualitative data collection. The survey helped us understand the main concerns of farmers who were adapting their operations to serve local communities during the pandemic. It is from the survey data that we began to focus on questions of emergency food assistance and mutual aid. We conducted semi-structured remote interviews with six farmers. For this article, we chose to focus on Full Heart Farm, Hunts Brook Farm, and FRESH New London because the experience of these farms best demonstrated different aspects of the economies of community we wanted to explore. Through focusing on specific farms, we can offer the ethnographic details and voices that bring to life the lived reality, ingenuity, and care that farmers practiced in the early stages of the pandemic. These are details that are not captured in statistical data alone and are critical to the study of economies of community, which are based on human connections, everyday life, and the stories that help

make sense of them. However, we use data from the three other interviews to contextualize these case studies. It is important to note that all participants in this research represent the producer perspective in the community economy framework.

All interviews were transcribed, and a system of codes was developed based on emerging themes. The transcriptions were coded, and this is where our focus on economies of community emerged and where we saw this as a central theme in the three interviews that are the focus of this article. However, we do draw on our survey data and the other interviews to support our arguments. We have quoted from the ethnographic interviews to give a first-hand perspective on the experience of farmers during this moment of crisis. By doing so, we hope to show the strength and vision of the people who were innovating and responding to community needs at a time when other systems were failing.

Full Heart Farm

In September 2020, we interviewed Allyson Angelini, the principal farmer and owner of Full Heart Farm, a small family farm that grows pesticide-free and organic vegetables, herbs, and cut flowers in Ledyard, CT. This farm prioritizes and values sustainability, making good food accessible to everyone, and working with other local, sustainable businesses. When the pandemic began in March, a cold month with unpredictable weather in Connecticut, many growers were caught off-guard, as this is the time when they are focused on seeding and planting. Angelini noted, "I started planting as soon as the pandemic hit, so we were rolling in the salad greens." There was much uncertainty in the sustainability of taking on new customers, as she had to take on the additional responsibility of educating these consumers about the local food system and how its produce differs from what one buys at a supermarket. Angelini was also concerned that public interest would decline if she could not harvest food quickly enough to meet demand.

As a response, Angelini swiftly began connecting with other local food producers, farms, and chefs to form a farm collective: "It's never been my belief that farmers can go at it alone. The local food economy is very dependent on that relationship … everything's connected." Over 30 local businesses got involved in this aggregation project, all with the goal in mind to help support one another's sales and to provide those in need with access to fresh food. Angelini made it a priority to streamline the aggregation process. Farmers and local producers submitted the list of products they could provide to the collective on Saturdays; online ordering opened to the public from Sunday to Tuesday; farmers and local producers prepared and delivered their goods to Full Heart Farm; curbside pick-up for customers took place on Friday. Although the farm collective was expensive and time-consuming for Angelini to manage alongside running Full Heart Farm, she emphasized that "the work was really meaningful" and had allowed for many local businesses involved to stay afloat for enough time to create backup plans and/or rescale their business to fit new social distancing guidelines by creating new forms of distribution that would be safe for both consumers and producers.

During this time, Full Heart Farm was also running its summer CSA program, which provides vegetable and flower shares to 100 families each week for 13 weeks of the summer. For the 2020 summer season, sign-ups began in March and quickly closed midway through the month. Angelini explained that normally shares sold out by April, but that this season there was "certainly more interest." Many people were contacting her about the possibility of additional shares; however, it was not possible to add more and scale up the CSA because much of the growing season, including cover cropping and supply ordering, had been planned a year in advance.

To minimize physical contact, the CSA transitioned its distribution from a market-style pick-and-choose farm stand to a prepackaged curbside pick-up or home delivery share. Additional staff were hired to assist in packaging and storing shares in a cooler as well as ensuring everything was being extensively cleaned and sanitized. Overall, investing in more time, extra staff, reusable plastic totes for shares, an extra cooler, cases of disposable gloves, multiple gallons of hand sanitizer, and other inputs to make the CSA program run safely under the new circumstances led to financial loss for Full Heart Farm.

Yet, Angelini stresses that everyone "did really good work this year" and feels that her CSA members, many of whom have continuously participated in the CSA program since it began 9 years prior, "valued the investments in both time and energy and tangible expenses … made to ensure their safety." Social contact was difficult to maintain due to the necessity of social distancing, but Angelini tried to give people a connection to the farm through videos about everyday life on the farm as well as weekly newsletters with detailed recipes using vegetables from the CSA share, discussion about the local food system, and personal anecdotes. For Angelini, knowing that people trust Full Heart Farm to grow and safely provide good quality food to them is what makes it rewarding: "We know everyone we feed. … That's what brings meaning to my work. Otherwise, I'm just growing vegetables and it's so hot outside." Full Heart Farm and Angelini's reach extended beyond CSA members and those who purchased from the farm collective, to those most vulnerable in the community. In addition to donating food to the local food bank, Angelini also did casket arrangements during a time when many florists were closed and unavailable, which is something the farm did not normally provide as a service. Angelini insisted, "I didn't want my community to suffer," a statement that displays her awareness of the needs of the larger community and the lengths to which she went to provide aid that allowed others to persevere through the pandemic.

While Angelini at Full Heart Farm was giving her all to help others, she lacked aid in critical ways. The COVID-19 pandemic highlighted a lack of support for small-scale farmers and local food producers and greater structural issues in the U.S. national food system that were shown through Full Heart Farm and Angelini's experiences. Initially, Angelini could not get necessary personal protective equipment (PPE) such as gloves, masks, and hand sanitizer, which would allow her and her staff to safely harvest, process and package the farm's produce. She was frustrated by the lack of availability of PPE, its rising cost when it could be found, and the fact that the state did little to ensure frontline workers, like farmers, had access to this critical equipment.

Full Heart Farm embodies an interconnectedness with the community that has formed around the farm, resulting in a more resilient local food system, one that helps keep local businesses going in the face of disruption and a system that provides food when national supply chains fail. Angelini started the farm collective in the spring of 2020, which brought together local food producers and used Full Heart Farm as an aggregator for the sale and distribution of food beyond what was produced at the farm. Angelini explained that the local food economy surrounding Full Heart Farm is contingent upon everyone's success; if local food businesses, such as restaurants, were to fail, this would have a negative effect on farms and local consumers. It was through collaborative reflection, planning, and action that Angelini and other local food producers were able to navigate the challenge of implementing new food distribution methods and making fresh food accessible to local community members.

The farm collective offered prepared meals from a restaurant that specialized in locally sourced food; a pickle company offered a variety of pickles; a bakery joined in to offer bread; and there were farms that offered frozen meat and fishers who contributed fresh seafood. The offerings changed from week to week and depended on seasonal availability, but there was always a wide variety of items available. Customers used an online platform to order, the producers brought their food to Full Heart Farm, and Angelini and her small team packaged up the orders. On pick-up day, cars lined up at the farm and masked helpers placed the orders in the open trunks of the waiting vehicles. This operation required Angelini to buy new refrigeration units and pay for packing materials, and it required additional labor to prepare the orders. In the end, the costs were high, and the profit margins were low. However, Angelini felt it was necessary to innovate, work with other food producers, and make sure that healthy, safe food was available to community members.

The bonds that had been created through previous social engagements and a sense of responsibility for the well-being of customers that local food producers knew personally became a driving force for Angelini and other food producers to

continue supporting a vision of sustainability for the local community. The case of Full Heart Farm demonstrates the agility of small-scale farms to respond to crisis by working with partners in the local food system and adopting new technologies and ways of doing.

Hunts Brook Farm

Robert "Digga" and Teresa Schacht are the owners and farmers of Hunts Brook Farm, a vegetable farm, in Quaker Hill, CT. Hunts Brook Farm, at its core, has a philosophy of "growing healthy, beautiful food" for the local community using socially responsible and environmentally friendly methods, similarly to Full Heart Farm and other small-scale farms in the area. The Schachts believe in collaboration to build a stronger community and aim to improve food access and education on food, farming, and the environment. The farm offers a farm stand and a CSA program that provides a share of diverse vegetables to feed a family of four every Wednesday for 18 weeks during the growing season. Hunts Brook Farm also sells its produce at farmers markets and through wholesale outlets, mainly to the local cooperative grocery store and a few restaurants. Regarding community outreach, Hunts Brook Farm gives members the opportunity to donate to the Family in Need Fund, which provides a CSA share to local families in need, notably local military families and families with single caregivers. The farm also supports community gardens and food projects and participates in panel discussions, workshops, and seminars that teach others about agriculture, sustainability, and food.

At the start of March 2020, even before Hunts Brook Farm began selling produce, Digga Schacht noticed that the emptying of grocery stores created a panic that led to people driving from across the state to get food from other farms nearby, noting that "there was no limit as to what somebody would do to get what they had." As COVID-19 cases began to spread at an alarming rate, Schacht quickly shifted away from his usual strategy of selling at local farmers markets and focused on the CSA, adding additional members as an increasing number of requests came in from customers. He even extended CSA pick-up by another full day and created an on-farm open air farmers market at the farm. This allowed for him to sanitize areas in between each customer visit and prevent crowding to streamline the process of customers getting their food while maintaining social distancing. Communication was key to making sure that customers felt safe. Schacht recalled that many customers were nervously "throwing their bag onto the table and taking three steps back," so he began letting customers know about the sanitation procedures in place on the farm. Schacht also explained that he was taking cash payments through a bucket to reduce any cross-contamination from handling money and produce. This put customers at ease and gave Schacht the impression that they trusted Hunts Brook Farm to feed them even during the pandemic.

The way that Schacht maintained a sense of community with CSA members and other customers changed due to new safety protocols. He remarked that it was difficult "not being able to hug each other … not being able to sit and chat" due to changes in distribution methods. The fast-paced, almost mechanical process of customers pulling up in their cars, waiting for their turn, walking up and setting down their basket, and returning to their car with a full basket in tow left little room for exchanges that were commonplace before COVID. Schacht joked that he smiled to customers with his eyes and expressed that people, himself included, were having to "discover a refeeling" of community due to changing ways of socializing during these times. This sense of togetherness and care was exhibited in other ways as well. During the 2020 season, Schacht estimates that the number of donations and people interested in donating to the Family in Need Fund tripled or quadrupled, allowing seven shares to be given to families in need, a number greater than ever before. Hunts Brook Farm reminded CSA members that they had the option to forward their share to a family in need if they were unable to pick it up in any given week. Schacht maintains a list of vulnerable community members and passes on uncollected shares to them when possible.

Hunts Brook Farm has always believed that working together is the key to a resilient, compassionate future for everyone involved; this means that just as local consumers are supported by local

food producers, local food producers require the support of their local community to thrive. Schacht recounted that as COVID caseloads dropped in Connecticut and life became "somewhat normal" again, some customers "slid right back to the 'okay well, Stop & Shop [grocery store chain] is an easy stop'" mentality and routine. Without sales from local farmers markets for most of the 2020 growing season, the farm was losing about US$1,000 a week for several weeks. Customers who continued to visit the on-farm farmers market made larger overall purchases, as they were doing all their shopping there as opposed to purchasing from various locations. Although 2020 ended being an extremely profitable season for Hunts Brook Farm due to some loyal customers and being able to start selling produce again at a local farmers market in the fall, Schacht worries about the sustainability of his business and of small-scale food production in general. He shared that while he is glad that minimum wage is rising, he is worried about labor costs because "if the price of a head of lettuce doesn't climb with it, and people aren't willing to spend a little bit more on food, then all of that is going to come out of our bottom line. … The question is whether they are willing to pay the true cost of production."

Schacht added that raising the price of his produce has not been possible for the past five years, citing worries of losing customers and of not being able to continue helping feed the food-insecure as deterring him from doing so. Being situated in a place where many people compare prices with regular grocery stores and make their decision based on that is difficult, he explains, as "people can't help but flock to the cheapest, less expensive thing there is." When an industrial-scale vegetable farm sells cantaloupes, for example, the cost is around US$2 a piece, but if Hunts Brook Farm were to charge that amount, it would be unsustainable; according to the farmer, three beds out of the four-acre farm would be used and if 150 melons were grown at US$2 a piece, a crate of them would earn the farm a mere $100. Schacht argues that:

> As minimum wage rises and as the costs of having to do what we do rises, food is going to get more expensive. As a society, as a whole, we have undervalued food in a lot of ways, and I want people to understand that most farmers are not doing farming to enrich ourselves monetarily. To value food for what it truly costs to produce, it is an important thing for people to understand.

This emphasizes the importance of change on a greater scale to support local food producers, both from a consumer perspective and from a government perspective. Some of this change has begun on a municipal level, as evidenced by Schacht's experience with the mayor of Montville, CT. Prior to the COVID lockdown, he called the mayor of Montville to ask if it would be possible to pass an ordinance that would exempt farm structures from property taxes, something Schacht was interested in because he owned potential farmland there. The mayor said he would look into it, and eventually called Schacht back to tell him that the ordinance was now passed. If local, small-scale farms are going to be viable businesses in southeastern Connecticut, municipalities will have to develop more strategies like this to help ensure that farming is an economically sustainable activity. For Hunts Brook Farm and other local farms, this expression of support on a community level was appreciated, though Schacht added that "collaboration on many levels" is needed to truly help promote local food production.

The community economy surrounding Hunts Brook Farm prioritizes collaboration and has community well-being at the center of its initiatives and exchanges. Although the pandemic changed the way that people communicated with each other, Hunts Brook Farm was able to change its distribution to provide access to fresh food while upholding social distancing and sanitation standards to keep everyone safe.

FRESH New London

In early fall 2020, we also interviewed Alicia McAvay, the director of FRESH New London, a nonprofit organization based in New London, CT, which focuses on urban agriculture and social justice. Its activities center around growing food, empowering youth, and connecting communities. We have included FRESH in our research because in 2019 it offered a CSA, and it also became an

emergency food provider during the pandemic. The CSA program is connected with the organization's goals of growing food and teaching others to grow food for themselves; it is the only CSA in New London County whose subscriptions work on a sliding scale. Members who can afford to pay full price for their shares subsidize the shares of those who cannot afford the full CSA membership. McAvay explained that grants and private donations also help fund the CSA in order to make it as accessible as possible. Although this program is not fully engaged in the market economy, the FRESH CSA embodies core principles of community economies through this economic connection of members supporting members that works to make fresh local produce accessible to all community members. FRESH provides an opportunity for a structured form of mutual aid.

Unlike the other cases explored here, FRESH is not a commercial farm and, as McAvay puts it, "we don't really communicate our success in pounds of food. We usually communicate it to people connected to our work." This idea of connecting people is at the heart of community economies; FRESH espouses embeddedness in its core values. In a regular year, FRESH's urban agriculture activities would be the main way in which community members would be brought together; as McAvay says, "Gardening in a public space is one thing, it's not what the vision of community gardening for FRESH New London is. Community gardening for FRESH New London is gardening in community and being able to be in that community, not just having your own plot to grow food in, in a public area." FRESH regularly holds community events, such as dinners prepared in its brick oven in one of the gardens and an annual plant sale. All of this had to change when the pandemic hit. McAvay shared that "You know it's the informal things that are actually the most impactful sort of connections that happen at FRESH and that's what really suffered, for sure. … We did find ways, we've done Zoom workshops and we were able to keep the gardens open which was important, but again in a really different way. We are still connected. I am still texting, talking to, and hearing from gardeners even if they're not hearing from each other."

McAvay emphasized that the CSA pick-up was an important social moment when members would socialize as they selected their week's produce, which was laid out in a market style. With the necessity of social distancing, FRESH had to invent a new contactless pick-up system. Reusable plastic bins were purchased, they were loaded each week, and members were told to open the trunks of their cars and not get out while a FRESH employee or volunteer placed the bin in the car trunk. As the summer went on, more chatting started to occur between FRESH staff and members. Members also got in the habit of chatting while waiting on the sidewalk with masks on. Not even social distancing could undermine the community's desire to socialize around food.

FRESH found itself carrying out a lot of activities that were not in the organization's mission statement. With regards to the CSA, McAvay explained that initially part of FRESH's mandate was to get food to people who needed it. However, that shifted, and the organization began to focus more on empowering people to take control of their food, particularly by growing their own. The idea was to grow food with people and not for them. However, the CSA is an income stream that allows FRESH to not be entirely dependent on grants and outside funding. During the pandemic, the need to feed people has increased and FRESH has had to rethink its activities yet again.

New London is already a largely food-insecure area, and the pandemic made the situation worse. Feeding America (2019) estimates that the rate of food insecurity in New London County is 11.7%, which means 31,300 food-insecure people, and the rate of child food insecurity is 16.8%, or 8,930 children in New London County. Initial data shows that the COVID-19 pandemic has caused major setbacks in reducing food insecurity. The Connecticut Office of Legislative Research (Proto, 2020) projected that the 2020 rate of food insecurity in New London County would rise to 17%, more than a 5% increase over the previous year. For the city of New London, the rate of food insecurity is much higher, at 21%, which is above the 11.9% average for the state of Connecticut (Gundersen, et al., 2018). New London meets the Community Eligibility Provision (CEP) for the

National School Lunch Program (NSLP). This means that over 40% of students are low-income and qualify for free meals (USDA, 2019).

During the pandemic, families who depended on school food programs initially had trouble accessing those programs because schools were closed. Other groups who were hard hit were undocumented migrants who feared being asked for papers or identification at food pantries and other emergency food outlets. The people working at FRESH became acutely aware of this need for emergency food for vulnerable populations, and they understood the importance of providing food without asking any questions. McAvay noted that "there's not a built-in value of dignity around emergency food systems." So, FRESH began delivering food to households in need on Fridays through what they call "Food to the People," a mutual delivery pantry. Providing emergency food was not part of their original mandate, but they found themselves doing this work:

> The downside of it, while I feel like it's really important, is that the amount of resources that it takes to run these emergency food options, these pantries and soup kitchens and other stuff, doesn't let you pick your head up and look at what's wrong with the system. You don't have any time to do anything about it, and we are a systems change organization.

McAvay did not see this new emergency element of FRESH's activities as a long-term organizational shift. She says that COVID-19 has moved FRESH to focus on organizational relationships and building mutual aid support; these growing local coalitions add strength when facing structural issues.

Discussion

Community Economy and Resilience

Gibson-Graham and other theorists may have envisioned community economy as a radical alternative or, at a minimum, a form of resistance to capitalist economies. However, in the case of small-scale local agriculture during the COVID-19 pandemic, we were able to see how community economies were key to creating a resilient local food system in New London County, CT. The way in which we conceive of resilience here, drawing the social into the economic and environmental, follows Lockie's (2016) call for a reconsideration of resilience theory, one that analyzes "the roles of power, agency, values, solidarity, heterogeneity and conflict in social systems" (p. 116).

At Full Heart Farm, the farm collective distribution method allowed for local food producers to connect by reflecting on how their businesses were affected by the pandemic, offering each other mutual support, and collaboratively coming up with strategies to sustain business both for their own benefit and to ensure that all community members had access to food. This connection in itself is meaningful because the conditions of the pandemic caused many to feel isolated and struggle in finding help. The collective provided a means to navigate these worries for the betterment of the overall community. This work, at its core, exhibits the value of interdependence in community economies through a community of local food producers coming together to provide mutual support to each other and combine their efforts to persevere amid the pandemic. The necessity of long-term planning is one of the reasons why most farms cannot respond to crises with much agility. However, through sharing resources and coming together to create a common marketing platform that appealed to consumers because of the variety of products available in one stop, Full Heart Farm and other small local food producers were able to overcome these constraints to some degree.

Sustainability and Government Support

Schacht's positive experience with the municipality of Montville is an example of how local governments can support farms through tax breaks on farm structures. Unfortunately, these types of incentives and aid need to be negotiated on a municipality-by-municipality basis, which makes this challenging because of the political differences in each locality. Unlike Montville, Ledyard, where Full Heart Farm is located, has tried to pass local bylaws making it harder for farmers there to sell directly to consumers. Angelini had to spend precious time lobbying local residents for their support to block these proposals. The political hetero-

geneity and fragmentation of food policy in New London County has made it challenging to bring about a broader change toward local small-scale farms and the systemic development of a more robust local food system. The dissolution of the New London County Food Policy Council in 2018 has also made coordinated efforts more difficult to achieve on a countywide scale.

With the failure of unified efforts to encourage local farming and ensure food security in New London County, the onus has fallen on producers as well as the families and individuals who support them. Hunts Brook Farm community members created interdependence through collective funding to provide struggling families with food aid from the farm's surplus and through networking. In spite of success in bringing many consumers good quality food during a period when food insecurity suddenly skyrocketed, Schacht raised critical questions and concerns about the sustainability of long-term food production from a small producer perspective, drawing attention to the resiliency of the local food system depending on collaborative action and change at multiple scales. We observed that the local scale offered interesting opportunities for building food system resilience in the face of crisis, but, at the same time, this resilience came at a cost and was not necessarily equitable for producers and consumers in the area that we studied.

The state of Connecticut has high taxes and land prices (Hewitt, 2020; USDA National Agricultural Statistics Service [USDA NASS], 2020), which make it expensive for business owners like Angelini and Schacht to run their farms, own land, and hire staff; this increases overall food production costs. Full Heart Farm and Hunts Brook Farm, like many small-scale farms and food producers, often have to sell their goods at prices lower than the cost of production because if they did not, it would mean fewer community members would be able to afford access to local food. Further, Angelini mentioned that the U.S. Small Business Administration excluded small farmers in their payroll protection program during the COVID-19 pandemic, although small farms were some of the businesses still expected to run at full capacity. Even after lobbying, only small farmers growing commodity crops were included in the program, which excluded farmers like Angelini in the state of Connecticut and the New England region (Curry, 2020). These circumstances draw into question the federal and local governments' commitment to small-scale farming, particularly producers who serve local markets. The absence of a local food policy council to bring together local concerns and propose scale-appropriate action makes it hard for individual actors to get the support they need on a county, state, and regional level (Blay-Palmer et al., 2020).

Local Food Access and Food Security

From a food access and food security perspective, Hunts Brook Farm offers an example of how a farm and its CSA program can provide direct action to address food insecurity in the community. The community that formed around Hunts Brook Farm from its CSA program and regular farm customers demonstrated an awareness of inequality in food access and responded when farmer Schacht offered opportunities to donate funds for community shares for families in need and by donating unused shares. There are other examples in New London County of how farms tried to address food insecurity at the height of the pandemic. One farmer who was interviewed mentioned setting up a "pay what you can" table at the side of the road. Although the logistics were often challenging, several farmers mentioned making donations to local food banks and emergency feeding programs. Almost all the interviewees demonstrated an awareness and concern for food insecurity in the pandemic and, as food producers, they all found different ways to engage with this problem and offer solutions. The pandemic affected everyone and built up mutual aid support that strengthened interdependence between members of the community, which is one of the central features of building an economy of community.

Through this research we have looked at ways in which the local food system in New London County demonstrated resilience in a crisis, but we also saw a need to take a critical look at the concept of food system resilience. It is necessary to look past the coping and survival mechanisms of individual actors to consider what makes that survival necessary (Kaika, 2017). Even if they are

somewhat precarious actors in the larger food system, small-scale farmers in New London County were able to adapt to the crisis situation that the pandemic created. However, rather than operating as a safety net or stop-gap solution, the government and local communities need to regularly support local farms so that they are a robust element of the food system at all times. This is where we noticed an absence of unified policy most. Our critical approach to resilience also considers how not all inhabitants of New London County were as resilient as others. For this reason, we cannot imagine "the community" to be a homogeneous entity; community members have different economic means and resources are distributed unevenly.

There are barriers to accessing local food, and it is not always an option for some of the most vulnerable inhabitants of New London County. Although FRESH New London tried to address food insecurity in the urban area of New London, farms outside the city were largely unable to deliver their produce to people who needed it in this area. Emergency food distribution in New London had a hard time transporting produce from local farms and dealing with the perishable produce once it arrived at distribution centers. Many people in New London have no way of reaching farms, and using public transportation to supermarkets can also be a challenge. For these reasons, locally produced food on its own is not the answer to building a robust local food system. In order to create a more just food supply in southeastern Connecticut, local food needs to be considered in relation to the broader food system and systemic barriers to social equality, from inequitable land access to poor public transportation. The food system is an integral part of the economy, social structures, and public health.

Although farmers wanted to feed people during the pandemic, at times there were barriers to donating food to local emergency food providers. One interviewee mentioned that the local food pantry was unable to come and pick up produce at farms. They told her that they preferred cash donations. Harvesting food to donate to the emergency food system can also be costly for farmers. One interviewee told us that volunteer gleaning teams who harvest surplus produce are important for farmers to be able to donate food without incurring additional costs. Many low-income households were unable to get to farms and could not afford the food there. However, one farmer we interviewed told us that during the pandemic, they set up a self-serve table at the farm where people could take the food they needed and were asked to pay what they could on an honors system. Although some farmers worked hard to be able to accept electronic benefits transfer (EBT) for the Special Supplemental Nutrition Program for Women, Infants and Children (SNAP), a substantial quantity of local food remained out of reach to those most in need. We saw how organizations like FRESH New London pivoted to respond to the urgent needs of people, particularly undocumented people in urban areas, who faced barriers to accessing the emergency food system.

Mutual Aid

From our interviews with small-scale local farms, we discovered that farms are deeply embedded in their communities, and this is one of the elements that allowed them to respond effectively to their community's needs during a time of crisis. In our broader research, we found that a number of farms offered mutual aid to community members in need, which was part of a broader trend toward mutual aid during COVID-19 (Springer, 2020). In this case, mutual aid took the form of asking CSA members to donate to a fund that covered shares for families in need, setting up tables with free produce, or donating to local food pantries and soup kitchens. Farmers were not going to let people in their community go hungry, and part of this also meant keeping prices low, even if it meant cutting into their profits. We heard about farmers helping each other in order to bring their goods to market, whether it was sharing a farmers market stall or being part of an effort to aggregate fresh food and prepared food products and deliver them to customers. The pandemic underlined the solidarity that exists between local farmers and food businesses and between farms and their customers.

Technology and New Forms of Distribution to Shorten the Supply Chain

The small-scale farming in New London County

made it possible for many farms to pivot to new forms of distribution. In particular, a number of farms adopted online sales platforms and contactless pick-up, which helped customers access food safely. Technology was also used to help aggregate goods and to maintain a sense of community. The ability of farmers to adopt new technologies for selling their goods and for communication with their customers and community was an important part of maintaining the embeddedness of the local food system. Our research supports Michel-Villarreal et al.'s (2021) findings that digital technologies are potentially enablers of SFSC resilience.

Community economies are at the heart of what FRESH New London does, from teaching people to grow their own food, be more self-sufficient, and take control of where they are getting food, to running a CSA program that is based on interdependence with its sliding scale of rates. The FRESH CSA is about community members lifting each other up. The social engagements that are critical to FRESH's mission were challenged by the pandemic, but people still managed to find moments of exchange at a time when everyone was isolated out of necessity. Although it was not part of FRESH's original activities, emergency food and the response of mutual aid created new forms of interconnectedness and interdependence between the organization and individuals, and coalitions were formed with other local organizations that will help everyone move forward in tackling structural change in the future. However, FRESH's director made it clear that a resilient local food system would not be possible unless structural issues were addressed.

Conclusion

For Gibson-Graham (2006), community economies represent an alternative production and distribution format to a capitalist system, one which focuses on how the social relationships between producers and consumers strengthen the economic resilience of the local food system. This concept of economic resilience is closely tied to the social embeddedness of people living in a specific locality. In the Full Heart Farm case study, we saw that the aggregation by local food producers provided a means to reflect on the impact of the pandemic on businesses. This group of producers showed how they could collaborate to continue local food production and distribution in order to fill the gap that was created by closed grocery stores on which many community members relied. Similarly, at Hunts Brook Farm, community interdependence was facilitated by Schacht keeping a list of community members who needed aid and by collective community donation efforts to provide free farm produce shares to those vulnerable community members. Both Full Heart Farm and Hunts Brook Farm kept their produce prices low at their own expense, keeping food affordable for community members both out of a sense of personal responsibility for feeding people and also out of fear of not being able to sell their produce at higher prices.

Our third case study, FRESH New London, raised related themes of local food distributors' and producers' adaptability by connecting to one another and to community members to provide mutual aid and support via temporary emergency food aid programs and partnerships; FRESH was unique in that it also strengthened community connection and food access through youth empowerment programs and a sliding scale CSA program, respectively. As a systems change organization, FRESH did not see emergency aid and current local food system resilience as a true solution to structural issues of food insecurity, lack of food access, and poverty, but instead akin to trying to fix a hole on the road by using plaster instead of asphalt. The bigger problem is the inequity between local, national, and global food systems.

We saw how farms connected people in the community. The social bonds that had been developing organically before the pandemic strengthened and were tested when the crisis hit. This is evidenced in the aftermath of the pandemic: there is a need to continue to build community around food production and distribution. It is the community economy aspect of the local food system that has helped many people in New London County through the crisis. Now it is time to focus on the lessons learned from the pandemic to try to build on the local food system's strengths that we outlined here, but also to address the weaknesses, such as a lack of support for small-scale farmers from the government and consumers (Anderson, 2020).

Large-scale commercial agriculture is subsidized, which leads to lower food prices at large retail grocery stores. People who shop in supermarkets are used to paying these low, subsidized prices and they are often shocked, unwilling, or unable to pay the price of local food, which is unsubsidized, does not benefit from economies of scale, and is often higher priced because it must account for the true costs of production. As a result, small-scale food producers repeatedly resort to selling their products for lower prices, which can be personally unsustainable. Gibson-Graham (2006) likely envisioned community economies as a means for ensuring the well-being and resilience of the local food system and all community members through resocialized economic exchanges, but in our case studies, we see that the economic costs to local food producers lead to a system that may not be resilient long-term without external support. The two-tiered agricultural system in the United States makes it nearly impossible to achieve the resilience that Gibson-Graham envisioned. Small-scale farmers and food producers require state and federal governments to support these forms of agriculture and food production because they contribute to food security as well as maintain healthy and just communities, particularly in times of crisis.

We acknowledge that this work focuses primarily on the producer perspective in local food systems and that further research on consumer perspectives, particularly on how food and labor are valued and influenced by structures such as systemic racism and socioeconomic inequalities, are needed for a more holistic understanding of food systems and their resilience. However, we believe our research brings to light the inequalities that exist between large-scale and small-scale farming and the ways in which this uneven system both disconnects people from agricultural production and hinders the creation of robust local food systems.

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How to create intermediated and partnership local food networks? Collective performance, collective negotiation, and collective learning

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Abstract

This article describes the construction of innovative beef supply chains observed in the Loire and Isère departments in France. The aim for their promoters was to build intermediated local food networks without leaving the organizing power in the intermediaries' hands. The authors take the analytical framework of the sociology of "market *agencements,*" which focuses on market shaping processes, to show how the ranchers, slaughterhouses, wholesalers, and retailers went about defining quality, prices, and the logistics and administrative organization of their supply chains. They also underscore three characteristics of intermediated supply chain partnerships, namely, the search for collective performance, collective negotiation of the rules of the game, and collective learning.

Keywords

Agriculture of the Middle, Livestock, Market Shaping, Local Food Networks, Values-Based Supply Chains

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Introduction

Local food networks, or short food supply chains, have become a core subject of agri-food studies since the early 2000s. In most cases, this research has focused on direct sales (farmers markets, farm shops, community supported agriculture, etc.). However, more recently it has also turned to intermediated forms that include wholesalers, processors, retailers, and contract caterers. They have also clustered around new keywords such as "values-based supply chains" and "agriculture of the middle" (Lyson et al., 2008) or the idea of "hybrid" supply chains that combine the long-global-conventional and the short-local-alternative (Bloom & Hinrichs, 2011).

Even though they have been examined less than direct sales, a record is being built up of the potential advantages and limits of these intermediated forms of local food networks. On the one hand, they are solutions for scaling up. By pooling the supplies of several producers, controlling logistics, or carrying out processing operations, they make it possible to reach such buyers as hospitals, schools, and universities (Cleveland et al., 2014; Conner et al., 2011; Izumi et al., 2010; Klein, 2015). Working with intermediaries such as wholesalers and retailers likewise makes it possible to reach certain consumers who want to get easy access to local products without having to change their buying practices too much (Greco et al., 2020; Milestad et al., 2017; Zwart & Mathijs, 2020). These intermediated forms also have advantages for farmers who do not want to invest in marketing and thereby spare themselves the associated time and mental burden (Le Velly & Dufeu, 2016). We must also point out that some of them have no choice but to rely on intermediaries. That is particularly the case of agriculture of the middle farmers, who are involved in undiversified crops on large acreages and would have great difficulty selling all of their production directly to consumers (Lyson et al., 2008; Peterson et al., 2022).

On the other hand, the creation of intermediated food networks can spawn fears of a slide into the long supply chain's way of operating, something that some authors liken to conventionalization (Mount & Smithers, 2014). The main pitfall is that the intermediaries may impose low prices on the farmers and capture the bulk of the added value. More generally, there is the risk of their exercising central power over the supply chain's organization so that they determine not just the prices but also the production methods. Several investigations attest to the reality of this risk. They relate the farmers' feelings of not being sufficiently involved in the governance of intermediated initiatives (Bloom & Hinrichs, 2011; Milestad et al., 2017; Mount & Smithers, 2014) or of having to submit to the demands of the supply chain's other actors (Cleveland et al., 2014; Klein, 2015; Rosol & Barbosa, 2021; Tewari et al., 2018).

Can intermediated local food networks be created without the intermediaries getting the power to organize the supply chain? The researchers who have identified a values-based supply chain model intimate that is possible, that strategic partnerships can take shape between the food supply chain's actors, but at the same time they underscore the magnitude of the challenges to take up (Stevenson & Pirog, 2008). Moreover, as we have seen, several studies show that despite aspirations in line with the values of relocalizing food supply, it is not rare for farmers to carry very little weight in dealing with the other actors in intermediated local food networks.

This article makes an original contribution to this debate by describing how it is possible to build intermediated local food networks inspired by partnership objectives. To do so, we shall study two French beef supply chain initiatives that we chose because they are particularly well designed in this regard. We shall do this work with the help of the sociology of "market *agencements*." This analytical framework, which is an offshoot of actor-network theory (ANT) (Latour, 2005), focuses less on the ways that already formed markets operate than on the "marketization processes" that allow their formation (Çalişkan & Callon, 2010; Callon, 2021; for a presentation, see Le Velly & Moraine, 2020).[1] This perspective makes it possible to emphasize

[1] Callon chose the French term "agencements" rather than "arrangement" because it is closer to "agency." A market agencement is a sociotechnical arrangement that is capable of productive and market action (Çalişkan & Callon 2010).

the actual operations that are necessary to establish innovative agrifood networks, such as the development of sustainable quality standards for the merchandise, formulas for setting fair prices, new logistic infrastructure or packaging, and so on (Le Velly & Dufeu, 2016; Le Velly & Moraine, 2020; Onyas et al., 2018; Ouma, 2015; Wang, 2018). A fine examination of these processes can then enable the researcher to understand better how the power relations within the network develop. Far from being thought of as structurally rigid and determinate, these power relations are seen more as the results of the market-formation processes in question.

The rest of this article is organized as follows: In the first part we present the two initiatives that we studied and specify the conditions of our investigation. The next part is devoted to the study results, in which we expound upon the characteristics and motivations of their initiators. Above all we shall describe three marketization processes that were carried out in partnership, namely, defining quality, setting prices, and setting up the initiative's logistic and administrative structure. The last part discusses our results with a focus on three dimensions of the actors–supply chain partnership, that is, the search for collective performance, the collective negotiating over the rules of the game, and the learning process.

Case Studies and Methodology

Eleveurs de Saveurs Iséroises

Eleveurs de saveurs iséroises (Isère Flavors Ranchers) is an association of beef cattle ranchers situated in the northern part of Isère Department, France. The creation of this association was triggered in 2013 by the desire of four Grenoble butchers to be able to offer their customers top-quality local beef. Not knowing how to contact the ranchers, they turned to the Isère Chamber of Agriculture, a public establishment that supports the department's farmers. An employee of the chamber brought together and advised a group of 14 ranchers. The ranchers and butchers then reached a meat quality and price agreement. An administrative and logistic scheme involving a transport company and the City of Grenoble's public slaughterhouse was also worked out. However, this first initiative culminated in a very small number of orders: just 18 head of cattle in all of 2014. A second arrangement was then thought up with a local Super U supermarket in 2015–2016, whereby the latter, located in Saint-Étienne-de-Saint-Geoirs (Isère Department), committed to buying 100 carcasses a year. This second sales outlet led another 14 ranchers to join the scheme and a part-time sales representative was hired. At the end of our investigation, at the end of 2017, a third marketing scheme was being tested. It was aimed at the coordinated coupling of two outlets, namely, the sale of forequarters to the central kitchens serving Isère's public secondary schools and the sale of the hindquarters to a regional group of supermarkets franchised by the grocery store chain Carrefour.[2]

100% Charolais du Roannais

100% Charolais du Roannais (100% Roanne Charolais beef) is a trademark boosted by Roannais Agglomération, a public association of 40 municipalities from the north of the Loire Department. Starting in November 2015, Roannais Agglomération held monthly meetings that brought together local ranchers (originally five of them), managers from a regional contract caterer named Coralys, managers and butchers from four supermarkets, and the manager of Charlieu's public slaughterhouse (Loire Department). These actors quickly came to an agreement on the project to arrange supply chains for two products, namely, frozen hamburgers made from the forequarters by Carrel, a company located at Hières-sur-Amby in the north of the neighboring Isère Department, and the hindquarter carcasses. A new actor, Clément frères, was included in the scheme in the course of 2017. The job of this cattle merchant was to select the animals before sending them to slaughter. Then 11 new supermarkets in the department joined the

[2] The forequarters are the source of the main cuts of meat for braising or boiling, such as for stews and bœuf bourguignon. They are also used for ground meat and processed dishes. The hindquarters, which are considered the source of more choice cuts, provide meat for grilling, pan-frying, and roasting.

project at the end of 2017. To cope with the growth forecast, 10 additional ranchers were also included in the collective. Figure 1 gives a schematic overview of the two supply chain initiatives.

Methodology

In accordance with the usual methods of the sociology of market agencement, our research relied on an ethnographic investigation that combined archival research, semi-structured interviews, and direct observation. We started by going through the two projects' archives, composed of press clippings, internal regulatory documents (specifications, agreements, and articles of association), and minutes. The minutes of their meetings, which were generally 2-5 pages long, contained a wealth of information about the organizational choices made and difficulties encountered. We were thus able to study how the supply chains were gradually set up starting in 2014. Next, we conducted 16 semi-structured interviews of the two initiatives' actors in the course of 2016 (see Table 1). Finally, the second author of the article participated in 14 monthly meetings attended by all the participants in the *100% Charolais du Roannais* initiative in 2016 and 2017.

These data underwent thematic analysis in which the coding was guided by the research topics

Figure 1. Actors and Supply Chains in the *100% Charolais du Roannais* and *Eleveurs de saveurs iséroises* Initiatives at the End of 2017

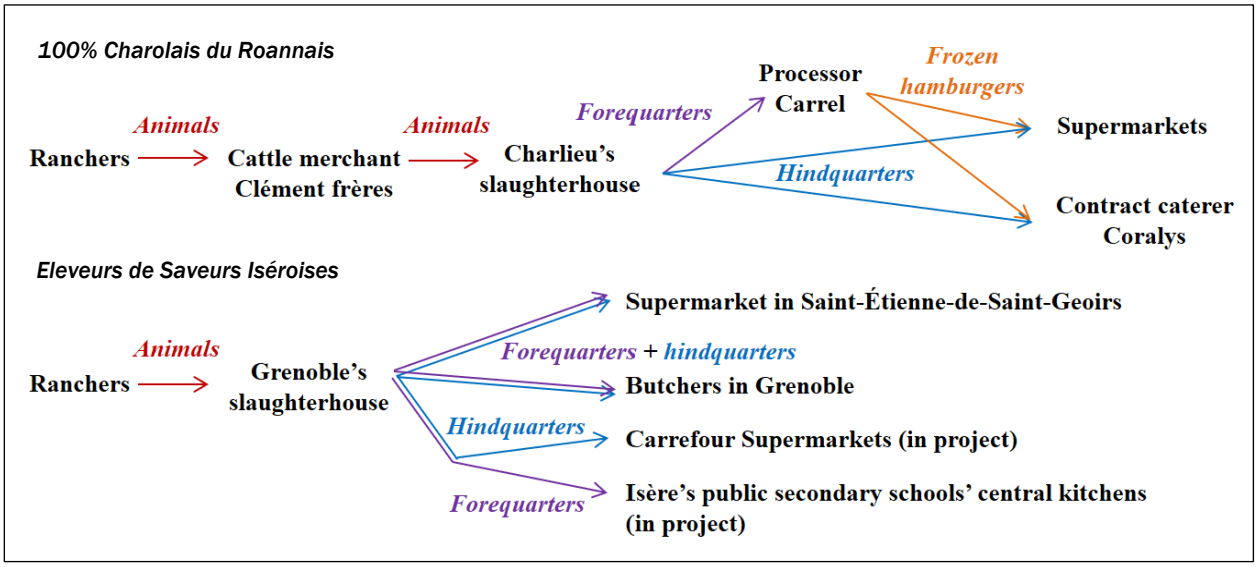

Table 1. Summary of the Field Data Used

	Eleveurs de Saveurs Iséroises	*100% Charolais du Roannais*
Semi-structured interviews	9 interviews: 6 ranchers, 1 supermarket manager, the manager of Grenoble's slaughterhouse, and a manager of the central kitchen of Isère Department's secondary schools	7 interviews: 2 ranchers, 3 supermarket managers, the manager of Charlieu's slaughterhouse, and the Loire Agrifood Cluster's task officer
Archives	35 documents: 27 minutes of the association's meetings; 5 press clippings; and the association's articles of association, house rules, and specifications	30 documents: 22 steering committee meeting minutes; 7 press clippings; and the agreement between Charlieu's slaughterhouse, Roannais Agglomération, and Clément frères
Observations		Participation in 14 steering committee meetings in 2016 and 2017

studied in intermediated local food networks (the intermediaries' price-setting power, work necessary to market goods, etc.). The coding was also influenced by our analytical framework, which revolved around market-shaping processes, and especially their material dimensions. Nevertheless, our results were produced very inductively on the basis of data rather than hypotheses. This method produced some unexpected results, such as the importance of the "learning" theme, which we had originally underestimated.

Results

The Actors' Characteristics and Motivations

The ranchers in the two initiatives were very similar to the ones targeted by some American researchers concerned about the survival of an agriculture of the middle (Lyson et al., 2008; Peterson et al., 2022; see also Brives et al., 2017). First of all, these ranchers did not come from "alternative" networks, such as those organized around organic agriculture. They came from networks of ranchers producing beef cattle for sale to long supply chains via cooperatives or cattle merchants. The ranches were also typical of French cattle ranching operations: farms with an agricultural acreage of a scant 100 hectares (247 acres) with pastures and hay fields on which one rancher and a paid laborer work. It should be noted that in both cases studied the ranchers worked to "red label" specifications, the red label being an official sign for consumers that guarantees high-quality produce. However, this red label is widespread in the French beef cattle-ranching sector, to such a point that its ability to generate market differentiation is no longer clear.

The ranchers' motivations also echo those found in the American research. Their main objective was to sell their products at higher prices. This objective was coupled with criticism of the way the long supply chains in which they participated work. In France, the overwhelming majority of cattle ranchers sell their stock to cattle merchants or industrial slaughterhouses. In the second case, we can describe three types of slaughterhouse: those that belong to ranchers' cooperatives, those that belong to the agrifood processing industry, and those that belong to supermarket networks. The ranchers in both initiatives criticized all of these actors for imposing their prices with no exceptions. Their criticism of the cooperatives in this regard was of particular note. The cooperatives do indeed belong to the ranchers, but are nevertheless seen as gigantic groups that defend the ranchers' interests poorly. The decisions to turn to the public slaughterhouses of Grenoble and Charlieu were thus linked to this criticism. These small slaughterhouses, which had been kept open by local government actors as part of their local development goals, are used to working for ranchers who market their meat directly. As such, they just work as service providers, without any influence over supply chain organization.

Direct sales of crates of meat could have been envisioned as a way to respond to this desire to recover their price-setting power, but the ranchers in our two case studies were not attracted by this solution. They felt that it was time-consuming and that marketing meat was not their job. So, although they contested the ways that the long supply chains in which they participated worked, they did not reject the principle of having different intermediaries carrying out their respective tasks. This *Eleveurs de saveurs iséroises* rancher expressed this point of view very well:

> It's trying to get out of this system of either all long supply chains or all direct sales. Some things between the two exist. I did a little bit of selling directly, but it takes a huge amount of time. I'm thinking [of a way to] combine the advantages of long supply chains and direct sales. (June 2016 interview)

At the other end of the supply chains are the distributors, who also have "conventional" profiles. These are the butchers, supermarkets, and contract catering businesses. Their main motivation was to differentiate themselves from their competitors. These actors saw that their customers wanted local products. A local supply could thus act like a loss-leader on a supermarket shelf. Similarly, proposing menus that included local produce could also be a differentiating way to answer the calls for tenders (offers) to which the contract-catering companies responded.

These actors likewise experienced the construction of the two initiatives' supply chains as an opportunity to recover some control over their supplies. The self-employed butchers, supermarket butchers, and contract catering kitchen supply managers got the overwhelming bulk of their meat supplies from cattle merchants, agrifood companies, distributors, and purchasing unions. They appreciated these intermediaries, who could offer a wide range of goods. However, some of them, such as this supermarket manager participating in the *100% Charolais du Roannais* initiative, were also critical of the loss of power to which this relationship gave rise:

> So, you say, what is the difference? It's putting together the product from A to Z with the actors who make it, to be able to be aware of, to control everything. … A product like that one [*100% Charolais du Roannais* frozen hamburgers] worries me less than a Charal steak [the best known beef brand in France] that I don't know where it comes from or what it was made with. With this one, we know for sure that the animals were slaughtered a certain day, [the carcasses] were not left lying about here or there, that horsemeat wasn't added to the mix. … We have to go back to things like that, even if it costs us a little more. (April 2016 interview)

This quote provides an excellent transition for introducing the rest of our results. How does one create a new product or new merchandise and a new supply chain "from A to Z"? This is where the sociology of market agencements provides a very useful analytical grid by underscoring the importance of the processes required for market shaping, i.e., the "marketization processes" (Çalişkan & Callon, 2010). For *Eleveurs de saveurs iséroises* and *100% Charolais du Roannais*, three processes appeared to be vital, namely, defining quality, setting prices, and organizing the market encounters. We shall now see for each of them how the participants in these "markets in the making" (Callon, 2021) negotiated collectively over the rules of the game.

Defining Quality Collectively

A first marketization process, one that Çalişkan and Callon call "pacifying goods" (Çalişkan & Callon, 2010), concerns the operations that make it possible to define, stabilize, and guarantee the quality of merchandise.

A major operation in both case studies was drawing up specifications for the group's animal husbandry practices. This was the subject of negotiations that were conducted in different ways by *Eleveurs de saveurs iséroises* and *100% Charolais du Roannais*. In the first case, the Chamber of Agriculture adviser ran the cattle ranchers' meetings with the aim of translating the requests of first the Grenoble butchers and then the Saint-Étienne-de-Saint-Geoirs supermarket into specifications for the ranchers. In the second case, Roannais Agglomération held monthly steering committee meetings in which the ranchers, Charlieu slaughterhouse, supermarkets, and contract catering company took part. The panoply of people seated around the table at these meetings was noteworthy, for it included some 15 people who usually do not meet each other.

In conventional long supply chains, the intermediaries (slaughterhouses, industrial concerns, and distributors) make the necessary adjustments so that the qualities of the ranchers' produce and qualities demanded by the retailers match. In the two initiatives that we studied, the aim was to put an end to that so that the ranchers would no longer be dependent on the intermediaries' organizing power. For the distributors, that meant understanding better the constraints on cattle ranching. For the ranchers, above all, it meant going from reasoning that revolved around the animal to reasoning centered on meat quality and then working back to their ranching practices. None of the ranchers in the two initiatives had ever worked directly with butchers in the past. This *100% Charolais du Roannais* rancher stressed the difficulty that such a change in attitude entailed:

> We were somewhat novices in all that. We came full of courage, hoping that it would work, and then it's true that we had some initial problems to deal with. … People say that meat is complicated, but it's true that it is com-

> plicated. It isn't a crate of apples. A lot of handling goes into making meat. When you go from one animal to the next you don't have the same yields, the same degree of fattening. … There are tons of factors that come into play. You sort of discover what meat is all about. (April 2016 interview)

For the two initiatives, this process first gave rise to the drafting of specifications covering the livestock farming (diet, slaughter age, etc.) and animal conformation requirements (amount of muscle, carcass yield). While these specifications partially overlapped with the Charolais and Limousine red labels with which the two groups of ranchers complied, some of the requirements went beyond them. For example, the *Eleveurs de saveurs iséroises* ranchers took on the additional obligations of three months of dry rations before slaughter. That was a noteworthy change requested by Grenoble's butchers. The dry ration basically consists of hay supplemented with grain and is aimed at replacing corn silage, a feed strategy promoted since the 1960s because of the quick weight increases to which it leads, but that is now accused of producing meat that is tougher and spoils more easily.

The specifications were necessary but not sufficient to achieve all the quality adjustments needed. The experience of the supply chain system set up with Grenoble's butchers likewise attested to this. These butchers were used to choosing their meat from a broad supply of carcasses collected by meat brokers. It was thus easy for them to judge fat levels and choose the carcasses that suited them. The butchers in the *Eleveurs de saveurs iséroises* scheme bought the animals on the hoof, before they were slaughtered. The problem with that was that meat quality does not derive automatically from ranching conditions or conformation. In the case in point, the butchers found the first carcasses delivered to be too fatty. The ranchers then took training courses to learn how to appraise the butchery quality of animals on the hoof. Evaluating the fattiness of a live steer entails skills and practical knowledge that involve visual observation and manual palpation of the animals that today are the monopoly of the intermediaries in the beef supply chain. The goal was thus to transfer such know-how to the ranchers.

The actors in the *100% Charolais du Roannais* initiative came up against similar issues but found a different solution. This time, Charlieu's slaughterhouse is the one that sounded the alarm. It explained that it had to remove a large amount of fat from the carcasses to achieve a 15% fat content for ground beef, which cost them a pretty penny. It also ascertained very great heterogeneity among the animals, and even pointed to the case of one cow that should have been rejected. Given these problems, which cropped up repeatedly in the three tests in 2016, the *100% Charolais du Roannais*'s steering committee chose to use the services of a cattle merchant, Clément frères, that was tasked with identifying the best animals on each ranch. This solution, for all that, did not give the merchant the power to organize the supply chain. Clément frères was more like a service provider to the ranchers and the other actors of the supply chain, doing triage by quality, in a market scheme in which the rules continued to be set collectively.

Collective Price Setting

A second marketization process concerns price setting (Çalişkan & Callon, 2010). Prices can be set by the action of a diverse range of rules or devices that mirror the balance of power in the supply chain. Two aims were sought in our two case studies: achieving an overall balance over the entire value chain and marketing every part of the carcass.

The supply chain actors in both the *Eleveurs de saveurs iséroises* and the *100% Charolais du Roannais* scheme sought to set the prices at each stage at the same time. Unlike what is done in conventional long supply chains, they did not engage in bargaining stage by stage, but sought an overall balance that would satisfy all the participants. This is a noteworthy feature, given that the work of the intermediaries in the long supply chains is generally extremely opaque when it comes to prices and profit margins. More specifically, the ranchers criticized the way that the intermediaries profited from this opaqueness to manipulate information and push the prices they paid to the ranchers toward the lower end of the scale.

This search for a general balance combined

several rationales: comparison with the market prices usually practiced, coverage of the costs specific to the initiative, and a search for added value that would justify the efforts made. For example, in the *100% Charolais du Roannais* scheme, the four supermarkets involved at the start of the project agreed with the ranchers on a purchase price of €9.72 for a 1 kg package of frozen hamburgers. The ranchers calculated that this price would enable them to cover their costs (hauling and slaughtering the animals; cutting up the carcasses; processing the meat into frozen hamburgers; packing, storing, and delivering the hamburgers; and administrative management) on the one hand and would generate added value compared with selling their cattle to the cooperative on the other hand. The supermarkets and ranchers also agreed on a retail sales price of €11.90 per package, which was in line with the prices of the major national brands. As these prices were set, the supermarkets clearly stated that they could not sell the packages at a higher price, as this would discourage customers. They also stressed that they were accepting half their usual profit margin in order to support the product's launch, but this margin eventually would have to rise when the costs linked to organizing the supply chain fell.

In both initiatives, this search for a fair price has resulted in additional income for ranchers. In 2017, once all the fees had been paid, they received around €100 more per animal sold in the *100% Charolais du Roannais* supply chains than what they received in the conventional supply chains. For *Eleveurs de saveurs iséroises*, the difference was estimated at €150. It should be noted, however, that few animals were sold under these initiatives. A handful of *Eleveurs de saveurs iséroises* ranchers sold about 10 animals annually for about a quarter of their turnover from this activity, while the others made only a few percent of their turnover through the sale of one or two animals per year. Similarly, the ranchers more involved in *100% Charolais du Roannais* only sold three or four animals with this margin per year, and the others only one.

The price-setting process was also linked to the problem of selling every part of the animal. Whereas retailers buy carcasses or cuts of meat, ranchers raise and sell animals. In conventional long supply chains, this constraint is managed by the intermediaries. Neither producers nor retailers have to worry about that. This was no longer the case in the two initiatives that we studied, and their actors set up collective discussions to solve this problem. When the *100% Charolais du Roannais* scheme was created, the parties agreed that the four supermarkets would buy both the hamburgers made from the forequarters and the entire hindquarter carcasses. When in May 2016 one of them announced that it would no longer systematically take the hindquarters, the steering committee considered several solutions. The possibility of excluding this supermarket was raised at a first meeting, with another supermarket arguing that if its competitor was no longer going to abide fully by the rules, it should not be allowed to sell the hamburgers, either. This solution was rejected and the next meetings tackled other avenues. Charlieu's slaughterhouse tried unsuccessfully to find new customers for the hindquarters. It also tried, in two rather unconvincing tests, to make hamburger out of whole carcasses of inferior quality. The project's steering committee envisioned increasing the number of animals slaughtered in summer, when demand for the hindquarters is higher, and storing the surplus frozen hamburgers until winter. However, this option was ruled out because of its cost and the lack of infrastructure. At the time we ended our investigation, no completely satisfactory solution had been found.

Agreeing Collectively on Market Encounter Organization

A third marketization process could also be discerned in the two initiatives that we studied, concerning the rules and infrastructure that allow "market encounters" (Çalişkan & Callon, 2010). In the long supply chains organized by intermediaries, these rules and infrastructure are effective and stabilized, to the point where people are often no longer aware of their importance. For the actors in the *Eleveurs de saveurs iséroises* and *100% Charolais du Roannais* schemes, on the contrary, they had to be recreated.

The rules governing orders, billing, and logistics concern a host of little details that must be settled to allow trade to take place smoothly. To

show this, we can give the example of the problems that *Eleveurs de saveurs isséroises* encountered with its first sales of carcasses to the supermarket at Saint-Étienne-de-Saint-Geoirs. The supermarket asked Grenoble's slaughterhouse to make several adjustments. First of all, the slaughterhouse had to cut up the carcasses more finely than it did for Grenoble's butchers. Second, it had to invest in a new labeling machine so as to be able to include on the carcass labels all of the mandatory information required by law for supermarket retailing. Finally, it had to deliver the meat in a larger refrigerated truck so that its height would be compatible with the supermarket's unloading bays. In the following interview excerpt, one of the ranchers recounts these problems and attests to the learning that they required:

> The carcasses have to be cut up in a certain way; they call that "split and ribbed." There's the side with one hind leg; the forelegs are vacuum-packed and ready to be cut up. We also have to work with Grenoble's slaughterhouse. So, the manager of Grenoble's slaughtering line came with us to meet the supermarket's butchers. … A first carcass was brought over in a 3.5-ton truck, a small refrigerated truck not high enough for the bay, which forced them to unload the truck 200 m from the bay and walk around outside with the animals. So, we had to bring them in 19-ton trucks. So, there you are, those are little things, but we didn't know about them. So, we had to learn. Those are little things, but we can't work with the usual livestock transporters we use with the butchers. Because to go deliver in the middle of Grenoble, it's better to have a 3.5-ton truck. It's all that. And little by little it will become part of our routines. (June 2016 interview)

Production planning is also necessary to ensure "fluid" market encounters. Remember that the *Eleveurs de saveurs isséroises* ranchers have to switch the livestock to dry rations three months before going to slaughter. They also have to be informed early enough to be able to reserve the livestock for these supply chains and not sell them elsewhere. The rule of planning thus ties in with a good behavior rule: Each party must respect their delivery commitments, even if that complicates things for them. As the various tests were carried out, the members of the two initiatives came to an understanding about the right ways to organize this planning. In practice, they drew up medium-term schedules in which each rancher took stock of the animals available on the farm and shorter-term schedules that distributed the orders actually on the books among the ranchers.

All of these organizational rules could be the subject of informal or written agreements. The *100% Charolais du Roannais* initiative made particular use of the latter. All the stakeholders in the supply chain signed a partnership agreement at the end of 2017 that spelled out each party's commitments. The "ranchers" portion of the agreement provided in particular for taking charge of shipping the animals to the slaughterhouse and doing at least one commercial event in a supermarket each year. The cattle merchant, for his part, was responsible for checking the quality of the animals and had to pay a purchase price per kilo that had been negotiated with the ranchers. The agreement also specified that Roannais Agglomération was tasked with centralizing the customers' orders and making sure that the animals were available at the ranches. And on it went.

Discussion and Conclusions

The two initiatives we studied are exemplary cases of hybrid supply chains combining conventional and alternative characteristics. This observation is confirmed by the definition of quality (where an original local definition of quality is sought, while using conventional quality standards), price setting (which aims to ensure fair remuneration for all actors, without completely disregarding market prices), and administrative and logistical organization (which is specially defined, while reproducing the usual forms of intermediated supply chains). But hybridity is in no way equivalent to conventionalization. Our study of *Eleveurs de saveurs isséroises* and *100% Charolais du Roannais* suggests, on the contrary, that hybrid supply chains can achieve the partnership objectives given to them by their promoters. It is probably difficult but nevertheless

possible to create intermediated local food networks without leaving the power to organize them to the intermediaries.

In following the actors in these two initiatives we first were able to identify the sources of power of the conventional long beef supply chains' intermediaries. In trying to work with supermarkets, butchers, or contract caterers, the ranchers became aware of the huge number of adjustments that the intermediaries made each day. The cattle merchants, slaughterhouses, industrial concerns, and distributors have a place as mediators between the worlds of farming and retailing, the actors of which never meet each other. This position gives these intermediaries an advantage when it comes to setting prices. It also enables them to appear as unavoidable links in the chain, because they can find outlets for all the animals, guarantee the qualities of the meat being sold, or ensure fluid trade.

Next, our study revealed what was learned in establishing a strategic partnership among the actors of a supply chain. In their trail-blazing article on values-based supply chains, Stevenson and Pirog identify these supply chains' characteristics through a review of management literature. Two of these characteristics proved to be especially relevant in characterizing our two initiatives: "emphasis on high levels of performance and high levels of trust throughout the network" and "emphasis on shared vision, shared information (transparency), and shared decision making among the strategic partners" (Stevenson & Pirog, 2008, p. 120). Case studies published in this journal subsequently confirmed the importance of these factors (Conner et al., 2011; Greco et al., 2020; Klein & Michas, 2014). In continuing in this direction, we were able in turn to identify three cross-cutting characteristics shared by the three previously described marketization processes.

First, the *Eleveurs de saveurs iséroises* and *100% Charolais du Roannais* initiatives were characterized by their search for collective performance in the supply chain. So, even though each of the actors in the initiatives studied was motivated by her or his own objectives, all the actors were also aware of the fact that achieving their objectives would depend on making the right adjustments throughout the chain. For example, their promoters often expressed the idea that logistical efficiency could not be ignored without harming all the actors and could not be achieved without fine-tuning a host of details. Similarly, the champions of the *100% Charolais du Roannais* initiative explained that the success of their initiative depended on the meat's quality, which itself results from the feed used on the farms, proper selection by the cattle merchant, and quality of carcass chilling (aging) by the slaughterhouse, and also from the way that this quality is promoted at the point of sale, whether by the packaging or the butcher.

This search for collective performance was coupled with the will to develop the supply chain's rules collectively. This aspiration could be explained by the pursuit of partnership values. However, it also met a sort of necessity. Forging supply chains collectively is thus much less simple than continuing to work in supply chains whose organization is delegated to intermediaries. Whereas existing networks are reliable and stabilized, establishing new ones entails identifying good partners, setting and guaranteeing the products' qualities, agreeing on prices, and solving a host of logistic and administrative problems. To do all that, the actors in the two initiatives met each other at meetings and during visits. Above all, they launched experiments that enabled them gradually to discover the right ways to do things. The public actors, Roannais Agglomération and Isère Chamber of Agriculture, had important roles in this regard. They facilitated the encounters among heterogeneous professionals. Yet we must underscore the fact that the economic actors indeed organized the new supply chains themselves.

The two initiatives that we studied finally led us to see the importance of collective learning. In the case of *Eleveurs de saveurs iséroises*, we saw how, in reaction to the Grenoble butchers' criticism, the ranchers decided to learn how to judge the fattiness of their cattle by visual observation or palpation. In a symmetrical movement, the butchers had to talk with the ranchers and think about good livestock feeding. To exaggerate just slightly, we can say that the ranchers learned about meat and the butchers learned about ranching. The trials they conducted played an essential part in generating this learning. In the initiatives that we studied, the rules were

negotiated over and adopted based on the scheduling and assessment of test operations. The first attempt to sell *Eleveurs de saveurs iséroises*'s meat in a supermarket, with all the unexpected problems that were discerned on this occasion, shows this well. The same goes for the groping in the dark that was linked to the difficulty of selling every part of the carcass. All the things learned in this way are both a condition and a consequence of organizing as a partnership. They are indispensable if market organization is not to be left in the intermediaries' hands and they reinforce the actors' abilities to develop new food supply chains.

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A pilot study exploring the impacts of COVID-19 on small-scale direct-marketing farmers in Northwest Arkansas and their responses to the pandemic

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Abstract

The COVID-19 pandemic has led to many disruptions and challenges in local and national food systems in America. Many farms and market gardens were forced to innovate quickly and take action to survive ongoing disruption as these businesses struggled with finances and distribution of products among other challenges. Many small-scale, local farming operations in particular were able to respond to these disruptions in unique ways, which may offer useful insight into how to better prepare small farming communities for public health and other kinds of disasters in the future. This pilot study aims to better understand how COVID-19 affected the local food system in the region of Northwest Arkansas in the mid-southern United States and how small-scale, direct-sales farmers responded to the pandemic, through a survey and interview about their experiences from 2019 to 2021. Participating farmers reported changes in farming procedures and challenges in owning or working on their farms due to ongoing climate-related environmental issues or issues specific to the pandemic, such as distributing products, utilizing financial and other resources of support, and partnering with local supply-chain partners and community members to ensure local businesses' survival during COVID-19. This pilot study can provide insight into how local farming operations and their regional and smaller-scale supply chain partners have built and utilized community resilience strategies to survive COVID-19 challenges in the Northwest region of Arkansas. A statewide follow-up study will be con-

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ducted to observe how these producers navigated these challenges on a larger scale, including in different regions of Arkansas following the start of the pandemic.

Keywords
COVID-19, Pandemic, Small-scale Farming, Direct Marketers, Local Food Systems, Food Security, Climate Resilience, Community Resilience, American Rescue Plan

Introduction

The COVID-19 pandemic has led to many disruptions and challenges in food systems and supply chains. Local, state, and national government response measures to the spread of disease, including lockdowns, the closure of indoor operations at restaurants, and restrictions on mobility, also tended to exacerbate these disruptions (Teng, 2020).

Farmers, in particular, faced many challenges during the pandemic, and farms of all sizes faced difficulty accessing stable marketing channels, significant decreases in regular income, and increased input costs (Jackson-Smith & Veisi, 2021). In some instances, farmers were forced to dump or destroy "excess milk or fresh produce, while grocery stores are left with empty shelves and people waiting in long lines to acquire food assistance" early in the pandemic because of a sudden disruption in supply chains (Liang et al., 2021, p. 125).

Notably, many small-scale, local farming operations were able to respond to these various disruptions in a resilient manner. They fluidly adjusted their production and distribution to adapt to sudden changes in demand for food during the pandemic (Patillo et al., 2021), with some small farms even changing their main marketing channels from institutional buyers to individuals in local communities, creating home delivery systems and online ordering applications (Jackson-Smith & Veisi, 2021).

Although many studies are emerging that focus on how COVID-19 has exacerbated food insecurity and the global supply chain crisis, the literature is limited on the impacts of public health crises like COVID-19 on small farms and their responses to public health crises, particularly with a focus on the Mid-South region of the United States. Because the COVID-19 pandemic is still in effect, we are only beginning to fully understand how this pandemic has and will continue to affect local food economies and communities. To fill these research gaps, this pilot study aims to answer the following questions: (1) How has COVID-19 impacted small-scale direct-marketing farmers, particularly those in Northwest Arkansas (2) How have the small-scale direct-marketing farmers responded to COVID-19?

We employed a mixed case study method, surveying and interviewing local farmers about their experiences from 2019 to 2021. This study contributes to the literature by offering a glimpse at responding actions taken by small-scale direct-marketing farmers in the U.S. during the pandemic and how they have enabled their resilience, as well as contributing to the literature on farm resilience and community-based crisis response. It will also provide a starting point for a larger, statewide study that will aim to deliver a complete picture of how farmers were affected by and managed disruptions by COVID-19 in the state of Arkansas.

Literature Review

Risks to Small, Locally Owned Farms

The U.S. Department of Agriculture categorizes a farming operation as 'small' if the gross cash income is under US$250,000 (USDA, 2021a). Although the largest number of farms in America as a whole are small, locally owned farms, just 5% of farming operations produced 75% of all sales in 2017 (Moon, 2019).

There are a number of risks involved in keeping a small-scale, independent farm that can stay operating and competitive (Hanson et al., 2008). Small farms, in general, are costly to run, require access to capital and land, and owners typically receive substantial income from elsewhere in order to keep the family and the farm afloat (Hanson et al., 2008). Private insurers and federal crop insurance programs, such as the new Whole-Farm Revenue Protection program through the USDA (National Sustainable Agriculture Coalition, 2022), can offer coverage to farms in case of drought and other risks to agriculture (Brusentsev & Vroman, 2017), but many only provide aid for "high value"

crops, which represent only a small percentage of what a small-scale farm might produce (Reynolds-Allie et al., 2013).

An additional risk receiving greater attention is the effect of climate change on temperature, precipitation, and an increase in potential natural disasters worldwide. While climate is always a challenge for farmers, climate change not only poses further risk to the agriculture sector, it also can affect the abundance and distribution of disease, as witnessed globally during the COVID-19 pandemic (Khasnis & Nettleman, 2005; Patz et al., 2003). Potential effects of climate change in our globalized world are predicted to include overcrowding, famine, water contamination, human migration, and alterations in vector ecology, all of which may increase the potential for further spread of infectious disease (Khasnis & Nettleman, 2005; McDermott, 2022; Medlock & Leach, 2015; Thomas, 2020).

Disrupted Food Systems during COVID-19

Several major corporations dominate the food sector in Northwest Arkansas, including the headquarters for Wal-Mart, the largest food retailer in the world, and Tyson Foods, the largest poultry and meat processor in the country (Arkansas Farm Bureau, n.d.). However, even with this abundance of agricultural revenue, food security is an ongoing challenge for Arkansans. Nationally, over 10% of households in the U.S. were food insecure in 2020, compared to over 16% of households in Arkansas in 2019 (University of Arkansas for Medical Sciences, n.d.). In the region of Northwest Arkansas specifically, just over 13% of households were food-insecure. Fortunately, there are significant initiatives aiming to address these disparities in Northwest Arkansas. One new initiative, the University of Arkansas for Medical Sciences' Northwest Arkansas Food Insecurity Community of Practice, brings together 24 diverse organizations that address food insecurity in the region, including food pantries, nonprofits, farms, health care facilities, and others, and includes an advisory board made up of community partners (Jessen, 2022).

Previous studies have used the Food and Agriculture Organization of the United Nations (FAO)'s four pillars of food security to elucidate how the COVID-19 pandemic affected local, national, and international food systems (Béné, 2020; Laborde et al., 2020). The four pillars consist of access (economic and physical access to food), availability (adequacy of the food supply), utilization (food intake), and stability (steadiness in the other pillars over time) (Devereux et al., 2020). In particular, scholars emphasize that the pandemic had a tremendous effect on food access and food availability, particularly among higher-risk communities (Larson et al., 2020; Niles et al., 2020).

Various pandemic-related government measures, including the temporary closure of restaurants, schools, and workplaces, created significant economic stresses, such as layoffs and furloughs, thus leading to negative consequences for individuals' economic access to food, food security, and hunger (Campbell, 2021; Devereux et al., 2020). These government measures, in particular restrictions on mobility, also generated adverse consequences for individuals' physical access to food (Devereux et al., 2020).

The pandemic not only affected food security and access for consumers, but also affected how food producers themselves ran their businesses to survive. Since the beginning of COVID-19, farms of all kinds have had difficulty accessing markets to sell their crops and animal products (Laborde et al., 2020). In some cases, when farmers were unable to find alternative markets, they had no option but to destroy their products, such as surplus milk and vegetables (Hansen et al., 2020).

Scholars have additionally noted farmers' income losses due to pandemic disruption. During the first year of the pandemic, in particular, some agricultural product prices suddenly declined "as demand from restaurants, colleges, schools, and other institutions … evaporated" (Jackson-Smith & Veisi, 2021, p. 164), although input costs (e.g., fertilizers) conversely sharply increased due to the global supply-chain crisis generated by the pandemic (Patillo et al., 2021). However, the pandemic did open up new opportunities for smaller operations as many consumers wanted to buy directly from local farmers, cutting out the complex supply chain that exposed vulnerabilities during the start of the pandemic (Jackson-Smith & Veisi, 2021). This was a challenge for many producers, as such a sudden increase in demand for local foods caused

small farmers to struggle with accessing services, such as processing and distribution, to accommodate the demand (Patillo et al., 2021).

Small Farmers' Responses to COVID-19

In March 2021, US$6 billion of the American Rescue Plan was put toward supporting operations run by farmers of color, organic and small farms, and other producers in the form of grants, loans, and programming (Reiley, 2021; USDA, 2021b). However, efforts by lobbyists and federal judges, among others, have effectively blocked the distribution of relief or assistance through this program, and after nearly two years of disruption, many small or isolated American farms and businesses have not been able to access the financial relief needed to survive the pandemic (Reiley, 2021).

Fortunately, the USDA has taken steps to provide additional support for producers and incorporate climate adaptation into its programs over the course of the pandemic. Through rolling out a climate adaptation and resilience plan, the USDA aims to address the impacts of climate change on the agriculture sector by providing incentives for farmers to implement climate-conscious conservation practices, build resilience, increase support for research and new technologies, and foster a culture of climate risk management practice across the U.S. (USDA, 2021c). The USDA has also offered relief for low-income consumers and small-scale producers, among others, through its Pandemic Assistance initiative (Farmers.gov, n.d.). These government assistance programs may provide support for small-scale farmers as they respond to ongoing challenges, such as COVID-19 and climate change.

Although large-scale food supply chains may continue to face significant challenges due to the import and export conflicts and labor shortages that occurred over the past three years, there is evidence that many smaller-scale producers may have had a different experience during the pandemic due to their size, community relationships, and proximity to and existing relationships with local or regional supply chain partners (Jackson-Smith & Veisi, 2021; Thilmany et al., 2021).

One way to illustrate how small-scale direct-marketing farmers responded to COVID-19 is by utilizing a resilience framework (Darnhofer, 2014; Jackson-Smith & Veisi, 2021). In the context of the pandemic, farm resilience refers to "the ability of an individual farm operation to continue food production and distribution to customers in light of the ongoing COVID-19 pandemic" (Bachman et al., 2021, p. 285), such as by becoming more localized (Ahmed et al., 2020; Atalan-Helicke & Abiral, 2021).

During the pandemic, farmers developed and implemented various responses to sustain their essential functions. These responses to the pandemic can be categorized according to a farm resilience framework suggested by Darnhofer (2014) and Jackson-Smith and Veisi (2021). The framework concentrates on three key resilience capabilities of farmers: buffer capability, adaptive capability, and transformative capability. Buffer capability is the ability of farmers to absorb a perturbation without a substantial change in farming operations, for example, by maintaining food production with fewer inputs and relocating existing resources. Adaptive capability is the ability of farmers to adjust their operations to respond to disruptions in an incremental manner while maintaining the same goals and values of their operation. For example, this could be by introducing marginal changes to established routines by improving production processes in a more flexible manner and adopting a new technology (e.g., mobile applications) to sell their food products to existing customers more efficiently. Finally, transformative capability is the ability of farmers to design and implement radical changes. Transformative responses include changing "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" (Jackson-Smith & Veisi, 2021, p. 159).

According to Jackson-Smith and Veisi (2021), the most common examples of farmers' responses to COVID-19 are buffer responses without changing any basic operating processes. For example, many farmers destroyed or dumped their farm products in order to cope with oversupply caused by the closure of restaurants and institutional buyers such as schools, although some farmers concerned about food security in their local communities willingly donated their excess agricultural

products to families, neighbors, and hunger-relief organizations (Bachman et al., 2021).

Farmers' adaptive responses also focused mostly on "short-term incremental adjustments in their production or marketing practices" (Jackson-Smith & Veisi, 2021, p. 167). Those operations that already used direct sales to individuals adjusted their selling methods to be more socially distanced during the pandemic. In Northwest Arkansas, several of the largest farmers markets quickly pivoted to a virtual market model through websites and mobile applications and providing curbside pickup during the early months of 2020 (Della Rosa, 2020).

Compared to buffer responses or adaptive responses, transformative responses were less common during the pandemic (Jackson-Smith & Veisi, 2021). A notable example of a transformative response is a case where a small farm in North Carolina known as Ran-Lew Dairy lost half its businesses due to the closure of local restaurants, but the farm responded to the crisis by launching "a socially distanced on-farm pick-up system" to sell their dairy products to people in their community (Huber, 2020, pp. 269–270). When larger local grocers struggled to stock dairy products during the pandemic due to supply chain disruptions, this small farming operation was able to adapt rapidly to meet the larger grocers' needs (Huber, 2020). Ran-Lew Dairy's transformative response effectively changed its marketing channels from local restaurants to an on-farm pick-up system and local large-scale grocers.

Several studies demonstrate why some smaller farms were able to respond to the pandemic more successfully compared to large-scale producers (Ahmed et al., 2020; Bachman et al., 2021). According to Huber (2020), the reason is partially related to the size and agility of smaller farms. Smaller farming operations with fewer staff "can be trained more rapidly and can adapt to market changes more fluidly than industrial-scale farms" (p. 270), and the creation of new marketing channels, and direct marketing in particular, can make for an effective response to COVID-19 (Bachman et al., 2021; Marusak et al., 2021; Thilmany et al., 2021). Despite a larger share of the expenses, "direct market sales return a larger share of the food dollar back to the farmer than traditional marketing channels do" (Bachman et al., 2021, p. 285), and "is associated with higher business survival rates among small … farmers" (Bachman et al., 2021, p. 285). Another unique quality present in many successful small-scale farming operations is the ability to build robust relationships between partners in local and regional supply chains, including consumers, farmers markets, small businesses, university extension offices, and other partners. Small-scale farmers who had their own social networks and relationships of trust with local consumers and partners tended to receive timely support from them to respond to the pandemic in a resilient manner (Fardkhales & Lincoln, 2021; Haynes-Maslow et al., 2020).

With a number of adaptive responses noted in the literature, we aimed to discover what responses or adaptations, if any, were utilized in Northwest Arkansas among small-scale direct-market farmers through the first two years of pandemic disruption.

Methodology

This pilot study utilized a mixed case-study approach focusing on small-scale direct marketing farms in Northwest Arkansas. Qualitative and quantitative data were collected and analyzed separately, and then results were compared in order to capture a full picture of the effects of the pandemic on local farmers. Quantitative data were collected first from 17 farmers who either owned or worked on small direct-marketing farms or market gardens in Northwest Arkansas, using a short online SurveyMonkey survey. The link to the survey was emailed to farmers through the Northwest Arkansas Farmers' Market Alliance, a community organization that provides support and programming to 17 farmers markets across the Northwest Arkansas region, and through Northwest Arkansas–based farming-focused Facebook communities (groups). Attempts were made to increase the sample size by bringing an iPad to farmers markets and inviting farmers to take the survey, but this was ultimately unsuccessful as farmers were busy with their sales. Farmers took the survey during the summer of 2021, to observe changes between the 2019 market season before the pandemic, the 2020 market season during the first year of the pandemic, and the

market season in 2021, after the first year of the pandemic.

The quantitative portion of the study contained a mix of questions on a Likert scale, such as "If you farm (food) produce/crops, how much did you grow in 2020?" with answer options ranging from "much less than in 2019" to "much more than in 2019." Other questions that required a number response included "How many part-time staff did you employ in 2019?" Others required a "yes" or "no" response, such as "Did your farm/business receive financial support during the 2020 season?" or a "check all that apply" response for questions such as "Which of these, if any, is your business struggling with in 2021?" with a list of possible choices. Some of these choices included food safety challenges, personal challenges, and climate/pest/environmental challenges, for which the mode was calculated. Descriptive quantitative analysis was completed in Excel after the data was generated from the responses in SurveyMonkey.

This survey was followed up by qualitative interviews through Zoom in the fall of 2021 with five of the farmers who voluntarily agreed to interviews when they took the survey. The follow-up interviews aimed to gather more information about the results of the quantitative data analysis and additional context about local farmers' experience of the pandemic in their own words, and to find out if there were additional challenges or innovations that were not included in the survey instrument. This time period was chosen for interviews because it allowed the farmers to reflect on the market seasons before, during, and the year following the first year of the pandemic before transitioning into the 2021 winter market season.

Once the interviews were recorded, the recordings were transcribed and then coded using Microsoft Word rather than a software program for qualitative analysis, due to the small sample size. The qualitative portion of the study included several larger themes that were listened for throughout the interview recordings through thematic qualitative analysis, including 'community,' 'resources,' 'change in farming procedures,' and 'farming challenges,' each including several subthemes stemming from the larger themes (see Table 1). These themes identified similar patterns throughout the recordings, which were then compared with results from the quantitative data analysis. This study was also approved by the University of Arkansas for Medical Sciences' Institutional Review Board to ensure the protection of the participants prior to the data collection.

While the sample size of this study appears to be small and is specific to a single region of Arkansas, this limitation is appropriate for a pilot study aiming to capture a small population of farmers in

Table 1. Qualitative Coding Scheme

Code	Description	Subtheme
Community	Statements that refer to the importance or non-importance of local farming in Northwest Arkansas	- Support for local farms in Northwest Arkansas
Resources	Statements in references to financial and other resources that farmers used during the pandemic to keep the farm running	- Were these resources sufficient - Were these resources used in non-pandemic years
Change in farming procedures due to the pandemic	Statements that allude to a change in the way the farm ran due to the pandemic	- Differences in where products were sold - Differences in the amount of product raised or grown - Differences in the kinds of products raised or grown
Farming challenges	Statements that refer to challenges faced by small farms in Northwest Arkansas	- Kinds of challenges present before the pandemic - Kinds of challenges present during the pandemic - Kinds of challenges after the first year of the pandemic

Table 2. Characteristics of Surveyed Farmers and Farms

	n	%	Mean (SD)
Gender	17	100%	
Male	4	24%	
Female	13	76%	
Race	17	100%	
White	15	88%	
Non-white	2	12%	
Farming experience (years)	15		14.9 (12.6)

Farm size (acres)		
	n	%
< 50 acres	11	65%
50–99.9 acres	3	18%
100–149.9 acres	1	6%
150–199.9 acres	2	12%
Total	17	100%

Farm location by county		
	n	%
Washington	11	69%
Benton	3	19%
Marion	1	6%
Crawford	1	6%
Total	16	100%

Types of products the farmers sold *

Farm	(Food) produce/crops	(Material or ornamental) produce/crops	(Non-meat) animal products	(Meat) animal products
F1	X			
F2	X			
F3	X			
F4	X			X
F5	X			
F6	X	X		X
F7	X	X	X	
F8	X		X	
F9	X	X	X	X
F10	X			X
F11	X	X	X	X
F12	X		X	X
F13	X			
F14	X			X
F15	X			
F16	X			X
F17				X

*Note that the amount produced of each product varies by farm.

a specific area of the state. A larger, statewide study will be conducted to follow up on the results of the pilot study and expand to more regions of Arkansas to include a broader and more representative sample. This study will also include additional years following the first year of the pandemic disruption to discover how farmers adapted two and three years later.

Results

The focal population for this pilot study was farmers who owned or worked on small-scale, locally run farms or market gardens in the Northwest Arkansas region during COVID-19. Only one farm that participated in this study reported earning more than US$50,000 annually in gross farm sales. Study participants represented 12 cities in four Northwest Arkansas counties, and the majority lived in Washington County. The farmers who participated in this study were 76% female, had an average farm size of around 49.6 acres, and the majority have been farming in Arkansas for approximately 15 years. The interview participants were primarily fruit and vegetable growers.

Eighty-eight percent of the farmers were white, which is reasonably reflective of the general population of the region, especially those who own farmland (see Table 2). This reflects an overall trend in American agriculture as well. While the number of

white farmers is decreasing, according to the most recent (2017) census of agriculture, 95% of American farm owners are white (Moon, 2019). However, the number of female producers, including those taking the helm of farming operations, has increased in recent years. The 2017 census of agriculture indicates that 56% of farms in the U.S. have at least one female producer (Moon, 2019).

In the results section, we illustrate three main themes we found from this study: The impacts of COVID-19 on local farmers in Northwest Arkansas, local farmers' responses to the pandemic from the farm resilience framework, and the importance of local communities in response to the pandemic.

The Impacts of COVID-19 on Small-Scale Direct-Marketing Farmers

This study focuses mainly on the unique challenges the pandemic brought to farmers, often specific to the kind of products they sold. The key categories of challenges that small-scale direct-marketing farmers in Northwest Arkansas faced during the pandemic are related to finances, the distribution of products, and the environment. For example, produce farmers struggled in part because they were unable to freeze their products and needed to figure out how to sell their goods while they were still fresh. Farmers raising animals struggled to find feed for their animals. Meat producers also struggled, even with high demand, to get their animals processed quickly enough to sell, and some animals got too big to process in time, which in turn led to more mouths to feed the following winter. Particularly since these farms were small operations, some also struggled because they did not have the infrastructure at their farm to process or store food long-term.

> A lot of produce has gone to waste because it's got to move right now. And the next thing you know the COVID numbers go up and the restaurants close and everything stops, and it's just the unknowing that's the tough part. (Interview participant 2)

Table 3 represents a variety of challenges that local farmers faced over the past three years. First, note that compared to the 2019 season, there was an increase of 23 percentage points in farmers reporting financial troubles in the 2020 season, and 11 percentage points more farmers reported that they were still experiencing financial struggles in the 2021 season. This is aligned with findings from Table 4. According to Table 4, only 12.5% of the survey respondents reported that they received financial support (e.g., government loans, private

Table 3. Responses to the Question: "Which of these, if any, did your farm/business struggle with? Choose all that apply."

	2019 (*n*=17)		2020 (*n*=17)		2021 (*n*=17)	
	n	%	*n*	%	*n*	%
Financial challenge	3	18%	7	41%	5	29%
Food safety challenge	0	0%	3	18%	2	12%
Distribution of products	0	0%	7	41%	3	18%
Climate, pest, or environmental challenges	9	53%	9	53%	10	59%
Personal challenges	3	18%	4	24%	2	12%

Table 4. Financial Support Status for the Past Three Years (2019–2021)

	Yes		No		Row Total	
	n	%	*n*	%	*n*	%
Did your farm/business received financial support in 2019?	2	12.5%	14	87.5%	16	100%
Did your farm/business receive financial support in 2020?	5	31%	11	69%	16	100%
Did your farm/business receive financial support in 2021?	2	12.5%	14	87.5%	16	100%

loans, personal gifts, etc.) in 2019, but there was an increase of almost 20 percentage points in farmers who received financial support in 2020. However, the percentage of farmers who received financial support in 2021 fell to the pre-pandemic level (12.5%).

The farmers who took part in this study expressed concerns not only about ensuring the financial survivability of their farms, but also the social responsibility of feeding their community.

> We were really kind of caught between a rock and a hard place because we really felt the burden of, like, wanting to feed people and, like, knowing that we needed to provide this food for the community, but not having the capacity to do that. (Interview participant 4)

Notably, as can be seen in Table 3, when asked what kinds of challenges farmers faced in 2019, 2020, and 2021, climate, pest, and environmental challenges were the most consistent among all farms. More than half the farmers surveyed agreed that this was a problem for them all three years, the worst being 2021, when the region experienced a surprise heavy snow in February, highly unusual snow in April, and an unusually wet and long spring followed by an extremely dry, long summer.

> I mean the weather is for sure like the worst variable, with climate change and what's going on everything is so crazy. … The biggest variable for me as a stressor is weather. (Interview participant 1)

Based on this finding, it seems that COVID-19 was a challenge for the farmers, but weather and pests were a greater challenge regardless of what kind of farm it was.

> I think the top priority that … we need to teach consumers is, know who's growing your food, because if you have a relationship with the person who's growing your food, then you will start to understand all the things that they have to go through and all of the challenges, all of the issues that are being brought up because of climate change. (Interview participant 4)

Further, as reflected in Table 5, during the 2020 season most local farmers surveyed produced either the same amount or more than they did dur-

Table 5. Production, Processing, and Sales in 2020

	Slightly or much less than in 2019		The same amount as in 2019		Slightly or much more than in 2019		Row Total	
	n	%	*n*	%	*n*	%	*n*	%
If you farm (food) produce/crops, how much did you grow in 2020?	5	33%	2	13%	9	56%	16	100%
If you farm (food) produce/crops, how much did you sell in 2020?	7	47%	4	27%	4	27%	15	100%
If you farm (material or ornamental) produce/crops, how much did you grow in 2020?	1	25%	2	50%	1	25%	4	100%
If you farm (material or ornamental) produce/crops, how much did you sell in 2020?	3	75%	1	25%	0	0%	4	100%
If you farm (non-meat) animal products, how much did you produce in 2020?	0	0%	4	80%	1	20%	5	100%
If you farm (non-meat) animal products, how much did you sell in 2020?	2	40%	3	60%	0	0%	5	100%
If you farm (meat) animal products, how much did you process in 2020?	2	22.2%	2	22.2%	5	55.6%	9	100%
If you farm (meat) animal products, how much did you sell in 2020?	3	37.5%	1	12.5%	3	50%	8	100%

ing the 2019 season. However, compared to 2019, they sold less during the first year of the pandemic (2020). This may align with the result shown in Table 3 that more than half the farmers struggled to distribute their products in 2020. Specifically, according to Table 5, 56% of produce farmers surveyed reported that they grew more during the 2020 season than the 2019 season. However, 47% of the farmers sold less in 2020 than they did in 2019. Simply speaking, approximately 10% of farmers grew more but sold less during the 2020 season compared to the 2019 season. Unfortunately, the survey did not provide an opportunity to explain in detail why this happened.

As can be seen in Table 5, half the farmers who grew material or ornamental crops reported that during the 2020 season, they grew about the same amount as the 2019 season, but 75% of them sold less in 2020 compared to 2019. Eighty percent of the non-meat animal product sellers reported processing the same amount as the previous year, while 20% of them reported processing more compared to the previous year. Sixty percent of them sold the same amount as the 2019 season, but 40% sold less compared to the previous year. Notably, meat producers seemed to fare better in 2020 than plant growers and non-meat animal product producers. The majority of meat producers surveyed reported both producing and selling more in 2020 than in 2019. Note that since Table 5 shows only the comparison between the 2019 season and the 2020 season with respect to production, processing, and sales, it cannot provide details on how the amount of production, processing, and sales changed before, during, and after the pandemic.

Farmers' Responses and Adaptation

As stated earlier, Darnhofer (2014) suggests three types of farmers' responses to the external environment: buffer response, adaptive response, and transformative response. According to the literature, the most common responses that farmers implemented during the pandemic were buffered responses, such as destroying their farm products and cutting costs (Jackson-Smith & Veisi, 2021). However, local farmers in Northwest Arkansas appeared to use primarily more innovative and adaptive responses to the COVID-19 pandemic, which focused on short-term incremental changes in their production and marketing processes. We discovered that their responses were based mainly on adaptive changes in sales procedures, including farmers market drive-through pick-up and online ordering applications.

However, these farmers did not want to continue using these new marketing methods (e.g., the sale of crops in a socially distanced manner and the use of mobile applications) if the spread of coronavirus was controlled effectively and properly. This may be because these farmers considered having in-person interactions with local customers one of the most important values for their farming business and therefore did not put any transformative changes in place to adapt to the pandemic in the long term.

Adaptive changes in sales procedures

According to Table 6, out of the options listed on the survey question, "Where did you sell your crops in 2019, 2020, and 2021"? which included farmers markets, local restaurants, grocery stores,

Table 6. Responses to the Question: "Where did you sell your products for the past three years [2019–2021]? Choose all that apply."

	2019 (*n*=17)		2020 (*n*=17)		2021 (*n*=17)	
	n	%	*n*	%	*n*	%
Farmers markets	8	47%	7	41%	7	41%
Local restaurants	5	29%	3	18%	4	24%
Community supported agriculture	0	0%	1	6%	1	6%
Grocery stores	4	24%	2	12%	2	12%
Local businesses	3	18%	4	24%	2	12%
Other	9	53%	10	59%	11	65%

CSAs, and local businesses, farmers listed 'other' the most frequently. With regard to the percentage of 'other' sources that farmers sold to, there was an increase of 12 percentage points from 2019 (53%) to 2020 (65%), potentially due in part to the increase in online sales that many small farms switched to during the pandemic or in small part by U-pick or roadside operations when COVID safety procedures allowed for more outdoor activities. The second most frequently chosen option was farmers markets, which stayed mostly the same even with the interruption of the pandemic year, as many farmers markets in the region either continued to meet in-person outdoors or switched to online sales.

The farmers noted that due to the small size of their farms, they were able to be flexible and pivot quickly to different methods of distribution when disruption started during the pandemic, such as initiating drive-through and online options for their businesses. Some farmers who normally sold to restaurants received support from local chefs who helped them distribute their products, so that both the farmers and the restaurants could benefit while restaurants were closed to in-person dining. Restaurants and farmers markets provided online sales and delivery options to move products while in-person options became unsafe or unavailable.

> I think there were a lot of farms like mine that really survived because of [online sales from restaurants] because we had already planted, we had already managed our year, our produce, our crops and you know … what are you going to do with 20 bags of salad mix or whatever, you know you gotta find an outlet. (Interview participant 3)

Community

Community is a theme of farmers' experience of the pandemic that came from the qualitative interviews. This theme is closely related to local farmers' adaptive responses to the pandemic that we illustrated above. Although there is a paucity of explanations in the farm resilience literature (Darnhofer, 2014; Fardkhales & Lincoln, 2021) for how and why a certain type of farmer's response to the crisis is selected and implemented, this study can provide a plausible example and explanation for that. Collaborative relationships that local farmers already had with their customers, local businesses, and other farmers in the immediate community enabled the farmers to respond effectively to the pandemic in an adaptive manner. In particular, local food economy partners in Northwest Arkansas came together in moving ways to support each other's businesses and help each other continue running. For example, local meat processors helped farms to process smaller animals even if they did not make as much money as they did with large animals like cattle. Farm-to-table restaurants and local chefs worked with farmers to cater to online orders in the absence of wholesale sales.

> The farm to table movement started before COVID and has really taken root here in Northwest Arkansas. And so the ball had already been moving successfully when COVID came and … and they weren't just going to abandon it at that point. (Interview participant 4)

These may be good examples of local farmers' adaptive responses to the pandemic that were enabled through collective action between local farmers and other immediate community stakeholders, such as restaurants and meat processors, and importantly, including consumers who continued to buy and eat locally.

> I think that's one of the side benefits from a situation like COVID where people are forced to count on one another, you know in times of need and duress like this, the relationships between not just the chefs and the farmers but between just individuals. (Interview participant 5)

This community support is not just a result of the pandemic. Farmers described conversations with other farmers about ways to improve their methods or to support greater sustainability even before the pandemic, creating close personal relationships with local supply-chain partners, such as chefs and butchers, inviting others to visit their farms and offer advice to those who wanted to

start farming, personal relationships with repeat customers, and other avenues of connection. Several farmers also noted that the Arkansas Cooperative Extension Service has been helpful to them in maneuvering through some of the challenges they faced with their operations, and one farmer voiced encouragement for more farmers to get involved with their local extension boards.

> I will say if we have learned one thing, it is to appreciate the farmer, we have retired from [other jobs]. We have retirements come in. God bless the farmer that's trying to make a living doing this, I don't know how they do it. (Interview participant 5)

Discussion and Conclusions

Although studies are continuing to emerge that focus on how COVID-19 disrupted food systems and how farms responded to the pandemic, few have focused on case studies of small-scale farming communities in the Mid-Southern U.S. (Jackson-Smith & Veisi, 2021; Marusak et al., 2021; Thilmany et al., 2021). To fill this research gap in the literature, we conducted a mixed case pilot study with a focus on small-scale direct-marketing farms in the region of Northwest Arkansas. We aimed to answer two research questions regarding how COVID-19 affected small-scale direct-marketing farmers and how the farmers responded to the pandemic.

Our small sample of direct-marketing farmers reported struggling financially during the first year of the pandemic, as can be seen in Table 3. This seems to be closely related to another finding from this study that the majority of farmers struggled to find distribution channels for their products and sold less in 2020, as can be seen in Tables 3 and 6.

The most important and enduring finding from this study may be that while environmental challenges have always been a struggle for farms, the farmers who participated in this study demonstrated that environmental disturbance has been a greater challenge overall than the COVID-19–related disruptions, as shown in Table 3. Climate change is likely to pose further risk to farmers by increasing weather-related extreme events (Stott, 2016). Strategies need to be in place to protect these small farms and incentivize them to invest in environmentally sustainable farming methods while also making these efforts financially viable. We applied Darnhofer's farm resilience framework and found that small-scale direct-marketing farmers primarily chose adaptive responses instead of buffer or transformative responses. Importantly, it seems that the changes farmers made during COVID-19 were mostly meant to be temporary to respond to the public health crisis, and those who participated in the qualitative interviews were all glad to see their customers face-to-face again. However, at the time that this study was conducted, some of these innovations, such as online ordering, persisted to a lesser extent through farmers markets and may continue to provide easier access to locally grown food for those with limited mobility or who are unable to attend in-person markets in the future.

Small-scale producers in Northwest Arkansas did struggle with production and distribution, but many had opportunities to remedy this, while large-scale operations did not. This may confirm that it is possible for resilient small farms to respond to crises more successfully compared to large and industrial-scale farms (Ahmed et al., 2020; Bachman et al., 2021). However, to fully understand the resilience of farms in crises, it is important to consider that different farmers have different challenges depending on what kinds of produce or animal products they sell, what kinds of community connections they have, what sort of infrastructure their farm has, and what kind of resources they have or need (Darnhofer, 2020). Simultaneously, successful innovations in local food economy resilience during the pandemic may offer an opportunity to reimagine an alternative, healthier, more sustainable food system that can be more resilient to disasters and promote better health outcomes for the environment and communities (Atalan-Helicke & Abiral, 2021; Campbell, 2021). The lesson here then may be less about what strategies might work to ride through hardships on a small-scale farm and more about how communities' support of small local farms and smaller supply chains can help those farms survive and persist even as larger supply chains suffer.

This pilot study has several limitations. First, only English-speaking farmers participated in this

study, although there are non–native-English-speaking direct-marketing farmers in Northwest Arkansas. Thus, a future researcher may invest in translation services, such as in Hmong and Spanish, to provide the survey or conduct interviews in other languages spoken locally among small farmers in Northwest Arkansas or other regions. Next, this study focused primarily on Northwest Arkansas' agricultural sector. Therefore, findings from this study may have a limit of generalizability. That is why a larger, statewide study will be conducted to follow up on the results of this pilot study and expand to more regions of Arkansas to include a broader and more representative sample. This study will also include additional years following the first year of pandemic disruption to discover how farmers adapted two and three years later from the farm resilience perspective, as well as to observe the looming effects of climate challenges on small farmers across the state. This expanded study might provide insight into how needs and adaptations were similar or different across the state and how successful pandemic responses can be replicated across small farming communities in the future to support community and food system resilience.

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Until settlers drove them out, the Osage, Caddo, and Quapaw Nations cared for the land that now houses Northwest Arkansas. While members of these communities continue to live in Northwest Arkansas today, it is important to acknowledge that the majority of the local farmers and caretakers today in the Arkansas Ozarks are not members of those communities and are not indigenous to the area. May we all respect the land we live on, more deeply understand its history, and remain thoughtful and intentional about the stories we tell about it and its people, past, present, and future. The authors would like to thank the community participants for their generous time and involvement in this study.

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Communication and building social capital in community supported agriculture

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Abstract

Community supported agriculture (CSA) schemes (programs) provide an alternative means for obtaining produce, through direct purchase from farms. They are also often driven by a vision of transforming the current mainstream food system and seek to build a community of people who support this vision. Social capital refers to the networks and ties between people and groups and the

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See disclosures at the bottom of the next page.

impact of these ties on access to influence, information, opportunity, and ability to organize. Social capital is built by CSAs and helps foster and stabilize the grassroots agricultural innovations that are needed for the development of sustainable food systems. Using the concept of social capital, we studied communication methods of four CSAs in the UK, examining the interactions between CSAs and their members and within each of their membership groups. We carried out in-depth interviews with 49 CSA members to establish what interactions they had with their CSA and with other members, and analyzed our data thematically to identify the characteristics of interactions that were important to participants. We consider how our research may benefit CSA organizations by enabling them to learn what their members want and to learn about the varied ways in which members conceptualize their experiences of community derived from their membership. We found that the various CSA communication strategies, which consist of frequent and varying virtual and face-to-face interactions, are able to promote development of both bridging and bonding social capital. Overall, there is a desire for social connection in CSA memberships. Furthermore, in CSAs where members can interact easily, there is potential for CSA membership to provide members with communication that is important as a source of both knowledge and social connection. CSAs can maximize both social capital and member satisfaction by using a range of communication media and methods to meet their members' circumstances and preferences.

Keywords
Alternative Food Networks, Civic Agriculture, Civic Food Networks, Communication, Social Capital, Community Supported Agriculture, Food Systems

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Introduction

The urgent necessity of transforming food systems for reasons of sustainability, food security, and health has been well documented (IPES–Food & Nourish Scotland, 2021; Willett et al., 2019). As with most environmental issues, government, industry, and technology all have a role to play, and a range of potential avenues exist for generating change in food systems (Pralle, 2006). One potential means of sustainable food system transformation, which forms the focus of this study, is community-based innovation, which often aims to relocalize food systems by shortening supply chains, building social capital, and creating sustainable income sources for small-scale farmers (Gleissman et al., 2018). In this study, we focused on the role of the effective building of social capital, by investigating the specific communication strategies that enable community supported agriculture projects (CSAs) to develop social capital.

Community Supported Agriculture

A CSA is a partnership between farmers and consumers in which the responsibilities and the risks and rewards of farming are shared (Community Supported Agriculture Network UK, 2022; European CSA Research Group, 2016). A wide variety of governance arrangements exist, but usually the consumer offers something more to the CSA than just a straightforward exchange of money for produce. For example, the consumer may contribute labor, take some financial risk by investing in the CSA, play a part in decision-making, and/or accept a variable share of produce proportionate to the success of harvests. Accordingly, participants in CSAs are often referred to as members rather than customers.

The first CSA in the UK was established in 1994, and in 2020 there were 179 CSAs, although many are in the early stages of setting up. The CSA Network UK was launched at the end of 2013, and currently represents 111 of these organizations (Suzy Russell, Community Supported Agriculture Network UK, personal communication, September

17, 2020). As is common in many small and precarious sectors, it is difficult to estimate accurately how many CSAs are operating at any time, and thus how many people are members (European CSA Research Group, 2016). The number of members per CSA in the UK ranges from less than ten to hundreds, with an average of 87 members (European CSA Research Group, 2016).

CSAs and Food System Transformation

Though CSAs currently represent a small proportion of agriculture in the UK, their potential as agents of change in enabling a more sustainable food system is significant. CSAs can be viewed as part of a wider set of community infrastructure projects which includes consumer co-ops, solidarity buying groups of local and organic food, and collective urban gardening initiatives forming Civic Food Networks (CFNs) (Renting et al., 2012) or civic agriculture (Kaika & Racelis, 2021). These innovations are a response to lack of communication between food producers and the general public in the UK, which has long been recognized as a problem that entrenches public alienation from the way their food is grown and processed (Duffy et al., 2005; Opitz et al., 2019). In selling direct from farm to consumer, CSAs seek to strengthen the interactions between consumers and their local food supply (Opitz et al., 2019). Emerging evidence strongly suggests that CSAs can positively impact members' understandings of food systems and influence their food behaviors and health outcomes (Allen et al., 2017; Rossi et al., 2017). Members often gain knowledge of seasonality, cooking, nutrition, cultivation practices, and farmers' perspectives (Opitz et al., 2017). CSAs can also affect environmental change by fostering sustainable behaviors, providing food with low environmental impact, and building social capital and resilience at the regional level (Saltmarsh et al., 2011). Fostering social capital is one method of increasing the sociopolitical capabilities of alternative food networks and their ability to transform existing entrenched unsustainable food systems (Mert-Cakal & Miele, 2020). The unique CSA membership structure has potential for developing social capital by reconnecting consumers and producers, and it is this aspect of CSAs upon which we focus.

Social Capital

The concept of social capital has multiple origins, with the writings of Bourdieu (1984), Coleman (1988), and Putnam (2001) central to its development. Putnam defines social capital as the "social norms and networks that enhance people's ability to collaborate on common endeavors" (2001, p. 135). Social capital is sometimes metaphorically described as the glue that holds groups together or the grease that enables people to get things done (Kay, 2006). Building on understanding social capital as communication and linkage between people, social network theory examines the types and amounts of relationships (or "ties") that people and groups have with each other, and the impact of these ties on "influence and information, mobility opportunity, and community organization" (Granovetter, 1973, p. 1360). Three kinds of social capital are generally agreed upon in the literature. Bonding social capital is characterized by intimacy and the development of strong ties, often around shared characteristics. It enables reciprocal support, but it can also limit the expansion of trusting relationships beyond a niche community. Bridging social capital is usually characterized by weaker ties and is created when two otherwise unconnected individuals are linked. Bonding and bridging capital increase the capacity for change and adaptation within communities. A third kind of social capital, "linking" capital, involves the development of connections between groups or individuals of different social status. Linking social capital can be thought of as connections between people with different levels of power within society. These connections can create opportunities for change by creating dialogue between innovators and groups and individuals with influence and resources. Groups which create social capital also create entrepreneurship and innovation and encourage initiative, responsibility and adaptability, which are all required to meet the challenge of bottom-up transformations of the food system (Glowacki-Dudka et al., 2013).

CSAs and Social Capital

Identifying effective and efficient methods that enable CSAs to build social capital is key to supporting the creation of social movements to pro-

mote sustainable food. Research suggests that increased opportunity for communication and participation enhances the commitment of CSA members to the ideals of alternative food networks and to the CSAs themselves (Haney et al., 2015; Opitz et al., 2019). Increased communication enables CSA members to develop trust in the community formed by the farm staff and members (relational trust) and in the organization itself (institutional trust). Previous research suggests that relational trust is dependent upon face-to-face contact (farm visits, collecting produce directly from the farm) as well as digital communication such as social media, email, and use of online organizational tools such as Doodle polls (Aissaoui et al., 2017; De Bernardi et al., 2020). Hands-on food-growing work with the CSA may also play an important role in enabling members to use all their senses, deepen their understanding of the reality of agricultural work, and build their understanding of the organization (Aissaoui et al., 2017; Carolan, 2007).

While essential to the mission of transforming the food system, research has found that building social capital nevertheless can be a drain on CSAs' limited resources (Galt et al., 2019; Mert-Cakal & Miele, 2020). As observed by Rossi et al. (2017), researchers need to establish what kind of member engagement is required to create a thriving and innovative food system. Our research aims to fill this gap in understanding, to determine where time invested in communication and outreach to CSA members may derive the greatest social capital dividends. We examine how four CSAs in the UK communicate with their members, how their members interact with each other, and what value members place on this communication. Crucially, we look at what interaction members want and why, to enable CSAs to focus their efforts for maximum effect. By examining the kinds of participation that CSA members engage in and value, our research aims to provide knowledge that can enable CSAs to scale up and play a more significant role in enabling food system transformation. It can also contribute to the development of the CSA sector by creating a data base for both CSAs and policymakers who are seeking to support developing alternative food networks and transforming entrenched unsustainable food systems.

Methods

This article presents four CSA case studies. Data were collected via in-depth interviews with CSA members to build communication profiles of each of these CSAs. We asked three research questions:

1. How do CSAs interact with their members?
2. How do CSA members interact with each other?
3. What interaction do CSA members want and why?

We recruited 49 CSA members who had joined a CSA program in the 12-month period prior to interviewing in the summer of 2019. We selected relatively new members, rather than those who have already built social capital, to understand how participants responded to different opportunities to build social capital. The participants were members of four CSA organizations operating in Wales and England. We chose four case study farms that represented different CSA business models, to capture as much variability in CSA operations as possible while still enabling in-depth study of each case (Table 1).

CSA 1 was a family farm in a rural area in South Wales; they were diversifying, had a vision for building a local food culture, and as part of this goal they began a vegetable box program. CSA 2, in a rural area, had an established vegetable box program run as a workers' co-operative since 2018, with a vision of supplying organic vegetables to local residents. Most member households were from a nearby city. CSA 3 was a not-for-profit social enterprise focused on low-carbon production methods and whose member households usually contribute both labor and money to pay for their share of the vegetable harvest. CSA 4 was a cooperative run by its members that developed from public conversations about changing unsustainable food systems as part of the Transition Towns movement (https://transitionnetwork.org). CSAs 1, 3, and 4 shared the objective of building a community around their stated vision.

We incentivized participants to join the study by offering one free vegetable bag from the host CSA or a financial equivalent, depending on the preference of the CSA hosts. Initial contacts with members were made either face-to-face at the CSA

sites or by email via the host CSA. Interviews were carried out face-to-face or by phone. We emphasized data about communication between CSA and members: frequency of contact, media used, topics discussed, and intra-CSA communication. We also examined CSA member expectations regarding interactions with the CSA and its members. The interviews contained some questions that give an overview of the mediums of communication used, the frequency of communication, and the topics discussed, and other questions more in-depth and which were analyzed using the thematic approach described below. It is important to note that our sample sizes per CSA are not sufficient to warrant the use of inferential statistics. CSA 1 had 21 members at the time of data collection and 15 participated in our research, CSA 2 had 66 members and 6 participated, CSA 3 had 65 and 11 participated, and CSA 4 had 120 members and 14 participated. In addition to the interview data represented here, we also discussed the research with representatives of the CSAs and examined other sources of information to enable a degree of triangulation of the interview data with other sources. For example, we corroborated data gained through interviews by subscribing to CSA newsletters (or requesting copies from CSA representatives) and observing CSAs' publicly available social media activity. The study methods were approved by the Cardiff University School of Geography and Planning Ethics Committee.

After interviews were recorded, transcribed, and anonymized, we applied a coding procedure, derived from Strauss (1987), Miles and Huberman (1994) and Coffey and Atkinson (1996), that involved filing all the data (using the software package NVivo) and identifying themes. Initially we revisited the three research questions and coded any data relevant to them. For example, any data that mentioned communicating in a particular medium was coded as that medium: i.e., comments about WhatsApp were initially coded as "WhatsApp." The second stage of coding involved identifying "in-vivo" themes present in the data and coding them accordingly. These were strong themes that emerged from the data but were not necessarily apparent before the study began, either in our research questions or previous literature. The thematic analysis was carried out iteratively until no new themes arose, data saturation was reached (Fusch & Ness, 2015), and the definitive findings emerged. Below we present an overview of communication within CSAs, and then explore in more depth the themes that arose, illustrating our findings with extracts from transcripts.

Results and Discussion

Communication Between CSAs and Their Members

We found that each CSA had a different communication style (Figure 1). CSAs also used different mediums of communication, with varied amount of contact with members and topics of communication. As a result, the degree to which members were able to become familiar with the farmers, growers, or staff of the CSA varied. CSAs 1, 3, and 4 developed relationships with their members, whereas CSA 2 staff were more inaccessible. CSA 2 had the least amount of communication via the smallest number of mediums, concentrating on email. There was less contact between CSA 2

Table 1. Characteristics of CSAs Participating in the Research

	Location	Year est.	Governance model	# of members	# of participants	Median age	Median income*
CSA 1	SW Wales	2018	Family business	21	15	42	£35,714
CSA 2	SW Wales	2010/ 2018	Workers' cooperative	66	6	40	£36,654
CSA 3	East Anglia	2012	Community Interest Company	65	12	49	£35,000
CSA 4	East Anglia	2008	Community Benefit Society	120	16	35	£29,851

* Participants' equivalized household disposable incomes, using the modified Organization for Economic Co-operation and Development (OECD) scale.

members and their CSA than in the other CSAs, usually via emails about the produce. While participants expressed satisfaction with this level of communication, there was far less social capital (bridging or bonding) built in CSA 2 (Figure 2). However, since the vision of the CSA is limited to providing organic vegetables to local households, the limited amount of social capital is not likely to be viewed as problematic by the CSA itself. This is especially so, considering that CSA 2 is operating at capacity and often with a wait list for people wanting to join.

Figure 2 illustrates how bridging and bonding social capital are fostered for each case study. We considered the nature of the activity (one- or two-way communication flows, virtual or face-to-face communication) and the frequency of the activity to determine how it contributed to building bridging and bonding social capital. Moving down the rows and across columns in Figure 2, activities are likely to move from building bridging to bonding capital. Figure 2 shows that while CSA 1, 3, and 4 differ in their communication strategies, each is building both types of capital in multiple ways.

CSA 1 and 2 had a relationship with their members generally resembling a typical transactional relationship: they predominantly communicated about the produce itself, how to use it, and arrangements for obtaining it. There was a clear line between the organization and its customers. However, whereas CSA 2 had a solely transactional relationship with members, CSA 1 saw building

Figure 1. Percentage of Participants in Each CSA that Used the Communication Media Listed

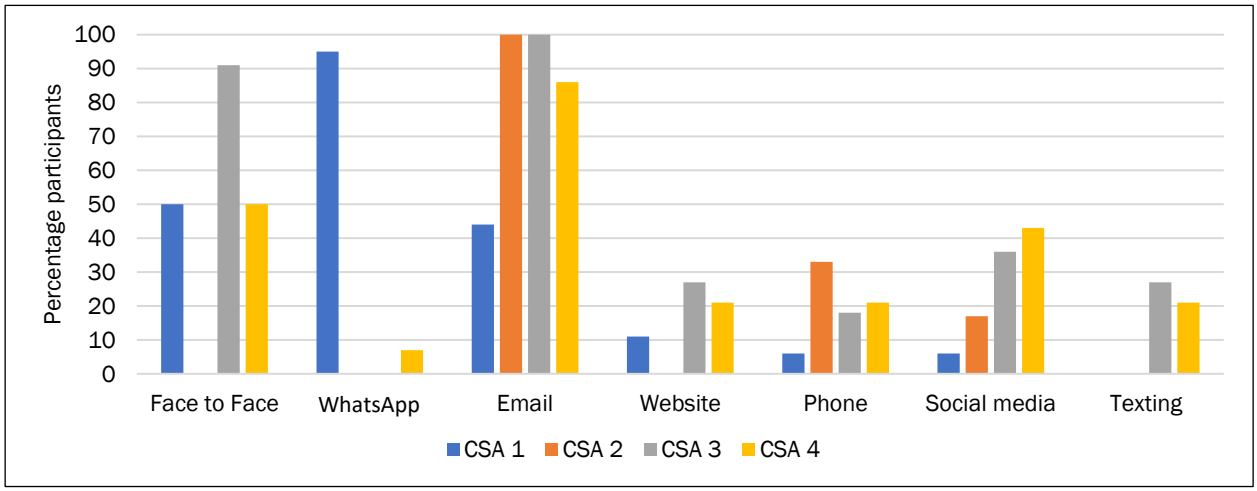


Figure 2. Bridging and Bonding Social Capital Across the Four Case Studies

CSA 1	Never	Occassionally	Fortnightly	Weekly	Multiple times/week
	0	1	0	3	4
Newsletters	0	0	0	0	0
Social media/website	2	0	2	0	6	8
Whatsapp	3	0	3	0	9	12
Texts	0	0	0	0	0	0
Emails	5	0	5	0	15	20
Phone calls	6	0	6	0	18	24
Face to face	7	0	7	0	21	28

CSA 2	Never	Occassionally	Fortnightly	Weekly	Multiple times/week
	0	0	2	3	0
Newsletters	0	0	0	0	0	0
Social media/website	2	0	0	4	6	0
Whatsapp	0	0	0	0	0	0
Texts	0	0	0	0	0	0
Emails	5	0	0	10	15	0
Phone calls	6	0	0	12	18	0
Face to face	0	0	0	0	0	0

CSA 4	Never	Occassionall	Fortnightly	Weekly	Multiple times/week
	0	1	0	3	4
Newsletters	0	0	0	0	0	0
Social media/website	2	0	2	0	6	8
Whatsapp	3	0	3	0	9	12
Texts	4	0	4	0	12	16
Emails	5	0	5	0	15	20
Phone calls	6	0	6	0	18	24
Face to face	7	0	7	0	21	28

CSA 3	Never	Occassionall	Fortnightly	Weekly	Multiple times/week
	0	0	0	3	4
Newsletters	0	0	0	0	0	0
Social media/website	2	0	0	0	6	8
Whatsapp	0	0	0	0	0	0
Texts	4	0	0	0	12	16
Emails	5	0	0	0	15	20
Phone calls	6	0	0	0	18	24
Face to face	7	0	0	0	21	28

Lighter colors indicate bridging capital and darker colors indicate bonding capital.

relationships with customers to be an objective. At CSA 1 there were some members who became friends of the farmers, moving beyond bridging social capital to bonding social capital. Face-to-face communication with the farmers was a key reason for many members' enjoyment of the program and served as an important source of bonding capital.

CSAs 3 and 4 were usually in touch with members once a week or more (Figure 3). Their relationships with members were more collegial, with discussion about the produce itself augmented with discussion about the logistics and tasks involved in growing produce, the problems involved in running the CSA organization itself, and development plans.

CSAs 1, 3, and 4 provided opportunities for communication between members. Communication was influenced by the governance arrangements of the CSA and arrangements for accessing the farm and collecting produce. For example, CSA 1 had no arrangements for members to be involved in decision-making, whereas 3 and 4 had inclusive governance models. This largely explains why members of CSA 1 talk primarily about vegetables and recipes whereas CSAs 3 and 4 also discussed practical and administrative problems in managing the CSA as well as agriculture and the environment more generally. The CSA collection arrangements, accessibility of the farm or growing site, and volunteering opportunities dictated how much members interacted and built bonding social capital through shared interests.

CSA 1 members were predominantly using WhatsApp to communicate with each other, with a quarter of the members also communicating face-to-face (Figure 4). Just under a third of participants had pre-existing friendships with other members of

Figure 3. Frequency of CSA Contact with Members Across the Four CSAs

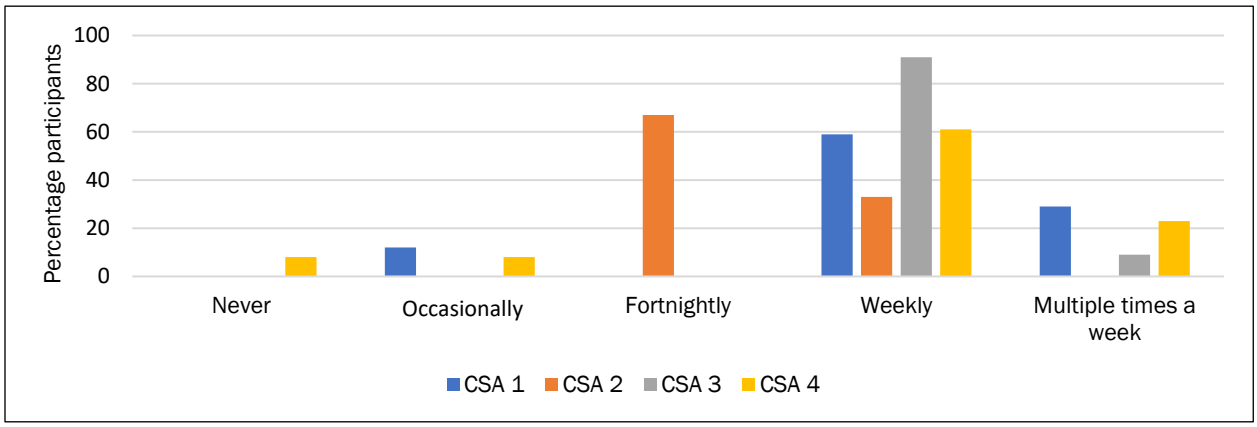
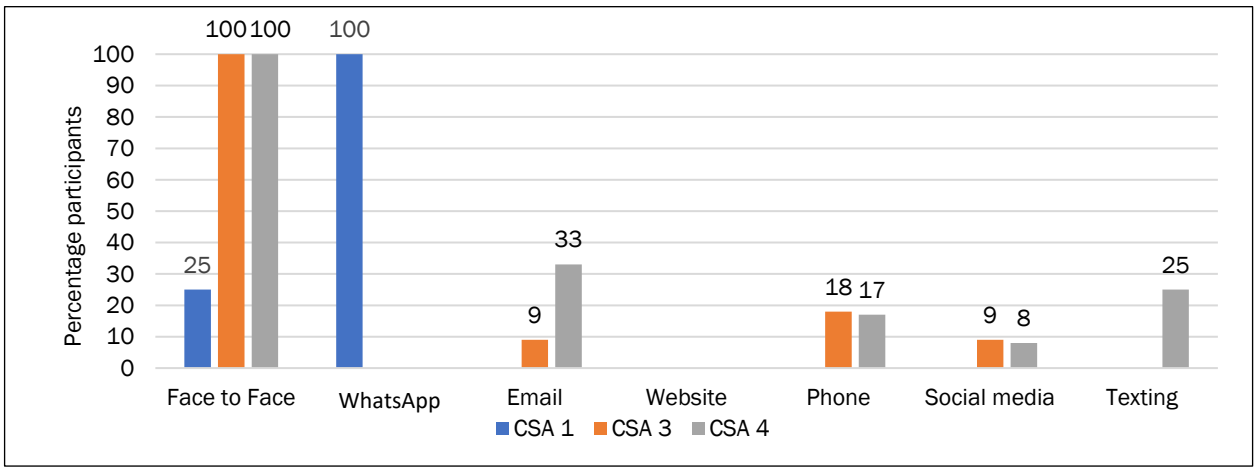


Figure 4. Type of Media Used by Participants to Communicate with Other Members



the CSA (28%) and thus had bonding capital that existed prior to CSA membership and outside the CSA. At the other end of the spectrum, a group of "arm's length" members communicated once or twice with other members or not at all. There was a group of members (13%) who were more intimate and socialized together and other smaller groups who were more involved in the CSA and discussed volunteering arrangements and practical tasks. Members of CSA 1 were more likely than other CSAs to value the communication they engaged in for creating a sense of community (40%); however, they treated it lightly, finding it pleasant or fairly important rather than very important, indicating that CSA 1 might have stronger bridging capital than bonding capital (Figure 5).

All CSA 3 members who communicated with each other reported doing so face-to-face; 18% also spoke on the phone, and 9% via email and social media. There were fewer independent friendships within the group than at CSA 1 or CSA 4, although 18% of CSA 3 members had pre-existing friendships with other CSA members. Members often socialized, discussing practical problems, agriculture and the environment, events and plans, and the produce itself (Figure 3). A third of CSA 3 members thought their communication was very important, the remainder thought the communication was pleasant and fairly important, and smaller proportions valued it for building community or did not view it as important (Figure 5).

We found that CSA 4 members predominantly communicated weekly (46%, Figure 6). In addition, almost a third (31%) of participants had pre-existing friendships with other members of the CSA. Of those CSA 4 members who communicated with each other, 83% engaged in general socializing with other members, with half of communication reported as socializing. Other than social conversation, 33% of members discussed the CSA and

Figure 5. CSA Members' Evaluations of the Importance of Their Interactions with Other Members

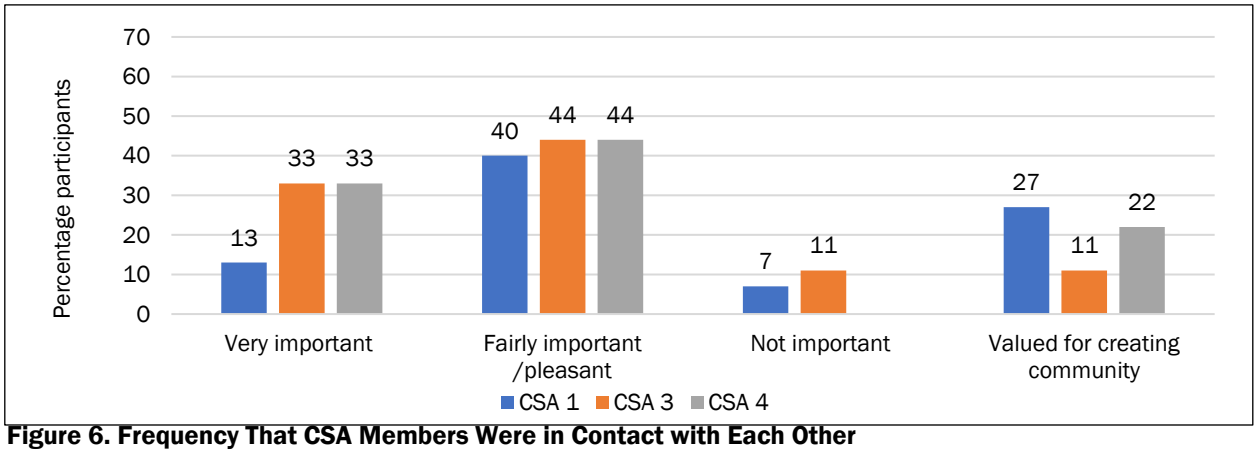
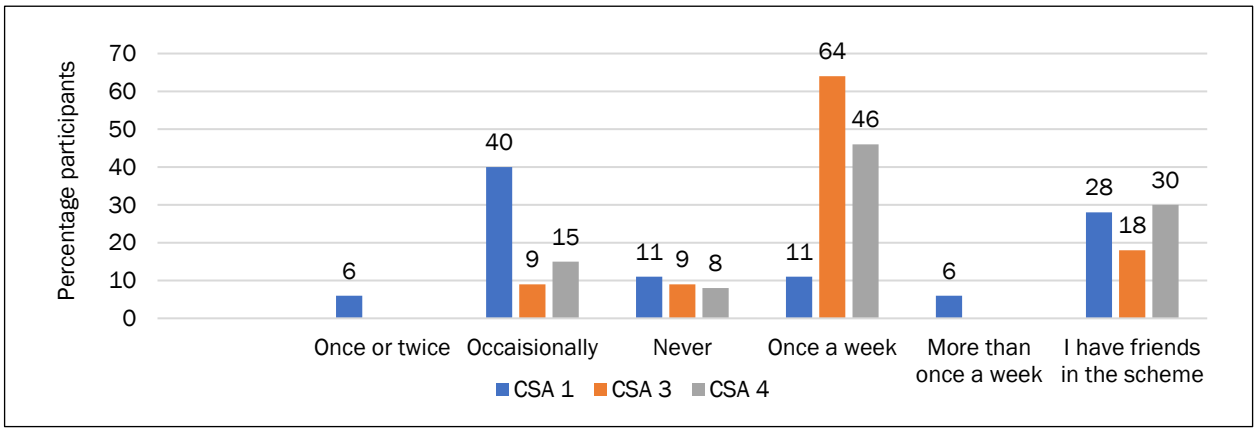


Figure 6. Frequency That CSA Members Were in Contact with Each Other



wider topics to do with agriculture and the environment, and 17% discussed practical tasks. Similar to CSA 3, a third of CSA 4 members thought their communication was very important; the remainder thought the communication was pleasant and fairly important and valued it for building community (Figure 5). This indicates that CSA 3 and 4 have built stronger bonding capital than bridging capital, as reflected in Figure 2.

What Interaction Do CSA Members Want and Why?

Face-to-Face Interactions

As members reflected on the communication they had with the CSA and with each other, it became clear that participants had a variety of needs and preferences about communication. Across all CSAs, the value of face-to-face communication was a strong theme. Although there was some indication that WhatsApp provided opportunities for creation of bonding social capital (Figure 2), more prospects seemed to be available face-to-face. Face-to-face communication varied in intensity: from almost incidental, such as a casual "Hello, how are you?" as participants weigh out their vegetable share at a collection point, to longer bonding social capital–building opportunities such as working alongside other volunteers in the fields every week. Communication that occurs during temporary close proximity, such as serendipitous meetings with fellow members at collection points, emerged as a key theme in the data. Members frequently talked about these meetings and the value they added to their everyday life.

The value of social connection gained through volunteering was a strong theme in the data, irrespective of the CSA that hosted the participant. Volunteering tended to be something that CSA members often did weekly, for two hours or more. This ongoing collaboration provided the opportunity for communication about the practical aspects of the job as well as for broader social communication to take place:

> I suppose there's two levels of information. One is like function, you know, if you're working on tasks together. … And the other is, you know, the general chitchat of social communication really, like opinions about the world. (CSA 3, Participant 3)

Reasons given by CSA members for volunteering include valuing the opportunity to be outdoors in nature, working with their hands, feeling the achievement gained from manual work, and having free time to support the vision of the CSA. These volunteers were focused on the work, and social capital developed as an unintended consequence of volunteering. Volunteering was an excellent way of developing social capital among people who were less outgoing: there was less pressure on them to perform socially, as the social interaction was a side effect of the work:

> It feels easier every time, I'm an introvert … and so it's really nice. James [the grower] particularly is so friendly, and very easy to chat to. Yeah, and again particularly on harvest days when I've been paired with someone to do a task. That's been really nice as well, because it's a way to get to know people. (CSA 3, Participant 11)

> When you're … doing something, it's a nice relaxed way … of communicating … isn't it? Because it's OK when you're busy … it's a way to get to know people. (CSA 3, Participant 3)

These quotes clearly demonstrate the mental health benefits of volunteering, a strong theme emerging from the data. The available social connection seemed to be a solace, providing a safe situation for CSA members to challenge themselves. The work provided a buffer between these volunteers and the pressure of social interaction. It thus became a vehicle for building bonding capital even for those who experience stress during social interactions:

> I have quite bad social anxiety. … I am not the sort of person that would easily arrange to meet someone for coffee or just phone them up for a chat … Just talking to people, freestyling it, I'm not very good at that. … It really triggers my anxiety, which is one of the reasons

> I really like the farm is because I feel quite safe. Because there's jobs to do, if I start feeling anxious … worrying about having something to talk about or worrying that I'm talking too much, I can just redirect myself back into the job that I'm doing. And I can then sort of regroup. So yeah, I haven't ventured into socializing or chatting to anyone outside of the actual visits. … It's something I will work on. That's my … long-term project … to sort of build my confidence up again. (CSA 3, Participant 8)

For other CSA members, the opportunity to socialize was a significant part of why they volunteered. Wanting to grow food in a community, rather than managing an allotment or garden by oneself, was a central motivator for many volunteers, as with a participant who looked forward to meeting different people at the growing site:

> [There have been] different phases … in winter it was quite quiet and similar people, a handful of people. … Now it's summer and as the project has grown a bit, there are more different people coming … coming here … you'll just wonder "who will be turning up today?" so it's an additional motivator. (CSA 4, Participant 1)

While volunteering represents a time-intensive form of interaction to build bonding capital, picking up vegetables at collection points provided weekly face-to-face opportunities for building relationships based on short but valued conversations:

> If I go to pick up the veg it is probably about ten minutes to a quarter of an hour. I do tend to stop and talk to either Jill or Brian. They've now sort of become friends more than somebody just that I buy veg off. I've got involved with them and their families. And so you get to know them really well. And they're a lovely couple. (CSA 1, Participant 6)

CSA managers purposefully created this opportunity to build social capital and create social value through their programs. For example, one of our CSAs aims "to encourage community engagement in the growing, consuming, education and celebration of local, ecological and seasonal produce," to "share knowledge and expertise to educate and enable others to benefit from our experiences" and to "co-create a viable community with a focus on social dividend, contribution and sharing" (CSA 3). Facilitating communication between members is part of this, and the casual conversations when collecting produce is something their membership enjoys:

> Last year, Brian would leave the bags out and then we would just go and … quite often we wouldn't see anybody. Whereas now this year … there has always been Brian or Jill. … And so I get to know Jill. … It's nice to have those chats as well. So I actually look forward to going and collecting my veg on a Thursday. (CSA 1, Participant 3)

Members often regard face-to-face meetings as a way of building community as well:

> [Collecting the veg] is something I like. And it's funny because actually our neighbor … she's 65 now, she's retired and so we are sharing who goes to get the veggies. She goes one week, then we go. … [It affects] the sense of community inside our neighborhood. So yeah … I really enjoy going there. It's a totally different experience from going to the supermarket. … You chat to people. (CSA 4, Participant 4)

Volunteering tends to build bonding capital, while interactions occurring during vegetable bag pick-ups can help to support bridging capital. While both types of activities provide face-to-face contact, they build different kinds of social capital within the CSAs.

Falling between these two kinds of face-to-face interactions are group events, which tend to be less regular and more varied. Coffee mornings, farm tours, lambing, tractor rides, music events, and seasonal celebrations were mentioned as ways through which participants met others. A participant illustrates how events can build

relationships and result in either bridging or bonding social capital:

> I went along to that coffee morning and met some really nice people. You know, you start a conversation and there are similar interests and, you know, things organically grow with time. The relationships. I am not desperately trying to find new connections with people. That will happen, life makes that happen. (CSA 1, Participant 10)

Virtual Communication

Although at the time the data were collected WhatsApp was only significantly used by one CSA, it was clear from this case that it was a useful tool for creating bridging capital, by communicating novel information between people who otherwise would not have spoken. On WhatsApp ties were weak to the extent that people may not know who they are communicating with:

> They … take photographs … of what they've done and … put a link to the recipe … that's quite good actually. I quite like that. I don't know who she is … but she calls herself Organic Iris and she puts lots of recipes and things. I see the post, but I don't know who she is. (CSA 1, Participant 1)

Members could participate as little or as much as they liked in the WhatsApp group, tailoring their interaction to the level they were comfortable with, as described by one participant:

> WhatsApp is pretty good, because it's a group conversation. You can dip in when it suits you. But then you get to see what everyone else had said as well. It's very inclusive actually. That's where technology is wonderful. So you can have a group conversation when it suits you. We all have busy lives, I think that's what's helpful about it. (CSA 1, Participant 13)

Below are extracts from interviews in which participants described meeting their different needs via the WhatsApp group. One participant used it a resource for recipes, emphasizing that the volume of communication needs to feel manageable.

> With WhatsApp, you can be involved in so many groups, you don't want to, you know, say you have overload and … you go back to your phone with 100 messages, that would be a bit much, I think. I think it's a nice level, really, it's not too much. There's just a little bit of recipes or, you know, some information. (CSA 1, Participant 4)

Another participant describes the beginning of the development of bonding social capital, as participants get to know each other and share more of their lives:

> It can be as simple as "Oh we don't need the bag this week," different orders. Or it can be "What's in the bag this week?" so I can prepare a bit ahead. Often, it's "What is this vegetable and what do I do with it?" so recipes are shared on WhatsApp. That's it really: practicalities, recipes, advice … and we have a laugh as well … Someone sends a message like "It's been one of these days, I'm having a glass of wine"—usually the farmers when they've been out in the rain … and photographs, he sends some lovely photographs. Herding sheep, ploughing fields. Yeah, that's nice. … (CSA 1, Participant 13)

There was some indication that WhatsApp conversation did not work for all participants, however. Some people just wanted their vegetables without any added social capital:

> I … and someone else who was on the [WhatsApp] group, do find it irritating when some people are "Uh, look what do I do with this pumpkin?" (mockingly) and you go like "Go and Google for goodness' sake." (laughs) … You know, I don't need people asking for recipes and stuff. Use your brain, please. To me it was just veg grown on a farm. You pay for them: thank you very much. Goodbye. (CSA 1, Participant 19)

Overall, the ties created by the largely WhatsApp-based communication between members of CSA 1 created a valued sense of community among members (Figure 5).

Other forms of social media, such as Facebook and Instagram, were also valued and effective (Twitter was only mentioned by one participant). For some participants, social media was the main way that they communicated with the CSA and with other members; they also saw it as a form of outreach or as a way of supporting the farm:

> The main interaction I have is on social media, because they're quite active on Facebook now. So I want to sponsor their posts, and I also try and get my friends and family to sign up. So I, you know, post pictures of what I've got from the farm that day. And the meals that I've made with my share and put that out on Facebook. (CSA 4, Participant 8)

> When I cook their food, I try and share it on Instagram, if it looks particularly beautiful, 'cause I can think of a lot more people to shop at the farm. I wanted to say to Jill and Brian, "Look how grateful we are with what you are doing." You know, we really love your produce. (CSA 1 Participant 15)

In addition to social media, email newsletters were valued by the members. They were often the central communication tool. CSA 2 had a newsletter only a few sentences long, whereas CSAs 3 and 4 had newsletters administered via online email marketing software with content about upcoming events, the welfare of the organization, the produce, recipes, other relevant local events or programs in which the CSA was participating, and calls for volunteers. A newsletter might seem to be a less sophisticated way of communicating than social media, but it was reliable and consistently read by participants, who gained insight and information about their CSA, even when they were only receiving a few sentences every week or fortnight:

> I think it's made me more aware of how, like, a wet summer or a dry winter, like, the impact that that can have on a particular veg. And they put that in the newsletter, you know, if, if something hasn't come through for them, they'll kind of say, you know, due to this particular spell of weather or whatever. Yeah, it's made me more aware. (CSA 2, Participant 13)

The face-to-face and virtual interactions met participants' desire to be part of a community, or to contribute toward a community, which was the strongest theme that emerged from the data. Members understood community building to be anything from the act of buying from a local farm rather than a supermarket to being a volunteer or socially active member, both face-to-face and online. *Not* wanting more social interaction via the CSA was also a recurring theme, and it is important to recognize that some members were not interested in developing community or social capital as part of their CSA membership. Some described themselves as "not being terribly social" (CSA 3, Participant 4); others were already involved in other communities:

> We do have very packed social calendars for the kids, with the community around the school. … The principal reason that we're involved [in the CSA is] the fact that I don't want to be doing any harm with our veg buying. … That's enough for me. (CSA 2, Participant 2)

Some had enough friends and not enough time to participate in additional CSA-connected relationships. Still others were using their involvement to spend time with particular people to deepen or improve existing important relationships:

> The interaction I do like is with my daughter. [Volunteering is a] really nice, wholesome … active and involved and enthusiastic, and we're learning together. … That interaction is probably my priority. And if I was socializing too much, you end up chatting to the other person and not relating to my daughter, which isn't what I want. (CSA 3, Participant 5)

Each CSA had different kinds and amounts of social capital stemming from their different

organizations. CSA 2 communicated almost solely through broadcast emails and had very little social capital associated with their membership; their members only rarely communicated with each other or with the farm, but this was driven by their primary objective, to provide organic vegetables, and therefore social capital was not required to achieve their objective. CSA 1 had more opportunities to communicate and develop bridging capital between people who may not have communicated otherwise. The membership group did not have enough communication to develop its own identity or bonding capital; the bonding capital that existed was exclusively between the pre-existing friend groups. CSAs 3 and 4 had more members who regarded communication with the CSA and other members as very important; both CSAs had a full suite of opportunities for their members to communicate, and which were used most frequently, from established volunteering schemes to social media. The most bridging and bonding social capital was being built in these CSAs.

Members of CSA 3 and 4 reflected on the bridging social capital that developed through their experiences at the CSA, first through intergenerational communication while volunteering, and second through meeting people from different backgrounds:

> You have … a nice mixed age range of people, people with families, people with children. We both have a child of our own, but Bill's daughter is in France, my son is in Manchester, but we don't see them as much as we'd like, we don't have any grandchildren. And it's quite nice to see people in different ages and, you know, friends who are not the same age. (CSA 3, Participant 7)

> You'd meet a different group of people certainly to what I normally meet, which is interesting, to some extent eye-opening. So yeah, you meet a different group of people to what you normally, to what I normally meet. I mean, there's not many other doctors here. (CSA 4, Participant 1)

In contrast, a participant gave an example of bonding social capital, in which connections between people who are "like-minded" develop:

> The people who are part of [CSA 4] are fairly important, not massively. I hope that one day it will be, I hope that I carry on being friends and sort of make deeper friendships, because … so many of them are people who, you know, they're really like-minded, and I like my conversations with them, I get a lot from it. So, you know, in the future, I would hope that some of those would become good friends. Rather than sort of, you know, liked acquaintances. (CSA 4, Participant 8)

A participant reflects on the building of bonding social capital and the value of making connection with people who are different from oneself:

> [CSA Membership is a] very nice way of getting to know people. You feel the same sort of wavelength. Though I realize one should also try not to just remain in one's bubble … I'm constantly being reminded. (CSA 4, Participant 15)

This bubble that Participant 15 mentions is something important to acknowledge, as we found that our CSA members were overall more affluent and of higher socio-economic status than the UK general population. Lack of diverse socioeconomic representation means that there is a low possibility for creating linking capital. Our analysis found no examples of development of linking social capital. A member reflects on what she described as the "middle class" nature of CSA membership:

> One of the things I would say, I think it's quite a middle-class thing. So a lot of, it's not cheap I don't think. And … lots of people who are there, they're often in health professions, or education. And so, you know, when you're next to them, you've got quite a bit in common to chat about. So I have done that a few times. But you are, well I think you are with fairly like-minded people, or that is who I've bumped into. (CSA 3, Participant 3)

While they did not form part of the case studies, there are a growing number of CSAs that are experimenting with implementing solidarity models (Verfuerth & Sanderson Bellamy, 2022), as a reaction to the increased number of households experiencing food insecurity during the COVID-19 pandemic. These activities could serve to increase the opportunity for building linking social capital. As these alternative food networks include transforming the current dominant food system among their objectives, input and participation from people across socioeconomic levels will be required.

Conclusion

By highlighting how different communication strategies build social capital, the research presented here can support further efforts within the CSA sector to generate transformative food system change. Our study indicates that there is variation in the way CSAs build social capital, leading to differences in the types that are built. In CSAs where members can interact easily, there are social and informational benefits, developed through both bonding and bridging capital. Preference and circumstance play a large role in the connectedness of individual CSA members, as does the particular CSA vision for change. Bonding social capital emerges from frequent face-to-face interactions, requiring an investment of time from participants and from CSA managers to organize. Some CSA members were happy with the relatively weak ties generated through WhatsApp communication, but most valued the opportunities to connect face-to-face at collection points and through volunteering.

To maximize social capital, CSAs should use a range of communication media. Social media, WhatsApp groups, face-to-face collection points, and volunteering opportunities can meet a range of their members' circumstances and preferences. CSAs seeking to maximize social capital efficiently can do so with just a few sentences in a regular email. Setting up a WhatsApp group would likely be well received and enable easy communication between members. Further, we suggest asking members to volunteer to write the newsletter, since many participants were eager to do so. Efficiently building social capital, however, does not translate into achieving food system change. When deciding their communication strategies, CSAs need to consider their objectives and vision for change. Different types of social capital are required to achieve transformation; while bonding capital is important for creating an engaged and committed community, bridging capital enables greater reach beyond the immediate community, enabling change to ripple through fringe communities and thereby creating the conditions for transformation. Further research should explore how different types of social capital created by CSAs can translate into wider food system transformation, as suggested by Mert-Cakal and Miele (2020). Additional research is also required to understand if diversification of CSA membership can promote linking capital and the possibility of building a more representative food movement. Overall, in our study, we found that there was a hunger for social connection within CSA memberships, with desire for developing community a theme that was dominant throughout our data. We conclude that CSAs are fertile ground for building social capital to generate food system transitions.

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Sustainable food procurement by the University of California's health systems: Reflections on 10 years and recent COVID-19 challenges

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Abstract

Across the country, hospitals are buying more sustainable food and passing internal policies in support of sustainable food procurement. This reflective essay describes the results of the sustainable procurement goals and policy of the University of California's five health systems from 2009 to 2021. Based on my observations as a staff person in the University of California and my participation in internal meetings with foodservice and sustainability staff, I discuss the evolution of the University of California's sustainable food procurement policy goals and its definition of "sustainable." I describe staff and programmatic support for purchasing environmentally sustainable food and beverages and the growth of the University of California's sustainable food purchases as a percentage of its hospitals' food budgets. This essay also explores staff debates about the sustainability of sourcing poultry with the label of "no antibiotics ever" after a 2020 COVID-19 outbreak at a poultry processing facility in California that led to the deaths of several workers. These debates about labor and working conditions in poultry supply chains from the five University of California health systems offer insights into ongoing challenges and opportunities for institutional food procurement and policy to change the food system utilizing existing supply chains and third-party certifications and label claims. The University of California's experiences also illustrate the ongoing need for farm-to-institution and farm-to-hospital efforts to better integrate values around working conditions in supply chains into sustainable procurement goals.

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Keywords
COVID-19, Foodservice, Hospitals, Labor, Pandemic, Poultry, Procurement, Sustainability, Third-Party Labels, Values-Based Supply Chain, Farm-to-Hospital, Farm-to-Institution

Introduction and Literature Review

In the past several decades, the farm-to-school movement has grown beyond K–12 schools to include entities such as colleges and universities, corporate campuses, government agencies, and hospitals. These institutions, out of concern for the ecological and economic challenges impacting agriculture, are undertaking activities such as deliberately purchasing more regional, ecologically sustainable, fresh, and healthy food items from suppliers as a means to change the food system (Feenstra & Ohmart, 2012; Thottathil, 2018). While the impacts of farm-to-institution activities on the food system have been mixed, research has shown that sustainable procurement by institutions can support small to mid-sized farmers and has stimulated interest and growth in federal policies and funding to support sustainable agriculture. Additionally, sustainable procurement is economically impacting communities and is providing healthier meals to young children, patients, and other individuals (Christensen et al., 2018; Farm to Institution New England, n.d.; Prescott et al., 2020; Zuckerman, 2013).

Since the early 2000s, the healthcare sector has become more active in farm-to-hospital endeavors, as healthcare delivery entities, medical professional associations, and nonprofits began advocating for hospitals to play a larger role in promoting different and sustainable food production practices for better public health outcomes through their food procurement (Klein et al., 2019). Many professional healthcare associations, from the Academy of Nutrition and Dietetics to the American Medical Association (AMA) and the American Public Health Association, have passed outward-facing resolutions that link the operational decisions made by hospitals (such as food procurement) to sustainable agriculture and human health (AMA, 2009; American Planning Association, n.d.). More recently, *The Lancet* (2019), one of the world's most prominent medical journals, highlighted the link between hospital food procurement, human health, and environmental sustainability, and argued that the current food production paradigm is contributing to human health problems instead of nourishing individuals.

As a part of farm-to-hospital efforts, hospitals throughout the U.S. have passed internal policies in support of sustainable food procurement (Harvie et al., 2009; Klein et al., 2019; Thottathil, 2019). Since 2005, the nonprofit Health Care Without Harm has been an influential organization in the farm-to-hospital movement and has been coordinating sustainable procurement efforts by hospitals with the Healthy Food in Health Care Initiative (Harvie et al., 2009). To support the initiative, Health Care Without Harm (in close partnership with another nonprofit, Practice Greenhealth, or PGH) lists on its website a set of third-party certifications and label claims for food products that their staff have vetted.[1] A food item is defined as "sustainable" by Health Care Without Harm and PGH if it has at least one of the certifications or label claims from the list. PGH measures the sustainability performance of a member hospital utilizing the metric of "percent spend on sustainable food and beverages" out of the hospital's total annual food and beverage budget (Practice Greenhealth, n.d.-b). Close to one third of U.S. hospitals (including the University of California's hospitals) are now participating in the PGH–Health Care Without Harm network and utilizing its resources for sustainable food procurement (Health Care Without Harm, 2019).

Despite this growth over the years, farm-to-hospital efforts have encountered several challenges, from the requirement by hospitals for a consistent supply of a large volume of food items to accommodate their large customer base of patients, staff, and visitors, to the disparity between consumer expectations and the seasonality and

[1] PGH and Health Care Without Harm's list of third-party certifications and label claims that meet their definition of sustainable are available online: https://noharm-uscanada.org/sites/default/files/documents-files/3373/Healthier%20food%20purchasing%20standards.pdf

availability of produce for pre-prepared menus by chefs (Klein & Michas, 2014; Perline et al., 2015). As a result of these logistical challenges, institutions like hospitals may favor larger suppliers, such as established broadline distributors, who have better access to diverse infrastructure and a larger number of producers, for sustainable food products (Izumi et al., 2010). These supply chain requirements have been barriers for smaller farmers who may seek to diversify their markets by selling to institutions (Harris et al., 2012).

Scholars have identified values-based supply chains (VBSC) as being able to accommodate these logistical difficulties and meet the operational requirements of large-scale food consumers like hospitals while also supporting farm-to-institution principles (Klein & Michas, 2014). VBSCs can take many forms, from farmers markets to food hubs, but what they have in common is that suppliers commit to issues such as greater environmental sustainability and transparency with their food products (Peterson et al., 2022). While VBSCs have had documented success in supporting small-scale and regional producers (Bloom & Hinrichs, 2011; Feenstra & Hardesty, 2016; Klein & Michas, 2014), many larger suppliers are also participants in VBSCs (Peterson et al., 2022). Many hospitals are participating in VBSCs by buying products labeled with third-party sustainability certifications or claims such as "local." These hospitals use existing contracts and arrangements with distributors and other suppliers, some of whom are large in scale, and some of whom may also carry conventional food products and products from large producers (Klein & Michas, 2014).

Farm-to-hospital work took off in a more formal and centralized way at the University of California's five health systems in 2009. That year, foodservice and sustainability staff agreed on shared policy goals, including one requiring that 20% of their hospitals' food and beverage purchases would be sustainable by 2020. In 2019, these health systems collectively surpassed this goal and spent US$3 million total that year on food and beverages that had third-party sustainability certifications or sustainability label claims (University of California, n.d.-b). In light of this progress, in 2020, staff passed updated sustainable procurement policy with an even larger sustainability requirement, that each of the health systems would dedicate at least 30% of their food and beverage spend to sustainable food products by 2030. To meet this goal, the health systems, as members of PGH, rely on the definition of "sustainable" PGH has set with Health Care Without Harm to make determinations around sustainable food purchases. To find and procure their sustainable food, the health systems also collectively take advantage of existing food contracts between the university and large distributors and other suppliers.

Utilizing information from both my personal communications and observations from internal meetings, as well as food purchasing data from public Annual Sustainability Reports published by the University of California, I will describe the results of the university's sustainable food procurement policies since 2009. I will also reflect on a challenge the university faced around its poultry purchases about 10 years later, in 2020. Specifically, to meet their new sustainable procurement requirement, the University of California's health systems routinely purchase items such as "no antibiotics ever" chicken, which is considered sustainable according to the university's updated policy; these poultry products with the label "no antibiotics ever" are typically purchased through existing contracts with large distributors and farmers. However, in 2020, a deadly outbreak of COVID-19 affected workers at Foster Farms, one of the largest poultry companies in the United States, and with which the university has a contract to source "no antibiotics ever" chicken. The outbreak led to internal questioning among staff about whether these poultry items should be considered sustainable under its new policy goals, especially if their production came from facilities with questionable working conditions. Staff debated whether and how the university should shift its food procurement in response to Foster Farms' public health violations and the deaths from the COVID-19 outbreak. These discussions from the five University of California health systems around the relationship of sustainability to labor and working conditions offer insights into both the opportunities and ongoing challenges for farm-to-hospital, VBSCs, and institutional food procurement and policy as currently

structured to comprehensively change the food system.

Methodology

The data for this reflective essay comes primarily from observations from my participation in internal meetings with other staff in the University of California from 2018 to 2022. As an Associate Director of Sustainability in the University of California's Office of the President during that time, I was immersed in decision-making and discussions around sustainable food procurement and policy goals for the university's health systems and campuses. I actively participated in Sustainable Foodservices Working Group meetings, which are regular meetings of foodservice and sustainability staff from every University of California health system and university campus. The working group sets policy goals for the university and monitors progress toward them. These meetings are chaired by one to two representatives from a health system or campus and regularly staffed by someone from the Office of the President. I staffed the meetings from 2019 to 2022. Additionally, prior to joining the University of California, I was employed by Health Care Without Harm from 2012 to 2015. I worked directly on its food procurement advocacy campaigns, including those related to sustainable poultry procurement and antibiotics in animal agriculture. Such participatory methodology is not uncommon in these reflective essays or in articles about institutional food procurement (Klein & Michas, 2014; Sands et al., 2016). To supplement my observations, I also analyzed food procurement data collected by the University of California's health systems from 2018 to 2022, which are published in public Annual Sustainability Reports put out by the University. Finally, I analyzed language from the University's Sustainable Practices Policy from the years 2004–2020.

Sustainable Food Procurement and Policy by the University of California's Health Systems

The University of California is a large public university system located in the state of California, and, in addition to 10 university campuses, is composed of five health systems that have hospital operations: UC Davis Health, UC Irvine Health, UC Los Angeles (UCLA) Health, UC San Diego Health, and UC San Francisco (UCSF) Health. The health systems consist of 12 hospitals in total. (UC Riverside Health is only comprised of disparate small clinics; it does not have separate centralized foodservice operations, either.) Together, these hospitals are currently the third-largest provider of inpatient services and the fourth-largest provider of hospital-based outpatient services in California (University of California, n.d.-a).

History of the University of California's Sustainable Practices Policy and Food Procurement Goals

As public Annual Sustainability Reports released by the University describe, for almost 20 years, sustainability goals have been operationalized within the University of California. The University passed its first system-wide environmental sustainability policy in 2004, after receiving pressure from students and with approval from the Regents of the University of California, its governing body (see Figure 1). While the "Sustainable Practices Policy" originally focused on green building design and energy efficiency, the policy has since been expanded to include several other issue areas. For example, the University of California now has a carbon neutrality goal for 2025 (for scopes 1 and 2 greenhouse gas emissions only), as well as targets for water and waste reduction (University of California, 2022). These goals were instituted as a part of "responsible stewardship of … resources and education and innovation for the public good" in California (University of California, 2021a, paragraph 1).

In 2009, the University of California added the first food procurement goal to its Sustainable Practices Policy, that its university campuses would purchase 20% sustainable food by 2020. Staff decided upon a dollar metric in part to make data collection from suppliers and calculations easier. After conducting a feasibility study, the five University of California health systems adopted the sustainable food procurement goal by consensus one year later, which was passed into policy in 2011 (Office of the President, 2010). "Sustainable food" was defined by the university as having one of the third-party certifications or label claims in a short list internally vetted by university staff and published in

Figure 1. Summary of Sustainable Food Procurement Policy Goals and Milestones at the University of California, 2004–2021

2004	– The University passes its first systemwide policy on sustainability ("Policy on Sustainable Practices")
2009	– Sustainable food procurement goals for campuses added to Policy on Sustainable Practices
2011	– Sustainable food procurement goals for health systems (to purchase 20% sustainable food by 2020) added to Policy on Sustainable Practices
2018	– Requirement that each health system join Practice Greenhealth (PGH) added to Policy on Sustainable Practices
2019	– 26% of food and beverages spend (US$27 million) by the University meets sustainability criteria (health systems accounted for US$3 million)
2020	– Sustainable food procurement goals for health systems updated in Policy on Sustainable Practices (to purchase 30% sustainable food by 2030) – US$7.7 million food and beverages spend by the health systems meets PGH criteria, the equivalent of about 21% of their total food and beverage spend – COVID-19 outbreak at a Foster Farms facility in California
2021	– The University issues the statement "Commitment to Worker Health and Safety during the COVID-19 Pandemic" – US$7.4 million food and beverages spend by the health systems meets PGH criteria, the equivalent of about 22% of their total food and beverage spend

the Sustainable Practices Policy from the years 2009–2019 (see Table 1).

In 2018, the University of California added another set of goals to its Sustainable Practices Policy, which focused primarily on sustainability in hospital operations, in recognition of "the unique challenges and opportunities for implementing sustainable practices in healthcare facilities" (University of California, 2019). A new requirement included that each health system join (and annually pay dues to) PGH, which sets and collects sustainability metrics for hospitals nationwide. As a result, each health system began reporting their sustainable food procurement practices to PGH on an annual basis. UCSF Health and UCLA Health had already been members of PGH and had also previously collaborated with Health Care Without Harm on various sustainable food initiatives.

2020 Updates to the Sustainable Practices Policy: New Procurement Target and Definition of "Sustainable"

All 10 campuses and four out of five health systems individually met the 2020 goal of purchasing 20% sustainable food before the 2020 deadline. Collectively, in 2019, over US$27 million or 26% of the University of California's food and beverage expenditures in residential dining halls, retail food service, and the health systems met sustainability criteria. The health systems accounted for US$3 million of that total.[2] The health systems and university campuses were able to achieve such sustainable spending through a variety of means, including hiring staff to support sustainable sourcing and offsetting potential higher costs of sustainable food items by adjusting menus and pricing (University of California, 2019).

[2] These figures exclude UC Irvine Health because it did not report any data in 2019. In conversations with staff at the health system, I was told that this shortcoming could be the result of a transition in its dining operations between foodservice management companies. The University of California's *2019 Annual Report on Sustainable Practices* states that: "UC Irvine Health is in the process of establishing processes to track and measure the amount spent on sustainable products."

Table 1. The University of California's Definition of Sustainable Food from its Policy on Sustainable Practices, 2009–2019

Sustainable Foodservices

In the context of this Policy, sustainable food is defined as food and beverage purchases that meet one or more of the criteria listed below, which are reviewed annually by the UC Sustainable Foodservices Working Group (under the UC Sustainability Steering Committee).

i. Locally Grown [a]
ii. Locally Raised, Handled, and Distributed
iii. Fair Trade Certified [b]
iv. Domestic Fair Trade Certified
v. Shade-Grown or Bird Friendly Coffee
vi. Rainforest Alliance Certified
vii. Food Alliance Certified
viii. USDA Organic
ix. AGA Grassfed
x. Grass-finished/100% Grassfed
xi. Certified Humane Raised & Handled
xii. American Humane Certified
xiii. Animal Welfare Approved
xiv. Global Animal Partnership (steps III, IV, V)
xv. Cage-free
xvi. Protected Harvest Certified
xvii. Marine Stewardship Council
xviii. Seafood Watch Guide "Best Choices" or "Good Alternatives"
xix. Farm/business is a cooperative or has profit sharing with all employees
xx. Farm/business social responsibility policy includes (1) union or prevailing wages, (2) transportation and/or housing support, and (3) healthcare benefits
xxi. Other practices or certified processes as determined by the location and brought to the Sustainable Foodservices Working Group for review and possible addition in future Policy updates.

[a] Resulting from regional constraints, campus definitions of "Locally Grown" and "Locally Raised, Handled, and Distributed" may vary; however, "Locally Grown" and "Locally Raised, Handled, and Distributed" distances shall not exceed 500 miles.
[b] Fair Trade Certified products must be third party certified by one of the following: IMO Fair For Life, Fairtrade International (FLO), Fair Trade USA.

As the University of California approached the year 2020, and given that all campuses and four health systems met the 2020 goal early, dining directors, other foodservice staff, and sustainability staff from each health system and university campus began deliberating new sustainable food procurement goals for the university. Most of these discussions took place in systemwide Sustainable Foodservices Working Group meetings. Desire from staff to update the systemwide Sustainable Practices Policy was further fueled by the fact that the existing definition of "sustainable food" in the policy was outdated. Not only did it not recognize newer certifications and label claims available in the market, but also several older label claims and certifications had fallen out of favor in sustainability networks, such as "cage-free" for eggs.[3] Months of discussion took place at one in-person meeting and

[3] In 2018, voters in California approved a ballot measure requiring all eggs sold in the state to be "cage-free." Given that norms around egg production had shifted, many staff within the University of California argued that the "cage-free" label claim should no longer count as a separate and presumably optional sustainability criterion.

in several subsequent and virtual Sustainable Foodservices Working Group meetings, and via email exchanges and phone calls. Eventually, the dining directors at each health system and campus reached a consensus for new targets to achieve within 10 years, by 2030. These new goals were passed into policy in 2020. The University of California's Sustainable Practices Policy now requires that 30% of each of the University of California's health systems' food and beverage spend must be sustainable by 2030.[4]

In the update, instead of listing sustainability criteria in detail, the Sustainable Practices Policy refers directly to PGH and Health Care Without Harm's definition of sustainable food and beverages for the health systems. This definition is the list of third-party certifications and label claims the two organizations have vetted. Staff at the University of California's health systems picked this definition of "sustainable" for a few reasons. First, each health system was already a member of PGH, as required by the 2018 updates to the Sustainable Practices Policy, and they were therefore annually reporting sustainability metrics to PGH. Second, as staff expressed during working group meetings, they welcomed freedom from the burden of regularly updating and vetting sustainability criteria internally and placed confidence in PGH to evaluate third-party certifications and label claims on a regular basis instead.

Key differences in PGH's "healthier food purchasing standards" compared to the University of California's pre-2020 standards include the incorporation of newer label claims that focus exclusively on the use of antibiotics in animal agriculture as a sustainability criterion. Meat and poultry with the label claims "raised without antibiotics," "no antibiotics administered, "no antibiotics ever," or "no antibiotics added" can now be counted as sustainable, according to PGH. Older sustainable food certifications that address broader topics, such as humane animal care, have multiple requirements about food production, including restrictions around the use of antibiotics in animal husbandry. However, the labels "raised without antibiotics," "no antibiotics administered," "no antibiotics ever," and "no antibiotics added" focus exclusively on the issue of antibiotics and do not ever allow for their administration. These labels do not make any guarantees around animal welfare, worker health and safety, or aspects of environmental sustainability such as climate change, soil health, or water quality.

Despite the limited scope of the no-antibiotics labels, the use of antibiotics in animal agriculture has been a key concern for PGH, Health Care Without Harm, and the University of California's hospitals. Research has highlighted that 80% of antibiotics sold in the U.S. are for use in animal agriculture, as opposed to human medicine, often for the purposes of growth promotion when animals are being reared.[5] Further, this antibiotic use in animal agriculture has been linked to antibiotic-resistant infections in humans (Martin et al., 2015). The University of California's hospitals have therefore made it a priority to purchase "no antibiotics ever" chicken for health and environmental concerns. As a result of mobilized efforts by entities like Health Care Without Harm, many poultry companies have shifted away from ever using antibiotics in raising chickens and turkeys (Charles, 2016; Mohan, 2015). Companies like Foster Farms, a supplier based in California, claim that they are now "leaders" in offering "antibiotic-free chicken" (Foster Farms, n.d.).

Progress Toward the 2030 Procurement Goal

The University of California's dining locations reported data on the new sustainable food procurement goals for the first time in the 2020 Annual Sustainability Report from the University of California, published in January 2021. According to

[4] The new goals also created separate targets for campuses. By 2030, 25% of each campus's food and beverage spend must meet the Association for the Advancement of Sustainability in Higher Education's (AASHE) definition of "sustainable" (University of California, 2022).

[5] Note that antibiotic use impacts the growth and reproduction of bacteria but not the growth and reproduction of other microbes, such as viruses. Antibiotics are administered at the farm level and not at other stages of food production and processing, such as slaughter.

this report, the university as a whole spent US$19.6 million on products that met sustainability criteria during fiscal year 2019–2020 (referred to as "2020 data"). Many of these food and beverage items included those with the certifications and labels of organic, Fair Trade, or "no antibiotics ever" poultry, and came from medium- to large-sized distributors and other suppliers. Of that figure, the university's five health systems purchased US$7.7 million of food and beverages that met PGH's standards. This figure was the equivalent of about 21% of their total food and beverage spend in fiscal year 2019–2020, a reported increase from the year before (University of California, 2021a).[6] In Sustainable Foodservices Working Group meetings and email correspondence, foodservice staff from at least two of the health systems commented that they had originally expected the percentage of dollars spent on sustainable food and beverages to be even higher, given that the health systems had been collectively at 20% or above for sustainable food purchasing in the previous three years, before 2020. Their explanations about their 2020 data revolved around the coronavirus pandemic, as their dining operations experienced decreases in food sales and increases in food supply disruptions. They also found collecting data from suppliers to be challenging during the pandemic.

Despite these challenges, sustainable food procurement is a point of pride for the health systems because of the accolades they have received for their procurement efforts. UC Davis Health, for example, has been honored twice by the James Beard Foundation for sustainable seafood procurement (UC Davis Health, 2020). UC Davis Health was also recognized by PGH as a "leader in sustainable food services" in 2020 (PGH, n.d.-c).

The health systems feature sustainable food procurement—particularly related to sustainable meat and poultry products—prominently in promotional materials, on their menus, and on their websites. For instance, in its cafeterias, UCSF Health advertises that its grilled burger is made with grass-fed beef and mushrooms. The mushrooms are included to increase the plant-based content in a serving (Fitzpatrick, 2017). UC San Diego Health and UCLA Health publicize on their websites and in presentations that they serve poultry raised without antibiotics (Champeau, 2014; UC San Diego, n.d.). UCSF Health even passed a resolution, in collaboration between faculty and foodservice staff, and now available on its website, to phase out any purchases of poultry raised with non-therapeutic antibiotics (Fleischer, 2018).

Discussion

Over the course of more than 10 years, sustainable food procurement at the University of California's health systems has been made official in internal policy, celebrated in communications, and normalized in culture among staff and faculty. Millions of dollars are now spent annually on sustainable food and beverages by the University of California's health systems. Based on trends since 2010, and barring long-term COVID-19–related issues, this dollar figure will likely continue to grow as 2030 approaches.

Support for Environmental Issues

There is clear support from many staff members throughout the University of California for environmental initiatives in sustainable food procurement. For instance, both the University of California's health systems and campuses are interested in expanding the scope of their sustainable food work to address climate change. The Sustainable Foodservices Working Group is currently exploring new goals that would require that both the health systems and campuses increase their plant-based food spend as a proportion of their overall food and beverage purchases. The goal aims to reduce the greenhouse gas emissions related to their food procurement activities. During the course of several working group meetings, foodservice staff agreed by verbal consensus to this exploration. The consensus was based on research they were presented from students, faculty, and nonprofit partners such as Health Care Without Harm documenting that animal proteins have a higher climate footprint compared to plant-based ingredients. Many sus-

[6] The 2020 data represents about a US$4.7 million increase from the 2019 Annual Sustainability Report. However, the 2019 report did not include information from UC Irvine Health.

tainability staff also expressed support for this exploration in order to further align food procurement activities with the University of California's broader carbon neutrality goals, which do not currently address food purchases. PGH, Health Care Without Harm, and other nonprofit organizations are providing guidance and support to the University of California's hospitals to measure and track plant-based food purchases. Four of the health systems have also signed onto the "Cool Food Pledge," a climate change–focused campaign run by the World Resources Institute, and have pledged to measure and reduce the climate impact of their food (PGH, n.d.-a).

Challenges to Sustainable Procurement Illuminated by a COVID-19 Outbreak in Poultry

Despite the growth the University of California's health systems have seen in their sustainable food procurement efforts, disruptions from the coronavirus pandemic in agricultural production and food supply chains showcase some of the limitations around their goals. For instance, in the spring of 2020, over 16,000 meat-processing workers tested positive for the COVID-19 virus, and 86 workers died in the U.S. (Waltenburg et al., 2020). COVID-19 outbreaks continued throughout the year in the poultry sector. One estimate found that there were 334,000 COVID-19 infections in the U.S. meat processing sector in 2020, primarily resulting from the lack of health and safety precautions for workers (HealthDayNews, 2021). In August and September 2020, nine people died from a COVID-19 outbreak in one poultry processing facility run by Foster Farms in California, and over 392 individuals tested positive for the virus. In the weeks afterward, several more individuals died from the original outbreak and another outbreak at Foster Farms in California. In December 2020, United Farm Workers of America filed a lawsuit against Foster Farms within the state. Attorneys argued that Foster Farms put workers at the plant at an increased risk of contracting and dying from COVID-19 and accused the company of operating in "naked disregard of both national and local guidelines" (as cited in Hall, 2020). In May 2021, state regulators cited the company for several repeated and serious COVID-19 violations.

While the scope of the pandemic was unprecedented and unpredictable, concerns about the health and well-being of poultry workers, from risk of bodily injury to warnings about the spread of respiratory illnesses, were not new and unique (Grabell & Yeung, 2020; Human Rights Watch, 2005; MacMahon et al., 2008). Many advocacy organizations had also long-documented the poor working conditions in poultry processing facilities (Oxfam, 2016; The Food Chain Workers Alliance, 2012). This outbreak of COVID-19 among workers is notable, however, because the University of California's health systems (and campuses) are sourcing much of their fresh and "no antibiotics ever" poultry, now considered sustainable according to PGH and university policy, from Foster Farms, with which the university has a systemwide contract through 2023.[7] COVID-19 catalyzed new conversations among university staff about the inadequacies of its existing sustainability program and methods for vetting labels for issues around labor.

News of the workers' deaths from COVID-19 led to several debates about worker health and safety within Sustainable Foodservices Working Group meetings in the fall of 2020. Some foodservice staff expressed discomfort about calling "no antibiotics ever" chicken from Foster Farms "sustainable," given the working conditions in poultry processing that contributed to the COVID-19 outbreaks. They argued that the University of California should terminate its contract with Foster Farms as a result, given social justice concerns. Other staff pointed out that if the university immediately ended the contract, campuses and health systems would likely face a shortage of poultry products. At the time, there was no alternative supplier that could meet the university's large volume demand of fresh and processed (for example, already cut up) chicken and turkey items as outlined in its contract with Foster Farms. Moreover, they argued,

[7] These poultry products are primarily being delivered to University of California locations through broadline distributors. For example, US Foods delivers for four of the health systems.

many other meat processing facilities were being shut down temporarily or operating at reduced capacity as a result of COVID-19, further restricting poultry supplies nationwide.

These potential supply shortages made many foodservice staff nervous that they would be unable to plan menus or meet consumer (student, staff, and visitor) demand for food items. Further, if some of the health systems and campuses wanted to plan ahead and purchase and store surplus poultry (for example, in freezers or warehouse space), which could be utilized during supply chain shortages, foodservice staff explained that their locations did not have such storage capacity or labor to manage such logistics. And finally, some members of the working group even argued that campuses and health systems did not need to be troubled about the outbreak. The Foster Farms facility where the first outbreak of COVID-19 occurred was not the origin of the processed poultry products being supplied to the University of California. In sum, the majority of concerns about ending the contract with Foster Farms revolved around the availability of processed poultry products from other suppliers, ongoing supply chain disruptions, and the University of California's own infrastructure and staffing limitations. This varied list of concerns highlights how there was no one or immediate solution for responding to labor violations around the COVID-19 outbreak, given the complex nature of meat processing, supply chains, consumer food preferences, and institutional procurement.

After weeks of discussion, individuals from the Sustainable Foodservices Working Group drafted a public statement that emphasized the importance of worker health and safety during the pandemic. The statement was then endorsed by the Working Group and other sustainability groups internal to the university. In 2021, the statement, called "Commitment to Worker Health and Safety during the COVID-19 Pandemic," was signed by high-level administrators in the University of California's Office of the President, the Chief Operating Officer and Chief Financial Officer. It was then both put on the University of California's website and sent by procurement staff to over 300 systemwide suppliers, including Foster Farms.[8] As of the middle of 2022, the university is maintaining its poultry contract with Foster Farms. Meat and poultry products marked "raised without antibiotics," "no antibiotics administered," "no antibiotics ever," or "no antibiotics added" are still considered sustainable by PGH, Health Care Without Harm, and the University of California's sustainable food procurement policy for health systems.

Outstanding Questions for Consideration in Sustainable Procurement Policy and Initiatives

The Sustainable Foodservices Working Group continues to grapple with unanswered questions regarding campus and hospital food supply chains: How can and should the University of California hold its contracted suppliers accountable for public health and other violations impacting workers? What options for action does the university have if there is no other immediate supply source for an affected product? Can supply for any product ever be guaranteed when and if the university relies entirely on one supplier for delivering it? And finally, should "raised without antibiotics," "no antibiotics administered," "no antibiotics ever," and "no antibiotics added" label claims still qualify as sustainable in the University of California's Sustainable Practices Policy, or are they too narrow in scope in their focus on one aspect of food production (which excludes labor concerns, for example)?

These questions illustrate the limitations to the impact of sustainable procurement policies by institutions like hospitals as currently designed, particularly if institutions are relying solely on the procurement of products with existing third-party sustainability certifications and label claims from larger suppliers as a means for changing the food system. To date, social justice and concerns around working conditions have not yet been focal points in most of these certifications or labels. The overwhelming majority of the third-party food certifica-

[8] The "Commitment to Worker Health and Safety during the COVID-19 Pandemic" from the University of California is available online at https://www.ucop.edu/procurement-services/for-suppliers/sustainable-procurement/covid19_letter_workerhealthand-safety.pdf

tions and label claims on PGH and Health Care Without Harm's "healthier food standards" revolve around environmental criteria or animal welfare. Only one on the list, Fair Trade, directly tackles labor. As advocacy organizations have pointed out, however, there are currently less than a handful of third-party certifications available in the marketplace that address workers and social justice, and these focus primarily on farmworkers (Nargi, 2019). Relatedly, only a few advocacy organizations, such as the Good Food Purchasing Program, address the intersection of institutional food procurement and labor (Silverman, 2021). The overall emphasis of farm-to-institution over the years has been on farm size and local or regional food (Prescott et al., 2020), not working conditions in food supply chains. This shortcoming mirrors that of the broader food movement, which has focused more on environmental sustainability and less on social justice (Minkoff-Zern, 2017).

To further complicate how the University of California should respond to external events that impact food supply chains is the fact that internal foodservice operations are dealing with pandemic-related crises around staffing shortages and smaller food and beverage budgets. The foodservice sector as a whole has experienced a decline in sales due to closures of cafeterias and other outlets because of mandatory shutdowns and low visitor numbers. At the same time, sanitation expenses have increased during the pandemic (McConnell, 2020; Pawlak, 2020; Shaw, 2020). The most recent food procurement data from the University of California's hospitals shows that the health systems purchased less food overall and spent about US$300,000 less (US$7.4 million, or 21% of their food and beverages) on food and beverages that met the PGH definition of sustainable in 2021 compared to 2020 (University of California, n.d.-c). Cafeterias, cafés, dining halls, and other foodservice locations are operating and continue to operate at a limited capacity throughout the University of California as a result of curtailment measures stemming from the pandemic. Foodservice staff have repeatedly shared on internal Sustainable Foodservices Working Group calls that pandemic-related pressures have taken time and resources away from internal activities that support existing sustainability goals.

Conclusion and Recommendations

Since the early 2000s, institutional food consumers such as hospitals have become increasingly engaged in sustainable food policy and procurement. Medical associations, hospitals, and nonprofit advocacy organizations have argued that hospitals can and should change the food system with their food and beverage purchases to protect the environment and mitigate human health problems. Staff at the University of California's five health systems are proud of the progress their hospitals have made on increasing their sustainable food and beverage purchases as a percentage of their foodservice budgets since 2010. These health systems have committed to dedicating a larger percentage, at least 30%, of their food purchases to sustainable food and beverages by 2030.

By spending millions of dollars annually on purchasing sustainable food and beverages—as the University of California's five health systems have been doing—they have signaled to suppliers that they are interested in values such as environmental protection. They have been willing to spend more money on food products with third-party certifications and label claims. They have been purchasing many of these items from suppliers with which they already have contracts. As other researchers have shown, many of these activities and those of other institutions relying on VBSCs have definitively led to positive ecological changes in food production and have supported small to mid-sized producers (Christensen et al., 2018; Farm to Institution New England, n.d.; Prescott et al., 2020; Zuckerman, 2013). However, the 2020 outbreak of COVID-19 that led to worker deaths at a poultry processing facility in California tests the limits of food systems change that may be possible, in particular with VBSCs. This is especially true when hospitals attempt to influence food production and processing solely by buying products with existing sustainability certifications and label claims from larger suppliers.

As sustainable procurement efforts from the University of California illuminate, there is need for farm-to-hospital efforts to better address concerns around labor and social justice in the food system. The University of California is continuing internal conversations about its relationship to its poultry

suppliers and how best to tackle workers' rights with procurement decisions. The university received a subcontract in late 2021 through a three-year grant with Georgetown University and the Robert Wood Johnson Foundation to explore developing a code of conduct for poultry suppliers and their workers. While work on the grant is nascent, a code of conduct could set parameters around acceptable health and safety conditions for workers in the poultry supply chains from which institutions source their food. Many universities, including the University of California, already have codes of conduct in place for trademark licensees (University of California, 2021d).

Moving forward, the broader farm-to-hospital movement could explore the role of a policy—such as a code of conduct addressing labor conditions in food supply chains—that health systems could adopt as a part of their sustainable procurement goals. Given that hospitals use third-party certifications and label claims for making decisions around their sustainable food purchases, farm-to-hospital efforts could also reevaluate the impact of antibiotic-use label claims on food systems change. Hospitals themselves may also want to consider accelerating their plant-based food procurement efforts to reduce their reliance on large meat and poultry suppliers that have had years of documented labor violations.

Finally, additional applied research continues to be needed around the infrastructure and supply chain barriers faced by institutions in diversifying their supplier base so that they are not entirely dependent on a few large suppliers for their food. For example, farm-to-hospital advocates could examine the limitations hospitals face in storing and processing food. These limitations serve as barriers for hospitals to purchase food from alternative suppliers who may have inconsistent supplies of food or food in forms that hospitals cannot immediately utilize without further processing (such as whole or frozen poultry). In turn, the farm-to-institution movement should continue to explore opportunities for connecting sustainable, small, and diverse suppliers to institutions. The need for institutions to rely on a diverse supplier base for their food products is likely to become increasingly important as supply chain resiliency continues to be tested by external shocks, including climate change-related disasters in agriculture and the ongoing COVID-19 pandemic.

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Adaptations and innovations: Analyzing food system organizations' responses to the COVID-19 pandemic

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Abstract

During the global COVID-19 pandemic, food systems have been affected by supply-chain disruptions, shifting employment trends, and increasing prices that change organization and business operations, increase food insecurity, and influence the broader economy. Much of the early scholarship regarding pandemic trends pointed to root causes in the corporate food regime and called for seeing the crisis as an opportunity for transformational change. Relying on surveys and in-depth interviews with food system stakeholders, this paper describes the impact of the COVID-19 pandemic on food businesses and organizations in Charlotte, North Carolina, USA. We examined the challenges created during the pandemic and related responses by stakeholders. Our research found that the pandemic's impacts have been mixed. Most stakeholders identified both barriers and opportunities, reporting great upheaval and disruption but also new opportunities for innovation and collaboration. We argue that, while many positive innovations and quick responses were generated, ongoing challenges are indicative of widespread food system vulnerabilities created by a corporate food regime that produces thin margins while limiting the ability of stakeholders to pursue transformational change. Much of the existing literature considers the pandemic's effects on individual producers and eaters, as well as large-scale structural shifts, yet less attention has been paid to the responses of food system

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organizations and businesses. This research contributes to food systems literature through its focus on food system actors to better understand how the food system is changing during the pandemic.

Keywords
COVID-19, Pandemic, Corporate Food Regime, Organizations and Businesses, Charlotte, North Carolina

Introduction

Throughout the global COVID-19 pandemic, food and agriculture systems have been disrupted as economic shifts spurred greater rates of hunger and significant supply-chain shortages. These disruptions brought to light the ongoing vulnerabilities of global food systems, including but not limited to the failures of concentrated corporate actors to sufficiently distribute agricultural goods from farms to consumers in ways that promote the health and well-being of producers, consumers, and the environment. The exacerbation of these vulnerabilities during the pandemic spurred quick changes and new innovations by organizations and businesses. This research examines those changes to better understand the pandemic's impacts and what this may portend for food system futures.

Through surveys and in-depth interviews with food system stakeholders across multiple sectors in Charlotte, North Carolina, this research identified the barriers affecting organizations and businesses during the pandemic and examined stakeholder responses. Our research found that the pandemic's impacts were mixed. Most stakeholders argued that lockdowns, mitigation measures, and supply disruptions produced significant operational barriers, but also new opportunities for innovation and collaboration. We argue that this mixed impact is indicative of widespread food system vulnerabilities (described throughout this paper) created by a corporate food regime (McMichael, 2009) that produces thin margins while constraining the pursuit of transformational change.

Much literature has reported on the effects of the pandemic on individuals, families, and farming communities (see Anderson, 2020; Blay-Palmer et al., 2021; Clapp and Moseley, 2020; among others, including a special call for such papers in this journal [Hilchey, 2021]). These reports are important for identifying how individuals are faring and the need to better support them. But this literature has paid less attention to the organizations and businesses that are responding to the pandemic's impacts. We examined how organizations and businesses responded to pandemic disruptions. The stakeholders in our research were innovative in responding to new challenges, but their ability to foment system-level change while also ensuring their survival is less clear. This research contributes to food systems literature through its focus on organizations and businesses in order to better understand how the food system is changing during the pandemic.

We begin with a brief review of food systems literature regarding vulnerabilities and crises. Then we discuss how these vulnerabilities are evident in the Charlotte context and our mixed-methods research approach, before detailing the research findings. Finally, we discuss what these findings indicate for ongoing food system stakeholders' responses to crisis disruptions and provide recommendations for future research and practice.

Food System Vulnerabilities

Throughout the pandemic, there were widespread stories of empty grocery store shelves (Hernandez, 2022), wasted food on farms (Mansoor, 2020; Yaffe-Bellany & Corkery, 2020), and increasing demand at food pantries (Silva, 2020). Public health officials and state leaders implemented restrictions on business operations and public gatherings, creating a direct impact on food system actors. For example, restaurants could no longer serve guests indoors and newly unemployed individuals began visiting food pantries for the first time, causing a dramatic rise in demand. Growing demand for food aid was coupled with a disrupted supply of food and increased prices. Food was being produced, but the supply chains were beginning to fragment as distributors were forced to find alternative outlets for foodstuffs (Hobbs, 2020). Hege et al. (2021) describe this as a "perfect storm" (p. 241) where the confluence of many food system impediments forced organizations to innovate quickly. In North Carolina, many specialty-crop producers reported significant damage to their

businesses as a result of the pandemic (Dankbar et al., 2021). The lost or reduced capacity of previously established supply chains required producers to rework their operations and oftentimes sell directly to consumers.

These disruptions were not experienced equally. Food insecurity and coronavirus infections were experienced at higher rates in Black and Latinx communities (O'Hara & Toussaint, 2021; Perry & Harshbarger, 2020). Less supply led to increased prices at grocery stores and other food retail locations, which affected those with limited incomes the hardest and forced many families into difficult choices about spending on groceries, rent, or utilities (Tappe & Meyersohn, 2021). Many of the workers most at risk of unemployment or contracting the virus were low-paid food system workers from marginalized communities (for example, fast food and grocery staff and migrant factory workers). Further, food systems scholars point out that food insecurity intersects with other inequities linked to race, class, gender, immigration status, sexuality, and ability (Bowen et al., 2021).

The disruptions and changes evident during the pandemic are part of a larger context of food system vulnerabilities and injustices (Anderson, 2020; van der Ploeg, 2020). Interdisciplinary food systems literature notes that recent crises are embedded in long-term food injustices and respond to a myriad of connections between food and human society, including issues of food access and insecurity, food justice, the ecological impacts of food production and consumption, and the economic systems of food distribution, among others (Clapp & Cohen, 2009; Rosin et al., 2011). Food system organizations and businesses have been greatly affected by "interlocking dynamics" that characterized current and previous food system crises—supply-chain disruptions, job losses, increasing prices—that had knock-on effects on food security, farm viability, and the economy as a whole (Clapp & Moseley, 2020).

These vulnerabilities are grounded in a corporate food regime focused on producing cheap and plentiful food through industrial methods and specialized markets over the past 70 years (James et al., 2021; Montenegro de Wit, 2021). McMichael (2009) theorized the corporate food regime as characterized by the shift to industrial agriculture, consolidation of agri-business and food retail industries, and liberalization of trade policies in order to privilege corporate power. These changes marginalize smallholder agriculture, local ecologies, and public health, and lead to food system crises (Hendrickson, 2020; Holt Giménez & Shattuck, 2011; Montenegro de Wit, 2021; Winson, 2010). For example, Holt Giménez and Shattuck (2011) see the 2008 world food price crisis caused by the corporate food regime, explaining that while there were record grain harvests, food prices were simultaneously on the rise and the number of hungry people reached historic levels. Some have argued that this was due in part to short-term causes like higher demand in developing countries, while also being the result of longer-term, structural factors like a growing reliance on imports caused by commodity dumping from wealthier nations (Mittal, 2009).

Similarly, many have pointed to trends in the corporate food regime that laid the foundation for food systems crises experienced during the coronavirus pandemic. This includes seeing a fundamental crisis point in the modern agricultural system with the near absolute reliance on monoculture farming systems to the detriment of our environment and in defiance of smallholder rights (McMichael, 2009). The liberal trade policies of the corporate food regime enable the wide circulation of food products across international borders and the heavy reliance of many economies on others for their food. Trade liberalization (alongside industrial agricultural practices) is seen by some as contributing to the increased incidence of disease spread (IPES-Food, 2020). It also demonstrated the system's vulnerability to disruptions as the ability to move goods was severely hindered during the pandemic, resulting in food shortages worldwide (Bowness et al., 2020). The increasing reliance on cheap, precarious, and often migrant labor in the corporate food regime was made visible when many food-service workers lost their jobs early in the pandemic, which drove up food-insecurity rates among this low-paid population. Grocery-store and factory workers were deemed essential and required to sacrifice their health (via exposure to a highly contagious virus, often with inadequate protective equipment) in order to keep food circu-

lating through the economy (Bhattarai, 2020). Some temporary foreign workers continued to labor in the fields despite contracting the virus, while other farm owners lamented the limited supply of migrant labor as international borders closed (Berger Richardson, 2020). Many point out that this was simply an exacerbation of existing precarity, danger, and marginalization of food system laborers (Robinson et al., 2021). It is important to note that marginalized food system laborers are more likely to be Black, Indigenous or People of Color (BIPOC) and were disproportionately impacted by COVID-19 (Alkon et al., 2020).

Throughout the pandemic, many food system stakeholders have had to make immediate pivots or pursue innovations in response to changes in demand (e.g., increases for food pantries, decline in customers for restaurants), public health guidance (e.g., distributing food boxes instead of allowing clients to "shop" through pantries, acquiring masks, and shifting to online communications), and supply-chain disruptions (e.g., finding new sources for restaurants, piloting direct-to-consumer programs) (Dankbar et al., 2021; Hege et al., 2021). At the same time, scholars suggested that the crises evident during the pandemic created an opportunity to rebuild food systems that are more just and sustainable (Blay-Palmer et al., 2021; Cox & Beynon-MacKinnon, 2020; Glaros et al., 2021). For example, Blay-Palmer et al. (2021) argue that the food system vulnerabilities exposed during the pandemic demonstrate the need for a City Region Food Systems approach characterized by multi-stakeholder engagement across regions, system-centered planning and policy, and participatory governance. Others argue that there are opportunities for diverse actors to rebuild local food systems and pursue resilience, construct circular economies, and dismantle the corporate food regime (Clapp & Moseley, 2020; Giudice et al., 2020; James et al., 2021). As some researchers have noted, any efforts to devise a more equitable food system must address the roots of injustices in a long history of settler colonialism and structural racism (Lunsford et al., 2021). These conditions producing food system vulnerabilities were in place in the Charlotte region prior to the pandemic, affecting not only the distribution of food and agricultural goods, labor, and food insecurity rates, but also how organizations and businesses were able to respond to these challenges.

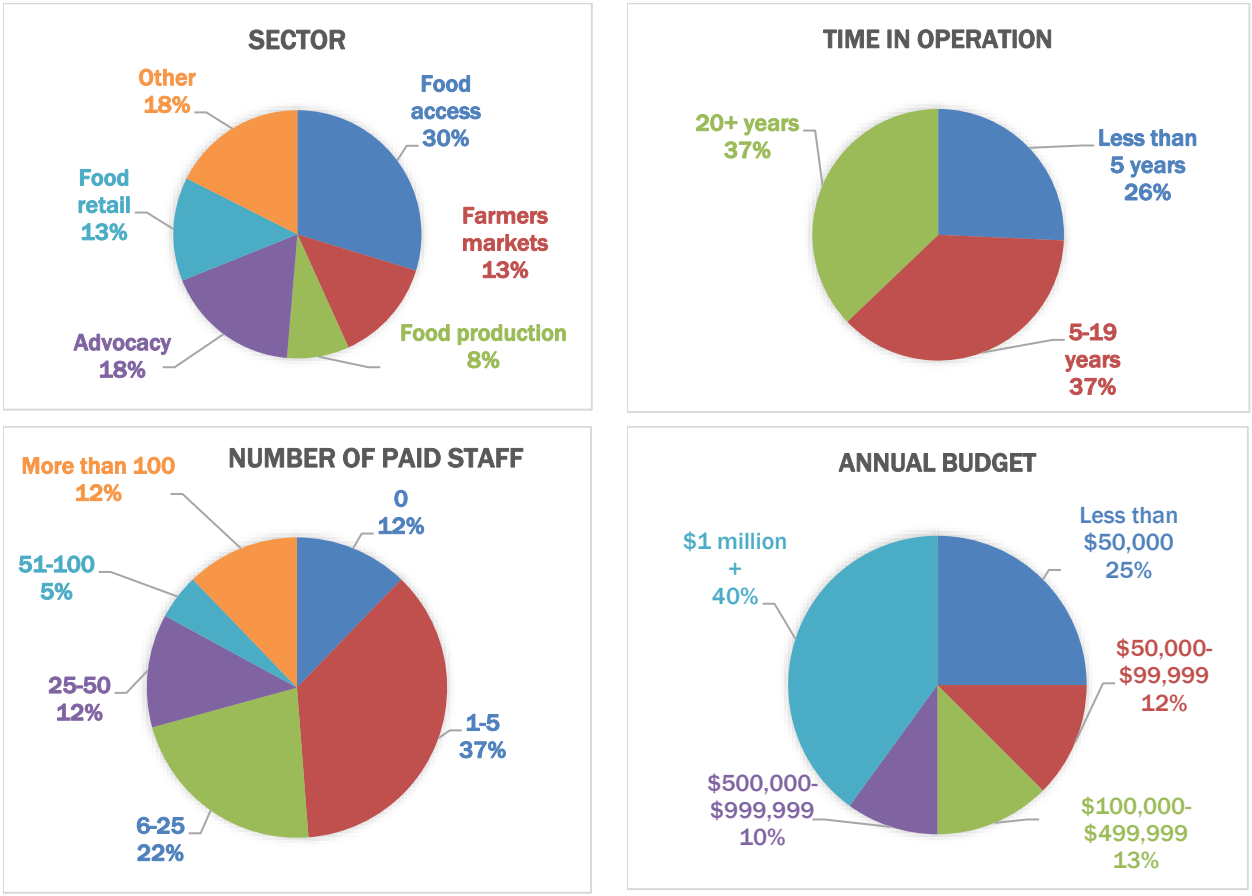
Research Methods and Context

To understand the pandemic's effects on food system organizations and businesses, during 2020–2021 we utilized a mixed-methods approach of online surveys and in-depth interviews. The research questions and instruments were developed in collaboration with more than 80 individuals working in the regional food system as part of a larger Charlotte-Mecklenburg Food Policy Council (CMFPC) food system assessment (CMFPC, 2022). The online survey utilized open- and close-ended questions about organization and business demographics, assets acquired, barriers encountered, and the impacts of the pandemic on their operations. Forty-one surveys were completed by stakeholders representing food access (22), advocacy (12), food retail (11), farmers markets (8), food production (6), and other sectors (8) (see Figure 1 for additional survey respondent demographics). We sought responses from diverse sectors in recognition of both the similar and differential impacts faced by food system actors across different areas.[1] Surveys were analyzed in Excel and SPSS to produce summary statistics.

Following survey analysis, 29 in-depth interviews were conducted with stakeholders from local and state government (5), nonprofit leaders focused on food security (5), agriculture (3), farmers markets (2), health and nutrition (6), environmental education (3), and business owners (5). Interviews provided more in-depth explanations and context regarding pandemic impacts and responses identified in surveys. Interviews were transcribed and coded by the research team using NVivo in order to identify emergent themes. While a potential limitation of the research is the small survey sample, this mixed-methods research approach sought in-depth information from a purposive sample of

[1] In order to allow survey and interview respondents to speak freely and in accordance with research ethics guidance from the UNC Charlotte Institutional Review Board, names of organizations and businesses participating in this research are kept confidential.

Figure 1. Survey Respondent Demographics



knowledgeable stakeholders in different food system sectors. It was not intended as a survey of the general population, nor as a tool to provide generalizable knowledge about resident experiences. Instead, through both surveys and interviews, we reached levels of saturation that provide important and in-depth insight into the experiences of organizations and businesses in Charlotte.

Charlotte is the largest city in North Carolina, with a population of nearly 900,000 people. It is home to the second-largest banking sector in the U.S. and it is one of the fastest-growing cities in the country (Charlotte Regional Business Alliance, 2021; 2022). The characteristics of the corporate food regime were prevalent in the Charlotte region prior to the pandemic in ways that affected available responses. Like cities across North America, Charlotte's food system has experienced a consolidation of regional farms in industrial operations, the predominance of a few grocery companies that source their goods through international supply chains, and increasing rates of food insecurity addressed, in part, by a network of corporate-sponsored food banks.

A study of the region's food system commissioned by the City of Charlotte that focused on farmers markets found that the county lost more than one-third of its farms between 1997 and 2012, ranks low in direct-to-consumer sales and marketing, and lacked support for regional producers (KarenKarp&Partners, 2018). North Carolina is the home to several large agriculture industries. Food system consolidation is evident in the grocery store industry where a few brands dominate the market and make decisions that accumulate grocery store access in certain wealthy neighborhoods while

denying such access to others. Additionally, like many cities in the US South, Charlotte has been shaped by a long history of racism and discrimination. The prevalence of food insecurity and inadequate access to healthy foods in certain neighborhoods can be traced to historical policies and practices that have separated people by race and income (Hanchett, 1998). Throughout Charlotte's history, decisions by government, white property owners, and corporate leaders have reinforced patterns of racial segregation that persist in today's built environment and spatial divisions. Such inequality has had a profound impact on the availability and accessibility of food.

Food insecurity rates continue to climb despite the efforts of a robust network of pantries, school feeding programs, and nonprofits addressing food insecurity. According to county estimates, in 2022, approximately 15% of Charlotte families struggled with food insecurity (Mecklenburg County, n.d.). Finally, its restaurant scene has been shifting in the past several decades to appeal to the younger, more diverse population that is moving into Charlotte (Purvis, 2021). As is true in the restaurant industry throughout North America, these establishments rely on low-paid, precarious labor that was ill-prepared to weather the impacts of the pandemic. At a governmental level, food systems decisions are made by the overlapping City of Charlotte and Mecklenburg County. The CMFPC was founded in 2011 as a nonprofit organization that works in partnership with the city and county in order to support food system innovations.

Many of the pandemic trends reported in the literature were evident in Charlotte. Mecklenburg County issued its first stay-at-home orders in March 2020 requiring residents to remain home except for conducting essential business and limiting restaurants to take-out service. These provisions were gradually lifted over the following two years. However, continued constraints and concerns about spreading the virus, as well as disruptions at other scales, significantly affected food system operations. Farmers experienced challenges reaching customers, grocery stores saw supply chains disrupted, restaurants closed or changed their business models, and rates of food insecurity skyrocketed. The most frequently cited changes experienced by food system organizations and businesses since the start of the pandemic included an increased reliance on technology, increased client or customer demand, new resource needs (for disinfectant supplies, gloves, and masks) and challenges in distributing products (see Table 1).

These impacts can be differentiated according to sector, organization size (via staff and budget),

Table 1. Changes Experienced During the Pandemic According to Survey Responses

Type of Change	# (*n*=39[a])	%
Increased reliance on technology during the pandemic	23	59%
Increased client/customer demand	22	56%
New resource needs for more disinfectant supplies, gloves, and masks due to pandemic	21	54%
Challenges in distributing products	17	44%
New opportunities for distributing products	16	41%
Increased time and incentive to focus on different priorities	15	38%
Loss of volunteers due to pandemic	14	36%
Change in demographics of clients/customers	11	28%
New funding streams	11	28%
Decreased client/customer demand	9	23%
Other	2	5%

[a] Respondents could select more than one answer

and length of time in operation (see Tables 2–5). Organizations in food access saw the biggest impacts in increased client demand, while farmers markets faced challenges with distributing their products, new resource needs, and increased time to focus on new priorities. Those in food production saw the greatest impacts in new resource needs, decreased client demand, increased reliance on technology, and new distribution opportunities. Those involved in advocacy identified mixed impacts through increased demand and reliance on technology, increased ability to focus on new priorities, and new funding streams. Differentiating organizations by size (Tables 3 and 4) shows similar patterns to overall findings, with an increased reliance on technology and increased client demand among the most selected impacts for all groups.

Organizations and businesses with budgets less than US$50,000 and more than US$1 million annually also reported significant impacts from the need to purchase more resources (Table 4). Finally, organizations and businesses that had been in operation for fewer than 5 years or 20 or more years generally followed overall trends with an increased reliance on technology, increased client demand, and new resource needs representing the most cited impacts (Table 5). Organizations that had been in operation for 6–19 years most frequently identified increased client demand. It is likely that organizations with a budget between US$50,000 and US$1 million and time in operation between 6 and 19 years reported differential impacts because those organizations were more frequently involved in food access or farmers markets and thus were directly engaged with clients

Table 2. Pandemic Impacts According to Sector

Type of Change	Food access (*n*=22)		Farmers markets (*n*=10)		Food production (*n*=6)		Advocacy (*n*=13)		Food retail (*n*=10)		Other (*n*=13)	
	#	%	#	%	#	%	#	%	#	%	#	%
Increased reliance on technology	11	50%	3	30%	4	67%	7	54%	6	60%	10	77%
Increased client/customer demand	17	77%	5	50%	2	33%	7	54%	4	40%	5	28%
New resource needs for more disinfectant supplies, gloves, and masks	12	55%	6	60%	4	67%	6	46%	6	60%	4	31%
Challenges in distributing products	11	50%	6	60%	3	50%	6	46%	6	60%	3	23%
New opportunities for distributing products	12	55%	1	10%	4	67%	5	38%	1	10%	0	0%
Increased time and incentive to focus on different priorities	10	45%	6	60%	3	50%	7	54%	4	40%	3	23%
Loss of volunteers	8	36%	3	30%	1	17%	4	31%	1	10%	4	31%
Change in demographics of clients/ customers	8	36%	3	30%	1	17%	3	23%	2	20%	1	8%
New funding streams	9	41%	2	20%	0	0%	7	54%	1	10%	3	23%
Decreased client/customer demand	3	14%	3	30%	4	67%	1	8%	5	50%	3	23%
Other	1	5%	1	10%	0	0%	0	0%	5	50%	1	8%

and consumers in ways not as easily mediated by technology.

Interviewees reported on the many shifts in how they engaged with clients and consumers, including pivoting to more mobile distribution, providing prepackaged food boxes, and using online sales and events. For example, food pantries began distributing prepackaged boxes and established delivery and mobile distribution sites. Restaurants shifted to offering more carry out and to-go options, navigated disrupted supply chains, and weathered increased resource demands (sourcing masks, using QR codes for menus, removing condiments from the tables, and sanitizing high-touch

Table 3. Pandemic Impact According to Staff Size

	Zero (*n*=5)		1–5 (*n*=15)		6–50 (*n*=14)		More than 50 (*n*=7)	
Type of Change	#	%	#	%	#	%	#	%
Increased reliance on technology	3	60%	8	53%	8	57%	4	57%
Increased client/customer demand	3	60%	8	53%	7	50%	4	57%
Need for more disinfectant supplies, gloves, and masks	3	60%	6	40%	8	57%	4	57%
Challenges in distributing products	2	40%	4	27%	7	50%	4	57%
New opportunities for distributing products	3	60%	5	33%	5	36%	3	43%
Increased time and incentive to focus on different priorities	3	60%	6	40%	3	21%	3	43%
Loss of volunteers	2	40%	3	20%	6	43%	3	43%
Change in demographics of clients/customers	1	20%	4	27%	5	36%	1	14%
New funding streams	1	20%	5	33%	4	29%	1	14%
Decreased client/customer demand	1	20%	1	7%	5	36%	2	29%
Other	0	0%	0	0%	0	0%	0	0%

Table 4. Pandemic Impacts According to Organization or Business Budget

	Less than US$50,000 (*n*=10)		US$50,000–US$999,999 (*n*=14)		US$1 million or more (*n*=16)	
Type of Change	#	%	#	%	#	%
Increased reliance on technology	6	60%	5	36%	11	69%
Increased client/customer demand	6	60%	7	50%	9	56%
Need for more disinfectant supplies, gloves, and masks	6	60%	5	36%	10	63%
Challenges in distributing products	4	40%	6	43%	8	50%
New opportunities for distributing products	3	30%	7	50%	6	38%
Increased time and incentive to focus on different priorities	5	50%	7	50%	3	19%
Loss of volunteers	3	30%	4	29%	7	44%
Change in demographics of clients/customers	2	20%	4	29%	5	31%
New funding streams	1	10%	5	36%	4	25%
Decreased client/customer demand	2	20%	3	21%	4	25%
Other	2	20%	0	0%	0	0%

points throughout the day). One restaurant owner described their experience with losing a major vendor and source of food, forcing them to pick up products more irregularly (such as on Saturday and Sunday when supplies dwindled), increasing acquisition challenges and costs. Farmers markets had to reorganize to provide more space between vendors or limit the number of vendors that could operate at the market. Despite these challenges, a majority of survey and interview responses indicated that there were positives experiences as well, such as new funding streams, new partnerships, and innovations that will be continued into the future.

Results: Mixed Impacts

> We shut down all our dining rooms. So, yeah, we could say that was a barrier I guess, but it just sort of flipped us and now we do home deliveries too, which we didn't do before. … We launched a website where people can order everything online. These are all things I never would have done if COVID didn't exist. (Business owner, interview participant, 2021)

Food organizations and businesses reported that the effects of the pandemic were mixed. As the quote from a small business owner above indicates, while there were significant disruptions to their operations that posed challenges, there were also new opportunities to grow and change. The mixed impacts included disconnections and new relationships; greater resource demands alongside new funding streams; and the exacerbation of thin margins at the same time as visibility of food system vulnerabilities and inequities increased. This section considers each of these findings in detail.

Disconnections yet new relationships and collaborations

In March 2020, restaurants began closing their doors, farmers worried about how they would reach their customers, staff of nonprofit organizations started teleworking, and food pantries sent volunteers home as they figured out how to distribute food in a contactless manner. Survey responses identified these disconnects via an increased reliance on technology (59%), challenges in distribution (44%), and loss of volunteers (36%). These actions were taken in the spirit of physical distancing to prevent the spread of COVID-19, but they produced significant disconnections. For example, most pantries in the Charlotte region had adopted a model in which clients could "shop" through the pantry, choosing goods from shelves themselves.

Table 5. Pandemic Impacts According to Time in Operation

	Less than 5 years (*n*=9)		5–19 years (*n*=13)		20+ years (*n*=13)	
Type of Change	#	%	#	%	#	%
Increased reliance on technology	7	78%	4	31%	8	62%
Increased client/customer demand	6	67%	8	62%	6	46%
Need for more disinfectant supplies, gloves, and masks	5	56%	6	46%	7	54%
Challenges in distributing products	4	44%	5	38%	5	38%
New opportunities for distributing products	5	56%	5	38%	5	38%
Increased time and incentive to focus on different priorities	3	33%	6	46%	5	38%
Loss of volunteers	3	33%	4	31%	5	38%
Change in demographics of clients/customers	2	22%	5	38%	3	23%
New funding streams	3	33%	4	31%	4	31%
Decreased client/customer demand	2	22%	3	23%	2	15%
Other	0	0%	2	15%	0	0%

During the pandemic, these pantries had to shift to providing prepackaged boxes that could be distributed in drive-thru operations or at mobile delivery sites. Previously, pantry staff and volunteers talked with clients while they shopped for food, providing a welcoming experience and enabling referrals to other services. This sociality could not continue in new distribution models that sought to keep a physical distance between staff, volunteers, and clients. Some research participants expressed concern that such disconnection resulted in missed opportunities for ensuring that food insecure residents knew where and how to access related services.

Similarly, several nonprofit staff members reported that it was harder to foster new partnerships, connect with others, conduct outreach, and build momentum when relationship building occurred solely online. One environmental educator described this disruption:

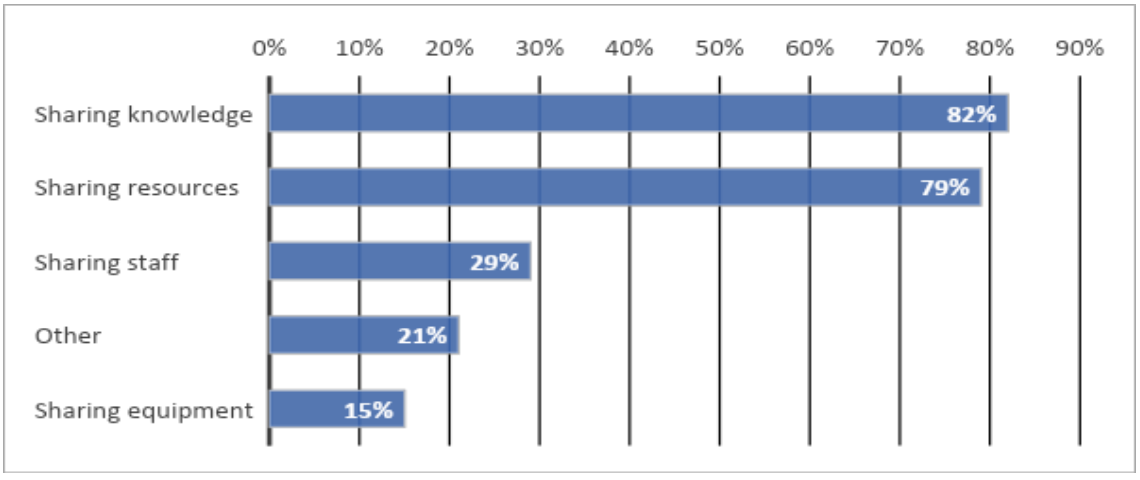
> You wouldn't think that agriculture is relational. But it is. Food, of course, is relational. And so from the growing of it, to the eating of it, it's a social activity. And so, to have been forced to remove the social aspect of it, which is the relational aspect, and to take everything to Zoom has, I would say, just kind of stunted outreach. (Environmental education, interview participant, 2021)

Many research participants lamented the challenges they faced in forming and solidifying partnerships and connecting with clients without in-person interactions. These challenges were particularly relevant in cases where stakeholders had limited access to or knowledge of technology.

At the same time, the pandemic afforded opportunities to strengthen existing partnerships and build new ones. More than 87% of survey respondents indicated that they partnered with other organizations or businesses during the pandemic, and 44% of these reported that this was a change from their prepandemic relationships (Figure 2). In surveys, those in food access and advocacy most frequently indicated that they made this change (Table 6). Newer and smaller organizations also identified this pandemic-related change more often. This could reflect the more limited partnerships that newer and smaller organizations had before the pandemic. Businesses and organizations that had strong partnerships were able to mobilize their networks to quickly pivot and create new programs as well as more quickly navigate changing resource landscapes.

Collaborations were pursued in order to increase program reach and effectiveness, share space and infrastructure, spur new projects, and create new food distribution channels. Multiple organizations came together to respond to new needs—creating avenues to distribute school lunches to families in need when schools were closed, or forming an online marketplace for several businesses to continue selling their goods when their doors were closed. For example, the

Figure 2. Partnership Approaches During the Pandemic



Latin American Chamber of Commerce of Charlotte partnered with Latin American restaurants to provide meals at food drives (WSOCTV.com, 2021). The owner of a local donut shop also organized a market to sell goods from multiple local businesses that were struggling to reach customers early in the pandemic (Swannie, 2020). Other partnerships organized mobile markets and food distribution programs to make sure avenues for getting farm products to those most in need could continue.

For example, one food access professional reflected that their organization was able to build on existing infrastructure to foster collaboration and funnel resources to those addressing food insecurity on the front lines:

> We've been at this, I think, for the last four or five years almost. When the pandemic hit last year, we were already in place. So, it is something that we plan to continue, we plan to continue to work with the pantries, continue to work with our local organizations and see what we can do to help. And it's about really helping, helping the businesses, the people that are on the ground that's actually doing the work. (Food access, interview participant, 2021)

Table 6. Survey Respondents Partnering with Other Organizations or Businesses during the Pandemic

	#	%
Sector		
Advocacy	11	85%
Food access	17	77%
Food production	4	67%
Other	8	62%
Food retail	6	60%
Farmers markets	4	40%
Number of staff		
0	4	80%
1–5	11	73%
6–50	9	64%
50+	4	57%
Annual budget		
Less than US$50,000	7	70%
US$50,000–US$999,999	8	57%
US$1 million+	12	75%
Time in operation		
Less than 5 years	7	78%
5–19 years	5	38%
20+ years	8	62%

Others relied on their networks to exchange information and resources, share infrastructure to deliver food, and otherwise distribute items that became available at uneven intervals (such as diapers or excess produce). One person from a food security–focused nonprofit reflected on their participation in such a network:

> That was probably the best thing that came out in 2020. That there was communication between providers, and between people who needed things so that we knew … there was a sharing of the resources in one place, you knew you could go to that call and get good, reliable information. (Food access, interview participant, 2021)

Many participants (80% of survey respondents) also reported that they formed new partnerships during the pandemic. All of these survey respondents indicated that they would continue those partnerships into the future, as they were perceived to be an important strategy to address some of the vulnerabilities created by the contemporary food regime. For some, this reflected a welcome respite from the historically competitive food system landscape and perhaps made some inroads toward forming the regionally focused food interventions called for in the literature.

Increased resource demands alongside new funding streams and technological innovations

The pandemic also had a palpable yet mixed effect on resource demand and supply. Early on, many businesses were forced to close temporarily, leaving many people unemployed. School closures limited the provision of meals to low-income families, contributing to increasing demand at food pantries. This was coupled with a dwindling volunteer labor

force, public health measures that constrained operations, and a hindered supply chain that left many organizations scrambling to find new sources of food and other materials. A majority of both interview and survey participants experienced a significant increase in client need (especially among food access organizations; refer to Table 2), along with a change in the demographics of their clients. One food pantry reported serving approximately 100 people per week before the pandemic. This increased to more than 1,000 people per week in the early months of the pandemic and leveled out to around 300 people per week in 2021.

Many pantry-related respondents also noted the new prevalence of Latinx families seeking out services as a pandemic-related trend. Some organizations and scholars argue that this trend is driven by the already existing precarity of Latinx residents, who are more likely to work in service industries that require their physical presence, are low-paying, and do not provide worker protections (Gamblin, 2020). They are also less likely to have access to governmental assistance programs and health and social services (Cadenas et al., 2022; Partika et al., 2022). In Charlotte, this is exacerbated by a long history of segregation and discrimination toward the Latinx community (Ablon & Robertson, 2022; de la Canal, 2018; Furuseth et al., 2015).

Organizations needed to simultaneously meet the unprecedented rise in demand and rework their distribution models to adhere to public health guidance (Table 7). Those involved in food production, food access, and food retail most frequently identified employing new distribution methods as a change they made during the pandemic. Similarly, organizations and businesses that were smaller and newer more frequently indicated that they made this change (perhaps indicating the nimbleness of smaller organizations). Some facilities shifted to using online platforms so that clients did not need to shop physically for their food. Others moved to delivery services or established mobile markets in communities where the need was most pronounced. Many pantries extended their services to support clients in applying for federal food assistance programs and to connect to other critical resources, such as health services.

Local food outlets, such as farmers markets and community supported agriculture (CSA) programs, also saw a sharp increase in customer demand. Some customers sought out local food when disrupted supply chains limited grocery store availability. As one interview participant affiliated with farmers markets explained, "as a result of COVID, people are thinking a little more about where food comes from because there were a lot of things that were not available at the grocery store . . . and that's an experience and a resource that people take for granted." Other customers were likely attracted to farmers markets because they were perceived as a safer place to shop.[2] Some may have also seen this as an opportunity to close the distance created

Table 7. Survey Respondents Employing New Distribution Methods During the Pandemic

	#	%
Sector		
Food production	5	83%
Food access	16	73%
Food retail	7	70%
Advocacy	7	54%
Farmers markets	5	50%
Other	4	31%
Number of staff		
0	4	80%
1–5	8	53%
6–50	8	57%
50+	2	29%
Annual budget (US$)		
Less than $50,000	7	70%
$50,000–$999,999	8	57%
$1 million +	7	44%
Time in operation		
Less than 5 years	6	67%
5–19 years	6	46%
20+ years	5	38%

[2] In Charlotte, farmers markets were always considered essential food businesses. They did not face mandatory closures, only limits on the number of vendors due to increased spacing requirements.

between producer and consumer in the corporate food regime.

Many organizations and businesses also faced new resource demands in order to meet public health guidelines. This included using limited resources to purchase personal protective equipment (PPE), cleaning supplies, and other materials. According to a food security–focused nonprofit staff member, these new demands affected their ability to provide other services: "I felt like we couldn't do as much as we wanted to do because you had to take all of the extra health precautions and some money that would have went to the kids went to operating in the pandemic" (Food access, interview participant, 2021). For some, money that otherwise would have furthered an organization's mission or met an immediate need was redirected toward addressing new resource needs so that basic functions could continue. It is also indicative of the limited budgets with which many food system nonprofits operate.

Increased resource demands were mitigated, in part, through new (yet short-term) funding opportunities and technological innovations that positively impacted operations. Many organizations and businesses secured funding that either did not exist previously or would have been inaccessible. Organizations in food advocacy (54%) and access (41%) most frequently identified new funding streams as a change during the pandemic (refer to Table 3). The federal Paycheck Protection Program (PPP) loans[3] helped businesses adjust to the new restrictions and requirements of the pandemic. Other federal funding programs, such as the Coronavirus Food Assistance Program,[4] Farmers to Families Food Box Program,[5] and other Coronavirus Aid, Relief, and Economic Security (CARES) Act[6] programs all provided new forms of financial support to food system actors grappling with the dual burden of serving more people while changing distribution models.

This balance between new funding challenges and opportunities manifested differently between survey and interview responses. More than 56% of survey respondents reported increased client demand as a pandemic impact (especially in the food access and food advocacy sectors), while only 28% selected new funding streams (Table 1). Responses to an open-ended survey question regarding possible solutions to food system challenges overwhelmingly returned funding or financial support as a critical need.

Yet many interviewees conveyed a sense of either ambivalence or satisfaction with respect to funding during the pandemic. One interview participant associated with farmers markets stated simply, "this is the catch-22: we've actually had more funding because of COVID." Financial support included new grants and investments for some nonprofits, as well as increased consumer purchases at local food businesses. One business owner described exceeding expectations by fulfilling 300 orders per week instead of an expected 30. For nonprofits, more grants were made available during the pandemic that allowed them to continue operations. One food pantry staff member explained:

> Because of the pandemic, federal and local grants were much freer in coming through the system than they normally are. They loosened restrictions, which was awesome. And so, money came through a lot quicker. We were able to get over [US]$250,000 in grant money from the county and to be able to help pay bills, and other grants too, so many more grants than we've ever gotten before. (Food access, interview participant, 2021)

Interviewees described the constraints placed on their organizations' finances during the pandemic, but more frequently identified silver linings in the various programs and funding initiatives designed to help organizations cope with the pandemic.

Similarly, increased reliance on technology

[3] https://www.sba.gov/funding-programs/loans/covid-19-relief-options/paycheck-protection-program
[4] https://www.farmers.gov/archived/cfap2
[5] https://www.ams.usda.gov/selling-food-to-usda/farmers-to-families-food-box
[6] https://www.congress.gov/bill/116th-congress/senate-bill/3548/text

emerged as both a constraint and an asset in overcoming increased resource demands. As the pandemic forced many to find alternative methods for meeting and interacting, the use of web conferencing tools and other technology became critical for organization success. Nearly 56% of survey respondents identified increased reliance on technology as a pandemic impact, the most selected impact. Organizations identifying in an "other" sector category (mostly environmental education; 77%) and in food production (67%) and food retail (60%) most frequently cited this pandemic impact in survey responses (Table 2). There was not significant variation in responses according to respondent organization size or age. Technological resources were critical, as many organizations shifted their operations to meet the dual demands of higher client need and disease spread mitigation. This was easier for some organizations than for others; some experienced challenges in gaining access to technology, while others expressed concern about their ability to effectively use technology.

Nevertheless, many organizations experienced new technology uses as a positive development for making operations more efficient and diversifying communications. One person in the food-production and environmental-education nonprofit sectors explained:

> I do feel, though, that meeting people on Zoom has saved a ton of time. We used to meet in person for board meetings—which is nice, you still need to do that sometimes—but everybody having to call off work one day a month …, meet downtown at a conference room. I got to get there early to set up audio visual, have [everything] printed out, and to have a two-hour board meeting took four hours in total. And now I can just get on and share my screen and send everybody the stuff in an email. So, there's some things about the pandemic that have shown us a better way to do a lot of things. (Environmental education, interview participant, 2021)

As this participant indicates, shifting to online meetings was seen as creating important operational efficiencies.

In addition to the possibilities for more accessible meetings, many organizations leveraged technology to create different options for their clients, such as online shopping, instructional cooking videos, and virtual fundraising events. Technology usage also broadened the geographic range of service for organizations and, in many cases, provided new platforms for communicating with those in need and prospective partners. In these examples, organizations and businesses overcame increased resource needs and client demand through continued reliance on external funding sources and technological innovations.

Thin margins and more visible vulnerabilities

Food systems scholars have reported on the thin margins for businesses in the food industry and the limited resources for organizations that rely on an uneven nonprofit funding landscape (Finley & Esposito, 2012; Fisher, 2017; Hailu, 2021; INCITE!, 2007). These challenges hampered the ability of organizations and businesses to respond to pandemic challenges, yet were also brought to light for the public, which some saw as an opportunity for change.

The immediate disruptions in supply chains, increased need for resources, loss of volunteer and staff labor, and barriers to in-person programming all produced obstacles for business and organizational operations. One restaurant owner described these challenges in detail:

> There was a time when you couldn't get any more gloves from Sysco because there was a shortage of them. There was a time that whole chicken wings, there's a shortage. My poultry purveyor, he only does chicken, and he didn't have any chicken wings, you know? … At one point, there was a shortage of black-eyed peas. I had to go to the grocery store to literally buy 20 pounds of black-eyed peas because nobody had black eyed peas. (Business owner, interview participant, 2021)

For some businesses, these supply disruptions alongside mandated closures and limited staff support spelled doom in an industry that already operates with very limited margins. The *Charlotte*

Observer reported that more than 30 food businesses in the region closed permanently in the first year of the pandemic (CharlotteFive Staff, 2020). Charlotte restaurants fared better than the national average in 2020 with approximately 12.5% of restaurants closing permanently, compared to a national average of 15.2% (Sedov, 2022).

Many organizations, such as emergency food providers, also struggled to have enough resources and staff to meet demand prior to the pandemic. As they rely on volunteer labor, donations, and external funding, these organizations are often pushed to be as efficient as possible without being able to save for a rainy day. Accordingly, they had to focus all energy on responding to the increased demand driven by pandemic disruptions. A significant portion of survey respondents (47%) reported that they were unable to meet the increased demand, with five organizations noting that they had to turn away more than 100 clients per month at the height of the pandemic.

This reflects the challenging funding environment for nonprofit organizations in which they are increasingly asked to do more with less, are not equipped to change quickly, and are required by grant provisions to allocate fewer and fewer resources to administrative costs (Finley & Esposito, 2012; Lecy & Searing, 2015). This challenging environment existed before the pandemic, and several research participants indicated that even with the infusion of new funding streams (as described above), there were not enough resources to adequately meet demand. At the same time, some were concerned that since the new funding streams were focused on immediate, pandemic-related needs (such as keeping staff employed), there was already momentum toward returning to this status quo.

On the other hand, many research participants reported optimism that the growing public attention to these challenges could present an opportunity to reform the system. In developing partnerships (described above), more cross-sector connections were made such that organizations focused on health or housing needs also began to see the extensive food needs among their clients. For example, one interview participant in the healthcare industry reported that the pandemic and related job losses accelerated new programs to screen patients for food insecurity.

Many stakeholders also noted that the pandemic made visible the many food system injustices discussed earlier. One interview participant associated with a healthy eating nonprofit explained: "So, before the pandemic, it was tough anyway. People don't have enough to eat. … If this pandemic went away tomorrow, that problem will still be here. The pandemic just kind of pulled the band aid off of it." As the plight of farmers, restaurants, organizations, and food-insecure individuals became the focus of media attention, support for food-based efforts to build resilient communities expanded. One stakeholder involved in local food production described this dynamic:

> I feel like for all the bad that COVID brought for local food systems, in the work we were doing, I felt like it really, it was kind of our time to shine. And a lot of people took notice, at least paid a little more attention to the local food system because when the grocery store shelves were empty, and the U.S. Foods' trucks were having issues and we're like, "Hey, we're fine, we've got products," you know, it definitely kind of underscored the importance of the work that all of us are doing in the food system. (Food production, interview participant, 2021)

In addition to highlighting the promise of local food systems, media reports highlighted the precarity of workers in the food system and the extent of food insecurity in the region. The greater attention to food system vulnerabilities was perceived by many as an opportunity to seek support for building a more robust, sustainable, and equitable food system.

Discussion

Our research uncovered mixed pandemic impacts on food systems. While many obstacles were identified by interviews and survey respondents, including disconnections, increased resource demands, and exacerbation of thin margins, most also discussed opportunities that arose, including forming new partnerships, identifying new funding streams

and technology innovations, and increased visibility. In response, many research participants made changes (such as increasing their reliance on technology, meeting increased client or customer demand, acquiring new resources, and utilizing new distribution channels) that they intend to keep in place permanently. The majority of survey respondents (35) indicated that they would continue the changes they had made, while many interview participants noted that their partnerships are now stronger, they found efficiencies through enhanced technology use, and operations improved. These shifts were critical for sustaining business and organizational operations and meeting client and customer demand while still operating in an industrial, corporate food regime that privileges large-scale, consolidated operations producing cheap goods for international markets.

Yet, it is not clear that the transformational changes called for in early pandemic-era food systems literature was possible. The change food systems scholars called for included a move toward regional and system-centered planning, pursuing circular economies, and dismantling the corporate food regime. Many scholars also argued for utilizing the crisis moment to address long-standing injustices at the root of our food system, including settler colonialism and structural racism (Lunsford et al., 2021).

However, given the need for survival in a precarious field, many organizations and businesses in our study shifted in ways that secured their continued operations but with a limited impact on reforming the system. One local business owner explained that at the beginning of the pandemic,

> [People] raised some money, paid a local … business or restaurant to make food and deliver meals. And those things in the early days helped. And then, as time went on, of course, they fell off. There weren't as many. And also, there were more businesses that then were kind of like fighting for the funds. (Business owner, interview participant, 2021)

This quote illustrates the tenuous nature of many of the pandemic-initiated responses to food insecurity and economic precarity, and the tendency of the systems to return to their previous state, regardless of the vulnerabilities. While a strong sense of community solidarity may have facilitated survival for different organizations in Charlotte during the early stages of the pandemic, as time goes on, the competitive marketplace appears to be returning to its former level.

A closer examination of the benefits associated with the pandemic, like increases in funding and how funds were distributed, provides a telling picture of their transformative potential. As one food system advocate noted, "I think the funding piece has become more interesting with the pandemic. I think some organizations are benefitting from that and others are not" (Advocacy, interview participant, 2021). A prioritization of emergency food relief over other efforts also indicates a continuation of the status quo. Others have similarly argued that the "emergency-within-emergency" approach to addressing rapidly increased hunger was simply a continuation of decades of replacing rights with charity via corporate-sponsored food banks (Spring et al., 2022). At the same time, funding for efforts that create transformational change remains limited. The common thread throughout the pandemic remained that organizations needed to meet a higher level of demand under new restrictions, and with a dwindling supply of critical resources.

As a result of these continued challenges, many organizations and businesses provided suggestions for ways to build sustainable and equitable food systems more incrementally. Short-answer survey responses called for establishing a more robust system of coordination, better support for small-scale, local producers, and a more active role for local and state government. Interview participants similarly argued for more coordinated food system strategies that recognize the complexities and historical marginalizations in the food system described above. Many research participants called for better recognizing the systemic roots of food system injustices, including continual and pervasive disinvestment in communities of color, uneven access to land ownership, and miscalculation of the multidimensional costs of producing food. In this regard, there is a need to better include BIPOC and underserved residents in decision-making processes, including through leadership positions, to

ensure that food system solutions sufficiently address their needs.

This aligns with the pandemic-focused literature that viewed the current moment of crisis as an opportunity for transformational change. However, our research found significant obstacles to pursuing such change when the crisis precipitates an even greater focus on survival. The corporate food regime does not often produce openings for food system organizations and businesses to simultaneously meet client needs and challenge injustices (Alkon & Guthman, 2017). The continued competition between organizations signals a return to the status quo, while the promise of truly transformative change waits to be realized. While many of our research participants were optimistic about the innovations and changes spurred by the pandemic, it is clear that the available shifts were smaller-scale and incremental.

Recommendations for Research and Practice

This paper describes the pandemic's impacts on food system organizations and businesses in Charlotte, North Carolina. It contributes to food systems literature by going beyond the challenges faced by individuals and farms to also examine the pandemic's impacts on food system organizations and businesses. Relying on surveys and in-depth interviews with stakeholders across multiple food sectors, we identified mixed pandemic impacts that included both unprecedented challenges and new opportunities. Disconnections were created through physical distancing guidelines and stay-at-home orders, but significant formation of new partnerships also occurred as the need for collaboration was made clearer. Organizations and businesses struggled to meet new resource demands (for example, increased food pantry demand and the need to purchase sanitizing materials and masks) but also found new funding streams and technological efficiencies. The pandemic clearly exacerbated the thin margins in which most food system actors operate, but also drew greater attention to those thin margins and food system vulnerabilities.

While much early literature on food systems during the pandemic called for using the crisis moment to create transformational change, the food system actors included in this research continued to be constrained in doing so. Instead, they had to direct their innovations toward survival. Thus, there remain questions about the levers of change available to system actors during moments of crisis. As COVID-19 becomes an endemic disease, a condition we will deal with in the normal course of life like the flu and other viruses, many food systems actors are questioning whether organizations and businesses are already returning to a status quo grounded in neoliberal policies and competition for scarce resources. In response, our research uncovered recommendations for centering BIPOC communities in decision-making positions, attending to the systemic vulnerabilities that were exacerbated during the pandemic, and fostering greater collaboration in order to build robust regional food systems. For policymakers and practitioners, a first step is to better support the innovations that emerged during the pandemic and to support organizations and businesses to not only survive, but to create change in today's unsustainable food system. Future research should continue to monitor the long-term impacts of the pandemic on food system stakeholders with an eye toward their capacity to pursue transformational change.

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Local innovation in food system policies: A case study of six Australian local governments

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Abstract

Australian local governments undertake a range of activities that can contribute to a healthy, sustainable, and equitable food system. However, their engagement in food system governance is highly uneven, and only a handful have developed dedicated food system policies. This article reports on case studies of food system policy development and implementation in six local governments in the states of New South Wales and Victoria. The main motivators for policy and program development were

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to improve environmental sustainability, reduce food waste, improve diet-related health and food security, and support local, sustainable agriculture. Key steps included consulting with the community, identifying local food-related issues, and developing policy solutions. Local government activities targeted many dimensions of the food system, and policy implementation processes included hiring dedicated food system employees, creating partnerships with organizations outside local government, advocacy to higher levels of government for policy and legislative change, and program evaluation. The research also identified key enablers of and barriers to policy development and implementation, including factors internal to local government (e.g., presence/absence of local champions, high-level leadership, and a supportive internal culture) as well as important state- and federal-level constraints, including absence of comprehensive policy frameworks for food and nutrition, of dedicated funding for local government food system work, and of leadership for food system governance from higher levels of government. The authors conclude with recommendations for strengthening the role of Australian local governments in creating a healthy, sustainable, and equitable food system, applicable to both local governments and to Australian state and federal governments. These recommendations may also be useful to local governments in other national jurisdictions.

Keywords
Food System, Local Government, Health, Policy Development, Policy Implementation, Sustainability, Australia, Case Study

Introduction

Globalized and corporatized contemporary food systems increasingly contribute to health, sustainability, and equity challenges at local, national, and global levels (International Panel of Experts on Sustainable Food Systems (IPES-Food), 2017).Like most other countries, Australia is experiencing a double burden of malnutrition: food insecurity is increasing, exacerbated by the COVID-19 pandemic (Kent et al., 2020), and levels of obesity and overweight status remain high (Australian Institute of Health and Welfare (AIHW), 2020), while one-fifth of non-communicable disease mortality can be attributed to dietary risk factors, particularly low intake of fruits and vegetables (Melaku et al., 2019). Ecological systems have been severely jeopardized by climate change and biodiversity loss, which in turn have been substantially caused by large-scale land clearing, over-irrigation of rivers, and other destructive forms of industrialized agriculture (Springmann et al., 2018). Climate change has already impacted food production in Australia (Ray et al., 2019) and is predicted to have profound, lasting impacts on food system resilience. Centralized food economies and concentration of power within an increasingly small number of large agri-food businesses has resulted in social imbalances, declining terms of trade for farmers, and unjust labor conditions for farm and food system workers (Clapp, 2021).

Transformative change in the food system is needed to address these complex, interacting challenges (IPES-Food & ETC Group, 2021; Slater et al., 2022), requiring action at all levels of government, as well as by businesses and civil society. Local governments (LGs) play an increasingly important role in food system governance, the "formal and informal rules, norms and processes that shape policies and decisions that affect food systems" (HLPE, 2020, p. 12), due to growing food policy innovation at the local level. A growing number of (mainly urban) LGs have introduced innovative food system policies in both the "Global North" and the "Global South" (Mansfield & Mendes, 2013). A significant body of research analyzes the processes of, and motivators for, policy development, as well the policies' key concerns and characteristics (Moragues-Faus & Battersby, 2021). These include the integration of multiple health, environment, social justice, and economic concerns (Mendes, 2008; Sonnino & Beynon, 2015), and the adoption of a food system lens, addressing in an interrelated way all activities comprising the food system (Clark et al., 2021; Mansfield & Mendes, 2013).

There is comparatively less research on policy implementation (Mansfield & Mendes, 2013; Mendes, 2008), but a significant recent focus is on creation of new institutional arrangements such as food policy councils, a form of multistakeholder governance led by, or involving, civil society and

community representatives (Sonnino & Beynon, 2015). Research also suggests that policy implementation is complex, with a broad range of factors influencing its success (Raja et al., 2018). For example, Mansfield and Mendes (2013) characterize the enablers of and barriers to policy implementation, depending on their presence or absence, as structural factors, referring to organizational arrangements and commitments internal to a LG (e.g., a formally mandated role for food policy within a LG), and procedural factors, referring to how different actors operationalize food policy goals and coordinate governance arrangements (e.g., citizen participation mechanisms).

This study analyzes food policy development and implementation in six leading LGs in the Australian states of New South Wales (NSW) and Victoria, aiming to expand the international literature on food system policy implementation (and specifically barriers to and enablers of implementation) using a case study of the six LGs. Processes of local food system policy development and implementation are still an emerging area of research in Australia. Australia has over 500 LGs, varying considerably in size, population, and geographic and demographic characteristics. The LG is the lowest tier of government in Australia, with state and territory governments as the middle tier, and the federal government at the highest level. LGs lack key public policy tools, such as taxation, that can be used to shape food systems, due to the division of power between the three levels of government; their functions are often narrowly conceived of as "roads, rates, and rubbish" (Yeatman, 1997). They are not recognized in the Australian Constitution and exist as "creatures of the state," with their roles and responsibilities created by state legislation (Aulich, 2005; Reeve et al., 2020; Yeatman, 2003). This has resulted in differences between Australian states regarding LGs' mandate to act on certain issues, including those related to food systems. Overall, federal and state policy and legislation in Australia do not provide LGs with an explicit mandate to act on food systems (except for food safety), particularly as there is no comprehensive state- or federal-level food and/or nutrition policy framework.

Despite constraints on their powers and jurisdiction, Australian LGs are leveraging existing opportunities to address food system issues (Carrad et al., 2022). Research shows that a very high proportion of LGs in NSW and Victoria incorporate actions to prevent or minimize food waste into a range of (non-food–specific) policy documents (Carrad et al., 2022). In addition, they undertake a broad range of activities related to health and wellbeing, sustainable and local food production, economic development, food safety and hygiene, and affordable housing. However, LG engagement in food system governance remains highly uneven, and only a small number of LGs in the two states have developed dedicated food system policies. While a significant number of Australian studies map the food system issues that LGs address in their policies and strategies, very few analyze processes of policy development and implementation. This article helps to address that gap by reporting on processes of food system policy development and implementation in six LGs, as well as the key barriers to and enablers of food system policies and programs.

Methods

Design

This study builds on work previously conducted by the research team that identified and analyzed food system-related policies and strategies among all LGs in Australia's two most populous states, NSW and Victoria (Carrad et al., 2022). This paper reports on complementary research that used an explanatory multiple-case study methodology (Eisenhardt & Graebner, 2007; Yin, 2009) to explore the experiences of six LGs in developing and implementing food system policies and related activities. This multiple-case design enabled the investigation of the "how" and "why" of the development and implementation of food system policies/activities while retaining in-depth accounts, considering the different real-life contexts of the LGs (Yin, 2009). The methods and findings are reported using the consolidated criteria for reporting qualitative studies (COREQ) (Tong et al., 2007); see Appendix A.

Participants and Recruitment

An initial shortlist of NSW and Victorian LGs was compiled based on the prior policy analysis study (Carrad et al., 2022). Shortlisted LGs were those identified as highly engaged in food system activities, including those with a dedicated food system policy. From this shortlist, seven LGs (4 NSW, 3 Victoria) were invited to participate in the study based on the objective of including LGs representing diverse demographics and locations (urban, regional, rural) in each state. One NSW LG declined. The participating LGs were, from NSW, City of Canada Bay ("Canada Bay"), Penrith City Council ("Penrith"), and Gwydir Shire Council ("Gwydir"), and from Victoria, City of Melbourne ("Melbourne"), Cardinia Shire Council ("Cardinia"), and City of Greater Bendigo ("Bendigo"). A nonprobabilistic, purposive sampling technique was used to identify research participants from each LG, whereby a senior LG staff person identified relevant staff members, deemed to be those involved in implementing food system-related policies and/or activities, ultimately representing Health and Wellbeing, Social and Community Planning, Infrastructure and Environments, Planning and Urban Design, and Operations departments. Staff were invited to participate in a focus group, ranging 2–5, with other nominated staff from their LG. Participant numbers were thus determined by the number of consenting staff, resulting in a total of 23 participants in six focus groups. All participants provided signed, informed consent prior to the focus group.

Procedure

Focus groups were facilitated using a semi-structured question guide (Appendix B). Informed by the objectives of the study, the questions were developed by one author (BR) and reviewed by AC, NR, and KC. Questions explored the processes and stakeholder groups behind development of the LG food policy; the drivers/enablers of and barriers to policy development and implementation; how policy is translated into bodies of work "on the ground"; partnerships with other LGs, with state and federal government, and other stakeholder groups; and perceptions of the factors that could strengthen the role of the LG in creating healthy, sustainable, and equitable food systems. Facilitators used additional probes where necessary to clarify participant meaning, and provided the opportunity for participants to answer each question. The semi-structured format also allowed participants to discuss topics not included in the question guide that they perceived as relevant.

Focus groups were conducted between February and April 2021 (one face-to-face and the remainder online) and were 80–120 minutes in duration. Three interviewers were female and one male with qualifications ranging from Masters to Doctor of Philosophy, and all with experience in qualitative interviewing. A combination of two research team members facilitated each group. One researcher had pre-existing partnerships with three LGs; those participants were asked if they preferred this researcher not to be involved in facilitating their focus group. One of the three LGs asked for the researcher to not be involved, and this focus group was facilitated by two other researchers. The researcher was involved in facilitating the remaining two groups (alongside another member of the research team). Discussions were audio recorded and transcribed verbatim, and a copy of the applicable transcript was sent to each participant for correction opportunity prior to analysis.

Policy documents referred to by participants during discussions were used to supplement the information provided in the focus groups.

Ethics approval was granted by the University of Wollongong Health and Medical Human Research Ethics Committee (HREC 2020/322).

Data Analysis

Thematic data analysis was conducted based on steps outlined by Taylor-Powell and Renner (2003). First, three authors (LT, AC, BR) read the transcript of the first focus group to familiarize themselves with the data and noted down initial impressions (step 1). Framing the analysis using the focus group question guide (step 2), they each independently coded the transcript of the first focus group by inductively generating themes or subcategories under each of the (deductive) discussion questions (step 3). Data not directly related to the discussion questions was inductively coded into new themes. The three authors discussed their con-

ceptualizations that emerged from the data and produced an initial coding schema consisting of major and subcategories to guide analysis of subsequent transcripts. Where relevant, simultaneous coding was used to code the same parts of the transcript with multiple concepts (Saldaña, 2021). The remaining five transcripts were analyzed by one author (LT) in NVivo (QSR International, version 12), using an iterative approach in which emerging conceptualizations were compared with the existing data and coded appropriately to the coding schema (Appendix C), and already-analyzed data were adjusted as required in light of the themes generated from the transcripts analyzed later (step 3 continued). LT subsequently analyzed the themes and subcategories to identify patterns and connections between them (step 4). Potential conceptual relationships between independent themes were explored, as were relationships related to simultaneous codes. Following completion of the coding process, each major theme and its subthemes was interpreted by LT; peer debriefs with BR discussed themes and possible alternative interpretations. Illustrative quotations to exemplify themes were noted during the analysis and appear in the results section below. Participants were provided with a draft of this manuscript and given the opportunity to provide feedback prior to submission for publication.

Some methods to achieve saturation, such as theoretical sampling, were not possible due to the relevant capacity and ability of staff members to answer questions about food system policy implementation (i.e., some staff members would not possess the requisite knowledge to provide meaningful insights). Conducting focus groups with more LGs was not possible due to the timeline of the research project. Nevertheless, code saturation is likely to have been reached (Guest et al., 2006; Hennink et al., 2017; Saunders et al., 2018). When analyzing the final transcript, only two new codes were created, and all other sections were categorized to existing codes. Previously analyzed transcripts were re-read to ensure the fit of the final two codes and to ensure consistency of the coding of all transcripts.

In this paper, we do not report on food safety enforcement, as it is a well-established LG responsibility, with little to no implementation variation between LGs.

Results

LG Food System Policies and Activities

Four of the six case study LGs had dedicated food system policies that overall aimed to strengthen the food system so that it contributed positively to health, social, and environmental outcomes. However, each had different foci that reflected their respective local contexts. Penrith did not have such a policy but scored highly in the policy mapping study due to the integration of food system-related objectives in a range of non-food–specific policies. Similarly, Gwydir did not have a dedicated policy, but also scored highly, in large part because of The Living Classroom, an innovative regenerative agriculture project addressing multiple food system concerns. Table 1 summarizes the demographics and key policies or activities undertaken by each LG.

Motivators and Rationale for Food System Policy and Program Development

LGs developed food system policies or undertook food system activities for various reasons, primarily environmental. LGs saw themselves as having a role in climate change mitigation and adaptation, including by reducing food-related emissions. They also recognized the inseparability of climate change from food system sustainability, which all six LGs identified as a priority, although the way they conceptualized this term varied. LGs such as Canada Bay, which adopted a community emissions target, also used initiatives on food-related emissions and waste reduction to educate community members on how consumer strategies such as meal planning and seasonal buying can reduce emissions and waste.

Community concern for food waste and food-related waste (i.e., food packaging) was another driver of policy development. Aligning with LG existing waste services and setting goals to the amount of waste sent to landfill provided a rationale for LGs to include food waste strategies in a broader food system policy.

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Table 1. Summary of Participating LG Demographics and Food System Policy/Activities

LG name and state	LG area demographics	Relevant policies	Year policy adopted (if applicable)	Summary of food system policy	Summary of key activities (if no food system policy)
Canada Bay (NSW)	• Eora N ation • Inner-West of Sydney. • Population: 96,550 in 2020; • 0.5% Aboriginal and Torres Strait Islander, • 40% born overseas	Sustainable Food Strategy	2015	Eight key areas: (i) Community consumption/food production; (ii) Local food production and availability; (iii) Council leadership; (iv) Food waste/composting; (v) Sustainable food outcomes in all council policies/assets; (vi) Partnerships; (vii) Promotion and availability of healthy, safe, and nutritious food; (viii) Multicultural food traditions/food diversity	
Penrith (NSW)	• Dharug Country • Peri-urban location on Sydney's Western fringe metropolitan area. • Population: 216,282 in 2020; • 3.9% Aboriginal and Torres Strait Islander, • 22% born overseas	• Community gardens policy, • Sustainability Strategy, • Penrith Health Action Plan, • Penrith Waste Resource Strategy	NA		Community events and programs promoting healthy eating skills and knowledge, food literacy, food waste avoidance/reduction. Community gardens, particularly among disadvantaged neighborhoods. Planning instruments used to protect agricultural land from development.
Gwydir (NSW)	• Kamilaroi Country • Northwest Slopes and Plains region. • Population: 5,258 in 2016; • 5.7% Aboriginal and Torres Strait Islander, • 15% born overseas	• Community Strategic Plan, • Delivery Program and Operational Plan, • Economic Development Strategy, • Destination Management Plan, • Bingara Preschool Nutrition Policy	NA		The Living Classroom: regenerative agriculture project, founded in 2011, transforming 150 hectares of public land into a learning center for food and agriculture. Home to a primary industries trade training center, site of interactive learning for community members/visitors. Pulse of the Earth Festival: celebrates regenerative agriculture, soil health and food, including presentations by leading international experts. "Toy Libraries" and after-school programs provide residents with healthy eating education and cooking experiences.

continued

continued

LG name and state	LG area demographics	Relevant policies	Year policy adopted (if applicable)	Summary of food system policy	Summary of key activities (if no food system policy)
Melbourne (VIC)	• Kulin Nation • Capital of Victoria, comprising 14 suburbs. • Resident population 183,756 in 2020, average daily population of 910,800; • 0.5% Aboriginal and Torres Strait Islander, • 56% born overseas	Food City Policy: City of Melbourne Food Policy	2012	Five Policy themes: Strong, food- secure community; Healthy food choices for all; Sustainable and resilient food system; Thriving local food economy; City that celebrates food.	
Cardinia (VIC)	• Wurundjeri and Bunurong Country • South-East of Melbourne • Peri-urban location. • Population 116,193 in 2020; • 0.8% Aboriginal and Torres Strait Islander, • 19% born overseas	Cardinia Shire Community Food Strategy	2018	Five key pillars: Protect and utilize fertile land for growing food; Grow a vibrant economy with local growers and access to local produce; Enhance food literacy and culture through engagement across communities; Reduce and divert food waste from landfill; reuse water to grow food; Build community capacity to support leadership and participation in food systems work.	
Bendigo (VIC)	• Dja Dja Wurrung and Taungurung Country • Central Victoria, • third most populous city in Victoria. • Population 119,980 in 2020; • 1.7% Aboriginal and Torres Strait Islander, • 8% born overseas	Greater Bendigo's Food System Strategy	2020	Four objectives: Enable communities to access safe, affordable, nutritious and culturally appropriate food and drink; Strengthen and support a sustainable local food economy that enables the growth, production, and sale of healthy food; Support local food growing and producing, cooking, and sharing knowledge, skills and culture; Reduce and divert food waste from landfill.	

LG: local government; NSW: New South Wales; VIC: Victoria

Community health and food security motives also underpinned LG policy development. The three Victorian LGs identified their respective Municipal Public Health and Wellbeing Plans (MPHWP)—a legislative requirement under the Victoria Public Health and Wellbeing Act (2008) and the State Public Health and Wellbeing Plan 2019–2023 (Department of Health and Human Services, 2019)—as drivers of food system policy development. Each LG's four-year MPHWP identified food/healthy eating as a priority domain and set targets for healthy eating and active living, creating a platform for LG staff to advocate for developing a complementary, dedicated food system policy. All LGs also explicitly discussed the need to improve food security and resilience in their communities, a need perceived to be related to social disadvantage (Cardinia and Penrith) and limited access to fresh, affordable food due to remote location (Gwydir).

Promoting local, sustainable agriculture and associated employment opportunities were important, particularly for Penrith and Cardinia as peri-urban LGs, and for more rural Gwydir. Penrith and Cardinia identified the preservation of agricultural land from residential and industrial overdevelopment as a mechanism for protecting food production in the region, a vital concern because of the important role of agriculture in the local economy. Gwydir residents' desire to promote regenerative agricultural practices was also a key driver for the creation of The Living Classroom. Grassroots demand for change in the agricultural sector led to the community group, Bingara and District Vision 2020, which created a strategy for reform that was subsequently adopted as the Bingara Town Strategy 2011, including initial plans for The Living Classroom.

Policy Development Processes

Consultation was fundamental to the process of policy development for LGs with a dedicated food system strategy. While Canada Bay drew on previous consultation to develop its food system strategy, the three Victorian LGs undertook extensive, dedicated consultation to determine the needs and concerns of residents, businesses, community groups, and other crucial stakeholders. They were conscious of the importance of including diverse voices and experiences, engaging people from traditionally underrepresented groups alongside local leaders in health, education, business, and not-for-profit organizations. For example, Bendigo engaged over 1,000 community members and groups over three months before drafting an Issues and Opportunities Report, conducting further stakeholder consultation, and then drafting a food system strategy that was released for public comment. Both Bendigo and Cardinia used a collective impact approach, a structured collaborative process that involves various business, nongovernment organization, and government stakeholders undertaking mutually reinforcing activities that contribute towards a shared goal, supported by a backbone organization (Kania & Kramer, 2011), and a variety of methods during their community consultation, such as "Kitchen Table Conversations" (Lourival & Rose, 2020), online surveys, meetings, phone calls, and post cards.

LGs also undertook research to inform policy development, as a means of needs assessment and to identify potential problem solutions. LGs used a combination of research methods, such as mapping food access, health statistics, waste data, and internal audits, to demonstrate the extent of health, environmental, and spatial issues. Health statistics were important for determining rates of diet-related outcomes (e.g., overweight status and obesity), knowledge (e.g., food literacy), and behaviors (e.g., food purchasing habits), and whether these varied by other factors (e.g., neighborhood) within each LG area. Cardinia and Melbourne also mapped existing relevant policies, to avoid duplicating engagement processes and policy rationales.

Research undertaken to identify policy solutions primarily focused on seeking examples of international and Australian food policies. For example, Melbourne staff spoke with the Detroit Food System Council and with people involved in implementing the City of Michigan Food System Policy. However, an important step in reviewing existing policies was to consider how they could be adapted to the local Australian context.

Enablers of Policy and Program Development

Various factors both internal and external to LG

enabled policy development processes. Five of the six LGs identified either LG or community-based individuals who championed food system initiatives and brought their passion for food systems to the LG. For example, a staff member from Canada Bay had already been active in establishing permaculture initiatives in the community, and suggested that the LG bring together separate food system issues under the umbrella of a dedicated policy. The Canada Bay policy was also a response to community demand for LG-led solutions to issues such as food access and food waste. As described above, community members were key in championing the creation of The Living Classroom, with one individual (later employed by Gwydir) critical to conceptualizing the initiative and convincing Gwydir to implement it.

Leadership and support for action from senior staff and elected members (councillors) was important for policy development as it amplified champions' voices and generated traction. Bendigo's Director of Health and Wellbeing supported and assisted in shaping the LG policy, including the adoption of a collective impact approach. Commitment, interest, and support from councillors was essential in enabling food system policies, with Bendigo staff commenting, "If we had nine councillors who were all about rate-capping and roads, rates and rubbish, we wouldn't be making as much headway in the space as we are at the moment" (Bendigo, Participant 3).

An internal LG culture supportive of food system initiatives and building on the momentum of previous work contributed to policy development. Some of the participating LGs had a long history of action on food system issues, which led staff members to understand that LGs have a responsibility to act on food systems. Additionally, the legacy of earlier projects, studies, reports, and action plans (e.g., Healthy Together Victoria, a state-led initiative implemented in 2011–2016 that used a complex systems approach to address obesity and chronic disease, including actions related to healthy eating and food access) (Department of Health and Human Services, 2015) were part of an ongoing, evolving process that eventuated in the development of a food system policy and associated action plan.

A state legislative mandate, specifically the Victorian Public Health and Wellbeing Act 2008 that set out expectations for LG involvement in health and wellbeing issues, was an important factor that enabled Victorian LGs to develop their respective food system policies. The Act legitimized LG attention on food security and diet-related health, held LGs accountable for associated objectives, and enabled developing comprehensive food policies that incorporated issues beyond diet-related health.

Barriers to Policy Development

Internal, state, and federal government-level factors were barriers to policy development. They included lack of leadership from the higher tiers of Australian government, described as "no national food policy, no state food policy…nearly every department in state government touches on food but they don't have a dedicated food fund or anything like that" (Cardinia, Participant 3). Lack of clarity at federal and state levels created uncertainty about the role of LG in food systems, so that each LG determined for themselves what was in or out of scope based on local-level circumstances. The absence of holistic food system policies at both federal and state levels also resulted in lack of coherence between all governmental levels, and the tendency for federal and state governments to take a siloed approach to food-related matters such as food safety.

While the Victorian LGs had a legislative mandate to act on health and wellbeing, none of the participating NSW LGs had an equivalent mandate, particularly as NSW public health legislation does not provide for the creation of local public health plans in the same way as the Victorian legislation. Canada Bay participants reported that the absence of such a mandate made it challenging to begin and sustain food system initiatives, and to include relevant issues in general policies. It caused them to withdraw action in some areas in order to prioritize other topics for which a mandate was present. Existing state-level planning schemes, which determine LG land use control, also inhibited LG ability to positively influence food access. Bendigo participants noted the inability to take on "big ticket items" due to the lack of language and principles

specific to health and wellbeing in the Victorian government's planning scheme and rating guidelines, which, for example, effectively prevented LGs from using the planning scheme to reject applications for developing new fast-food outlets.

Lack of funding was another barrier to policy development. Participants noted the absence of state government funding supporting LGs to develop holistic food systems solutions, resulting in a gap between community demand for, and LG delivery of, local food systems reform. For example, Penrith staff described a "chicken and egg" situation of needing to demonstrate community demand to justify acting on food systems and to attract funding, but needing funding to conduct community engagement initiatives. Participants saw state and federal governments as preferring to fund "back end" food relief policies and initiatives—particularly in response to the COVID-19 pandemic—rather than to support approaches that sought to build community capacity and strengthen local food system resilience against stressors such as climate change.

While some LGs reported that the internal culture of their organization facilitated food system policy development, others described how an unsupportive culture inhibited progress. One LG experienced challenges associated with engaging senior management, despite having easily gained buy-in from lower-level staff members. Representatives of another LG felt that they were forced to constantly convince elected members of the value of acting on food systems. Staff from the same LG spoke about how internal LG structure, with departments traditionally operating in silo fashion, limited awareness of the different activities being conducted across departments and made it challenging to engage diverse staff on food-related objectives.

LGs experienced difficulties engaging certain groups when conducting community consultation (although they persevered). Bendigo and Cardinia participants both felt that they were unable to successfully engage farmers, who had limited availability to participate in consultation processes due to farming time commitments. Penrith staff identified residents with low food literacy levels, who did not perceive food to be a key concern, as being difficult to engage, and that their region consequently lacked community motivation in advocating for improved access to fresh, healthy food.

Participants reported limitations in the accuracy and relevance of data (e.g., health statistics) used to inform policy development. Data were often outdated— collected perhaps once every four years—and usually depicted only regional or statewide conditions, thus masking local-level nuances.

Implementation Activities

LG policy and program implementation activities targeted diverse food systems issues relating to food production, distribution and access, consumption, disposal, water and land use, and economic development. Examples and descriptions of these activities are provided in Table 2. The LGs in our sample that had dedicated food system policy/strategies also had associated action/implementation plans with activities that aimed specifically to contribute to meeting the objectives of the strategy. However, the level of detail of these action plans, and the inclusion of specific measurable targets, varied.

Policy Implementation Actions and Processes

Both Bendigo and Cardinia employed a staff member in a dedicated food systems role to coordinate the actions involved in implementing their policies. In contrast, Canada Bay, Penrith, and Melbourne relied on staff members with broader portfolios to ensure policy implementation. Cardinia's governance structure was the most complex, with four groups: (i) the collective impact backbone (a role performed by Sustain: The Australian Food Network from 2016 to 2019 and then shared with Cardinia Shire Council from 2019 to 2022); (ii) the Food Circles Governance Group (comprising LG staff, Sustain, and Cardinia Food Circles), providing governance and strategic oversight, and management of day-to-day activities; (iii) the Food Circles Steering Group (comprising a range of internal and external stakeholders), which led or supported key actions; (iv) the Cardinia Food Network, bringing together over 20 community, education, business, and health organizations, each with responsibility for leading specific implementation actions.

Table 2. Overview of Activities Implemented by LGs

Food system area	Examples and descriptions
Food production, including not-for-profit and commercial	• Community gardens (all LGs)—versatile, multifunction sites for growing food, increasing community connectedness and social cohesion, and providing educational workshops on topics such as permaculture. LGs helped identify grant opportunities and promoted gardens on their websites. • Five Senses Garden (Canada Bay, in partnership with a community health agency). • Support for school food gardens (Canada Bay). • Exploring urban community farm models (Cardinia). • The Living Classroom (Gwydir) —a regenerative agriculture hub, with various "landscapes" (e.g., bush tucker, Chinese medicinal plants, carbon farm, orchards). Hosted school visits to learn about growing, composting, cooking, and Aboriginal and Torres Strait Islander food systems. • Pulse of the Earth Festival (Gwydir) —promoting regenerative agriculture. • Focus on regenerative agriculture, and other sustainable food production methods (all).
Distribution and access	• Food relief (all) —partnering with national or regional food relief agencies (e.g., OzHarvest) and community groups (e.g., Country Women's Association) to provide food to disadvantaged households/communities. Facilitated programs that connected supermarket food "waste" to food insecure residents at low/no cost. • Community food guide (Melbourne) —mapped all community-accessible food-related programs, including emergency food relief, community kitchens and food donation sites. Also used to inform the LG COVID-19 response. • Food hub, food box scheme, and youth training kitchen trial in collaboration with Monash University as a movement away from "handout" model of addressing food insecurity to a model focused on locally sourced, nutritious food and community-building, resilience, and dignity (Cardinia). • Use of planning controls to improve access to fresh, healthy, local, and sustainably produced food—providing for feasible walking distance to healthy food retail outlets when planning new residential developments (Bendigo). Also ensured appropriate floor space for future supermarkets in neighborhoods with poor food access. • "Village Café" (Penrith) —providing fresh produce to attendees of pop-up events that sought to connect residents with one another and social services.
Consumption	• Workshops and activities designed to educate residents about healthy, sustainable, and affordable eating practices, often in partnership with community health services and other organizations with relevant expertise (e.g., FoodREDi program by Gwydir in partnership with the Red Cross to teach food budgeting, nutrition planning, and healthy cooking skills). • Integrating nutritional advice into other programs (e.g., after-school programs, young family support programs). • Healthy Choices (Melbourne) —a nutrition labelling/marketing campaign at popular cultural events such as the Moomba Festival and Melbourne Fashion week, encouraging people to eat healthier foods.
Disposal	• Dual targets of reducing production of food waste by residents and diverting food waste from landfill. • Love Food Hate Waste workshops (Canada Bay, Penrith) —funded by the NSW Environment Protection Authority, workshops included messages such as using meal planning and being creative with leftovers to minimize household food waste. • Waste education exhibit at a "farm and food" festival (Cardinia) —promoted ethos of valuing food and provided information on appropriate food waste disposal methods. • Curbside organic waste collection service (Bendigo, Cardinia, Gwydir, Penrith) —often known as FOGO (Food Organics Garden Organics), this service enables household food and garden organics to be collected and processed at a commercial facility. Resultant compost sold to farms (Cardinia) or used by The Living Classroom (Gwydir).

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Food system area	Examples and descriptions
	• Curbside organic waste collection service (Bendigo, Cardinia, Gwydir, Penrith) —often known as FOGO (Food Organics Garden Organics), this service enables household food and garden organics to be collected and processed at a commercial facility. Resultant compost sold to farms (Cardinia) or used by The Living Classroom (Gwydir). • FOGO complemented by education campaigns on how to reduce food waste (e.g., workshops on cooking with leftovers) (Cardinia and Gwydir). • Rebates to households and community organizations to purchase compost bins and worm farms. • Reducing commercial food waste—Canada Bay connected Mirvac (a construction company and owner of a large shopping center) with OzHarvest to donate food to charity.
Land use	• Protecting agricultural land from overdevelopment (Bendigo, Cardinia, Penrith). • Unique planning overlay designed to protect agricultural land from development, preserve fertile soil, and promote biodiversity (Cardinia). • Planning controls to protect agricultural land (Penrith), although jeopardized by the NSW Government's prioritization of the Western Sydney Aerotropolis (infrastructure, economic, and residential hub centered on an airport). • Mapping higher-value agricultural land to assist land use planning (Bendigo and Cardinia).
Economic development and supporting local producers	• *Gastronomy Guide* (Bendigo) —a digital resource containing information on local food experiences to promote food-related tourism within the region. • Farm-gate sales (Bendigo) —enabled by coordination between the Creative Cities Officer, Creative Arts Officer, and Agribusiness Officer. • Promotion of food sector and agricultural careers (Gwydir) —engagement with schools and tertiary education institutions. The Living Classroom was a primary industries trade training center, providing traineeships to students from two local schools; a hospitality training center and certified teaching kitchen were attached to the local theatre hall. • Creation of a regenerative agriculture verification process as a branding opportunity for farmers/producers (Cardinia).

LG: local government

All six LGs discussed how partnerships with local health services, schools, and other organizations were essential to delivering on-the-ground food system initiatives in the areas of community health, waste reduction, agriculture, and food literacy. Participants collaborated with other organizations to extend their resources and expertise, connect different parties to avoid duplication, form new partnerships, and deliver programs beyond their jurisdiction and capacity. They acknowledged that LG "can't do it all…we needed others in the community to lead and to deliver actions where we can't, in spaces where we don't work…" (Bendigo, Participant 3). LGs often engaged local, regional, state, and national health agencies to facilitate nutrition and wellbeing programs, which these agencies were already mandated and funded to implement. Participants also said that connections developed with organizations during policy development contributed to the sense of legitimacy for policies in the community once adopted, and meant that community groups were already on board to assist with implementation.

Gwydir partnered with schools, having, for example, a memorandum of understanding with the Southern Cross University Regenerative Agriculture facility to enable industry education, training, and research opportunities. Gwydir also investigated opportunities to engage with Black Duck Foods, an Indigenous-led enterprise seeking to reclaim First Nations food sovereignty, re-develop traditional food growing, and ensure economic benefits for Aboriginal and Torres Strait Islander people, in order to support local and surrounding Aboriginal and Torres Strait Islander residents in establishing food businesses.

The three Victorian LGs discussed advocating to higher levels of government for legislative reform, intending to increase LG authority to implement food system policies and actions where they perceived that their jurisdiction was currently limited. For example, Cardinia participants reported advocating to multiple state government departments for a state food policy and dedicated food fund.

Evaluation was an important component of policy implementation for all six LGs, although how evaluation was performed ranged from comprehensive and structured, to less formal and more sporadic. Examples of the types of data collected and used by LGs were community members' perspectives (e.g., satisfaction with and change in knowledge consequent to educational workshops), environmental audits (e.g., waste data), and health and food security statistics. Melbourne's policy was accompanied by a rigorous results-based accountability evaluation framework with specific indicators and measures for each policy topic. However, Melbourne participants expressed concerns regarding their ability to conduct an "ideal" evaluation, given the reality of LG staff workloads. Gwydir had no formal evaluation process for assessing the impact and outcomes of The Living Classroom, but identified broad indicators such as its long-term continuation, visitation rates, and partnership development.

Enablers of Policy Implementation

Having a staff member in a dedicated food systems role was a key facilitator for two of the six LGs. As stated above, Bendigo and Cardinia had Food System Officers who were central to engaging community members and groups and ensuring that LG staff and project partners were accountable for delivering activities detailed in action plans. In addition, for Gwydir the presence of a community champion who went on to be employed by the LG to oversee operation of The Living Classroom was important for continuation of the initiative.

Collaboration between LGs was beneficial to policy implementation for the LGs participating in this study. For example, Bendigo positioned themselves as a leader on food system issues within their region, due to their food system strategy and having been named a UNESCO City of Gastronomy, and thus saw one of their roles as supporting neighboring LGs in providing educational opportunities related to healthy food systems. Cross-LG collaboration allowed LGs to share knowledge and resources, which one participant from Melbourne saw as an invaluable platform for motivating action, as LGs "like to one-up each other, [so] if you see someone else doing something … innovative you're also more likely to follow and feel confident in doing something yourself" (Melbourne, Participant 2).

Availability of funding was a critical enabler of policy implementation. Some projects were possible only because of external funding provided by state governments or grant programs, for example. Canada Bay and Bendigo benefited from internal LG budget allocations. However, the former received only a small budget for implementing sustainable food-related activities, while the latter was a more significant budget allocation that enabled the LG to fund a Food Systems Officer for ten years.

Coordination between LG departments was an important aspect of policy implementation, reflecting the multifaceted nature of food systems and that different food system activities cannot exist in silos. Bendigo intentionally integrated cross-departmental coordination into their strategy. Penrith addressed food systems in a coordinated way by undertaking food-related actions in multiple departments and integrating food system concerns in neighborhood plans, which implemented localized actions spanning a range of topics, both related (e.g., community cooking school) and unrelated to food (e.g., pop-up outdoor cinemas), determined by the community.

Melbourne participants saw an international community of practice, in the form of the Milan Urban Food Policy Pact (2015), as a valuable resource for policy implementation. Melbourne's involvement in the Pact (an agreement for municipal governments globally to act on food systems based on a framework of 37 actions in six categories) benefited the LG by positioning Melbourne as a leader in this space relative to other Australian LGs, and establishing the legitimacy of LGs in

food system transformation, which generated internal and external support for local food–related actions. It also provided peer-based knowledge-sharing opportunities between signatories, which enabled Melbourne to look to international examples to inform decision-making during the policy lifespan in the absence of Australian examples.

Barriers to Policy Implementation

As was the case with policy development, all participants described a critical barrier to implementation as lack of direction from, and coherence between, state and federal policy and legislation relevant to the food system. For example, Bendigo staff expressed frustration with state-level red tape that made it difficult to act in the best interests of the health of their community. For example, selling food at barbecue fundraising events: cooking and selling sausages, onions, and white bread was deemed "low [food safety] risk" by the Victoria Department of Health and Human Services, whereas healthier alternatives (e.g., corn on the cob) were classified as "high risk" and required community groups to undertake additional steps to gain approval.

Inadequate funding was a significant impediment to LG food systems work. Participants stated that limited funding stemmed partly from the lack of a food systems mandate from state government. Funding for food systems work usually was available only for short-term (i.e., 2–3 years) programs on specific topics and not for "food systems work" more broadly, impacting LG ability to plan, implement, and evaluate their activities. LGs also had little scope to spend funds in ways that targeted local priorities. Short-term funding resulted in insecure contracts for staff and no long-term certainty for initiatives or more substantial bodies of work. Many participants also spoke of running programs grant-to-grant and expending substantial time and effort in applying for grants, without any guarantee of success. In addition, grant guidelines often dictated that funds had to be used for project implementation, not for "core" uses such as staffing, which frustrated some LGs who wanted to be able to employ more staff to build their capacity to conduct food systems work. Limited funding usually did not allow LGs to undertake data collection for needs assessment or policy and program evaluation, which in turn prevented them from presenting evidence-based cases when applying for further grants.

Limited availability of relevant data was an implementation barrier discussed by two Victorian LGs. Data on some topics were non-existent, inadequate, infrequent/outdated, and/or not locally specific, affecting the ability to accurately measure the impact of their work. The complete lack of data on certain issues (e.g., farming businesses in peri-urban areas, cited by Cardinia) prevented LGs from demonstrating a need for action when submitting grant applications. LGs had to rely on relatively simple indicators to evaluate local food issues (e.g., a single question to determine food insecurity), which restricted their ability to fully understand the extent of these issues and to monitor progress. Furthermore, while LGs were able to collect information about short-term indicators (e.g., workshop participant satisfaction), they did not have data on long-term or more complex indicators such as health outcomes or environmental impacts.

LGs from both states indicated that from early 2020 the COVID-19 pandemic and associated lockdowns limited local food policy implementation or forced a change in focus. While participants described some positive effects, such as the attention the pandemic brought to food insecurity and the social determinants of health, it also had negative impacts on the systems-based trajectory of LG efforts. Communities and governments tended toward acting on immediate household food insecurity concerns (e.g., by providing emergency food relief), which failed to address the underlying causes of food insecurity and derailed momentum in implementing whole-of-food-system strategies. The pandemic also forced LGs to cancel face-to-face events and educational activities, and disrupted governance mechanisms. For some, the pandemic highlighted the need for a stronger focus on resilience and self-reliance at LG or regional levels in future revisions of food policies and other strategic planning documents.

Discussion

This paper has presented case studies of food policy development and implementation in six LGs in NSW and Victoria. Four had dedicated food system policies, which—as with similar policies in other jurisdictions—linked together health, environment, and equity concerns, and addressed many dimensions of the food system. These policies were accompanied by a wide range of implementation activities that also targeted multiple food system activities. While the impetus for food system policies often originates in the community or in civil society (Mendes, 2008; Sonnino & Beynon, 2015), we found that the idea of a dedicated food system policy usually came from within a LG, although in response to community demand for action on specific topics such as food security. However, the main motivator for the creation of The Living Classroom was community dedication to regenerative agriculture and commitment to creating a demonstration site.

Several factors internal to LGs were crucial to facilitating policy development, including champions who advocated for food system policies (who were sometimes based in the community as well), leadership and support from senior LG staff members and councillors, and an internal culture that valued food systems. As with other studies, we found that policy implementation processes were facilitated by organizational and structural factors such as funding availability, collaboration between LG departments, and the presence of dedicated staff members. The benefits of assigned staff members included building support for policy development and maintaining momentum once policies were implemented (Berglund et al., 2021; Mendes, 2008).

Many LGs stressed that their role in policy implementation was not direct service delivery but rather to partner with, or support, a range of stakeholders, including nongovernment organizations, businesses, community groups, and other levels of government, to deliver on-the-ground services and programs. Collaboration, integrated governance, and shared responsibility between diverse stakeholders is crucial for the delivery of local food system initiatives, particularly given the limited resources and jurisdiction of LGs (Lowe et al., 2018; Mansfield & Mendes, 2013; Mendes, 2008). To this end, Bendigo and Cardinia both used a collective impact approach in developing and implementing their policies, which formalized these principles. However, appropriate staffing and funding levels for food system initiatives is important to ensure that LGs can engage with external stakeholders effectively and to facilitate their steering or leading role (Berglund et al., 2021; Coulson & Sonnino, 2019).

LGs identified organizational-level factors that acted as a barrier to food system policy development and implementation, but as important were state- and federal-level factors that had flow-on effects for internal LG capacity. One was the lack of direction from, and coherence between, state and federal law and policy relevant to food systems. There are no dedicated food and nutrition policy frameworks at state and federal levels in Australia, and while Victorian public health legislation provided the impetus for local food system policies in that state, there is no similar framework in NSW. The Victorian Public Health and Wellbeing Plan 2019–2023 (Department of Health and Human Services, 2019) and Climate Change Act 2017 (2017) also articulate the connections between climate change and health, creating an opportunity for Victorian LGs to address issues such as agriculture- and food transport-related greenhouse gas emissions. Participants in our study linked the absence of a legislative/policy mandate to a lack of state funding supporting a whole-of-food-system approach, with most funding sources targeting short-term projects and specific topics rather than core functions such as hiring staff. This contrasts with initiatives such as the Vermont Agriculture and Food System Strategic Plan 2021-2030 (Claro et al., 2021), a statewide food system strategy, guided by a collective impact approach, supported by 20 years of dedicated funding and backed by state government legislation. An additional issue was the absence of systematic, comprehensive monitoring of issues such as food insecurity at state and federal levels, which impacted the data available to LGs to plan, implement, and evaluate their activities. The devolution of service delivery and governance functions to nongovernment and

community-based organizations was also described as a key characteristic of contemporary food system governance, resulting from multiple drivers, including neoliberal policy reforms (Andrée et al., 2019; Coulson & Sonnino, 2019).

While the absence of a legislative mandate can create space for policy innovation and entrepreneurship (Parsons et al., 2021), it may be one of the reasons why policy making on food systems varies considerably between Australian LGs (Carrad et al., 2022), as it means that LGs must take the initiative in developing food system policies and programs. Our findings also illustrate how LG food system policies are shaped by laws, policies, institutional structures, and funding sources at higher levels of government, pointing to the need to carefully attend to the division of powers between different levels of government when carrying out analysis of local food system governance, and to the constraints on LGs created by existing governmental structures (Coulson & Sonnino, 2019; Parsons et al., 2021). These constraints were one of the reasons why partnerships and collaborations were important to the delivery of food systems initiatives, as well as for generating community ownership of policies and programs.

Our findings about the processes of policy development and implementation, and their barriers and enablers, inform recommendations we make for enhancing the role of Australian LGs in creating a healthy, sustainable, and equitable food system. These recommendations may also be useful for LGs undertaking food system policy making and implementation in other national jurisdictions, keeping in mind the variation in powers and functions between LGs in different countries. One recommendation is for LGs to create a dedicated food system policy, which represents the opportunity to take a whole food-systems approach, coordinate the diverse work LGs do already with food systems, break down department silos, and streamline programs and resources (Barling et al., 2002). One possibility would be for a template policy (and other resources) to be created by Australian federal or state local government associations that can be adapted to local circumstances.

As indicated by previous Australian and international research, policy development should be informed by inclusive, accessible consultation processes, such as "Kitchen Table Conversations" (Lourival & Rose, 2020; Raja et al., 2018). In conducting such participatory processes, LGs should ensure adequate time to plan and implement comprehensive community consultation, leverage existing community networks (e.g., churches) to elicit participation, and use language and messaging that makes clear the purpose and nature of the conversations so as not to deter community members (Lourival & Rose, 2020). In addition, food-related issues should be integrated into non-food–specific policies and programs (Parsons et al., 2021), aligning food systems across all relevant documents/programs. Creation of objectives, targets, and monitoring and evaluation frameworks should occur in tandem with policy development (Raja et al., 2018). Policy implementation can be enhanced by delegating responsibility for food system policies and programs to a dedicated food systems officer (Berglund et al., 2021), and by working with a range of partners in the community. Finally, systematic evaluations can help demonstrate impacts and generate evidence of success that can be important to securing funding (Raja et al., 2018).

At a state government level, an explicit legislative and/or policy mandate for food systems would empower LGs to develop and implement food system policies and programs that promote positive health, environmental, social, and economic outcomes for the community. This mandate could include statewide, comprehensive food system and food security plans that set objectives and targets at the state level, and which empower LGs and provide resources to set local objectives and targets on priority food system issues, and to undertake core, ongoing work. Like Victoria, NSW should also establish a public health legislative framework that requires LGs to develop a wellbeing plan that explicitly requires LG action on key food system priorities. Both NSW and Victoria should amend their planning frameworks to enable LGs to encourage opening fresh food retail outlets and restricting new fast-food restaurants, as LGs identified planning frameworks as a major legislative barrier to improving healthy food environments (Rose et al., 2022).

Conclusion

Food system policies developed by LGs can be an important tool for joining together diverse LG work on food systems, breaking down departmental silos, identifying food-related targets and objectives and evaluating success in reaching them, dedicating budget and staffing to food-related programs, and implementing a broad range of activities. This article presented case studies of the motivators for, and processes of, policy and program development and implementation in six Australian LGs. It also identified key enablers of and barriers to food system policy development and implementation, including both factors internal to LGs and important state- and federal-level influences, including legislative and policy frameworks, which act as significant determinants of LGs functions and powers. Thus, supportive policy and legislation at state and federal levels, as well as new, dedicated sources of funding, are critical to strengthening the role of Australian LGs in food system transformation. Interactions between local, state, and federal systems of food law, policy, and governance are an important avenue for further research on the role of Australian LGs in creating a healthy, sustainable, and equitable food system. Although our findings are particularly salient for LGs in NSW and Victoria, and in other Australian states, our research helps to strengthen the international literature on food system policy implementation and makes recommendations that may prove useful to LGs undertaking food system policy development and implementation in other national jurisdictions.

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Appendix A. COREQ Checklist—Australian Local Government Case Studies

Topic	Item No.	Guide Questions/Description	Location in text
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/ facilitator	1	Which author/s conducted the interview or focus group? Interviews were conducted by two researchers from a combination of AC, BR, NR and LT	Methods
Credentials	2	What were the researcher's credentials? E.g., PhD, MD AC – PhD, BR – PhD, NR – PhD, LT – BA (Psych) M Food Systems and Gastronomy Credentials of all researchers would be available to those interested by searching the internet for the researchers, however, will not be identified in-text.	NA
Occupation	3	What was their occupation at the time of the study? AC – Research assistant BR – University academic (Law) NR – Lecturer (Food studies); Executive Director of *Sustain: The Australian Food Network* LT – Research assistant; Masters student (Food Systems and Gastronomy) This information will be available to those interested by searching the internet for the researchers, however, will not be identified in-text.	NA
Gender	4	Was the researcher male or female? Three interviewers were female and one was male.	Methods
Experience and training	5	What experience or training did the researcher have? AC – B Public Health (Hons); PhD. Prior experience conducting interviews and with analysis of both quantitative and qualitative data. BR - BA (Hons); LLB; PhD. Extensive prior experience conducting interviews and with analysis of qualitative data. NR – B Law (Hons); Masters International and Community Development; PhD. Extensive prior experience conducting interviews and with analysis of both quantitative and qualitative data. LT – Completing Masters Food Systems and Gastronomy at the time of the research. This information will be available to those interested by searching the internet for the researchers, however, will not be identified in-text.	NA
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement? NR – A minority of participants had a previously established relationship with the interviewer. AC, BR & LT – No relationship with participants prior to or during the study.	Methods
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g., personal goals, reasons for doing the research AC – All participants knew that the research was part of a broader project investigating the role of local governments in food system issues, and that the interviewers were employed on this project. It is reported that informed consent was obtained from all participants (i.e., that they were provided with an information letter about the study prior to agreeing to participate).	Methods
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g., Bias, assumptions, reasons and interests in the research topic NR's prior connection to some participants is the primary notable characteristic of relevance.	Methods

continued

continued

Topic	Item No.	Guide Questions/Description	Location in text
Domain 2: Study design			
Theoretical framework			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g., grounded theory, discourse analysis, ethnography, phenomenology, content analysis Thematic analysis	Methods – data analysis
Participant selection			
Sampling	10	How were participants selected? e.g., purposive, convenience, consecutive, snowball Purposive sample	Methods
Method of approach	11	How were participants approached? e.g., face-to-face, telephone, mail, email Email invitation	Methods
Sample size	12	How many participants were in the study? 23	Methods
Non-participation	13	How many people refused to participate or dropped out? Reasons? Two. One was going on maternity leave, the other consented but was ultimately unable to attend on the day of the scheduled focus group.	Not included in-text as sample was still adequate
Setting			
Setting of data collection	14	Where was the data collected? e.g., home, clinic, workplace At participants' workplaces or online (teleconference)	Methods
Presence of non-participants	15	Was anyone else present besides the participants and researchers? An Honors student associated with the broader project observed one of the focus groups. Participants gave their verbal consent at the commencement of the group for this to take place.	Not included in-text
Description of sample	16	What are the important characteristics of the sample? e.g., demographic data, date Date range of the focus groups is included in-text. Local government departments that participants represented are provided. Other demographics are not relevant, as participants were acting as organizational representatives, not providing personal information.	Methods
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested? Final interview guide is appended to the manuscript. It was not pilot tested, but was reviewed by all members of the research team and amended according to feedback received.	Methods and supplementary material
Repeat interviews	18	Were repeat interviews carried out? If yes, how many? We did not carry out any repeat interviews	NA
Audio/visual recording	19	Did the research use audio or visual recording to collect the data? Interviews were audio recorded and the recordings were transcribed	Methods
Field notes	20	Were field notes made during and/or after the interview or focus group? Notes were made during and immediately after the interviews.	NA
Duration	21	What was the duration of the interviews or focus group? Approximately 80-120 minutes	Methods

continued

continued

Topic	Item No.	Guide Questions/Description	Location in text
Data saturation	22	Was data saturation discussed? Yes	Methods
Transcripts returned	23	Were transcripts returned to participants for comment and/or correction? Participants were offered the opportunity to review the transcript of their interview.	Methods
Domain 3: Analysis and Findings			
Data analysis			
Number of data coders	24	How many data coders coded the data? The first transcript was independently coded by AC, LT and BR, who them discussed these analyses and reached consensus on a preliminary coding structure. Subsequent transcripts were coded solely by LT, with discussion and review of identified themes by BR.	Methods
Description of the coding tree	25	Did authors provide a description of the coding tree? Yes	Supplementary material
Derivation of themes	26	Were themes identified in advance or derived from the data? Identification of themes was guided by the aims of the evaluation and the interview guide (e.g., what are the barriers to policy implementation?). Within this, themes were derived from the data (e.g., lack of funding).	Methods
Software	27	What software, if applicable, was used to manage the data? NVivo.	Methods
Participant checking	28	Did participants provide feedback on the findings? Participants were provided a copy of the draft manuscript prior to submission, and given the opportunity to provide feedback.	NA
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g., participant number Quotations are presented to illustrate the themes, identified by participant identifier.	Results
Data and findings consistent	30	Was there consistency between the data presented and the findings? Yes	Results
Clarity of major themes	31	Were major themes clearly presented in the findings? Our results discuss the major themes. Illustrative quotations are used in the results section.	Results
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes? In the results we identify how the major themes were described differently by the various organizational representatives (participants).	Results

Developed from Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. International Journal for Quality in Health Care, 19(6), 349–357.

Appendix B. Local Government Focus Group Question Guide

1. Can you tell me about your background and role at the [Insert local government name] Council?
2. What is the role of local government in creating a healthy, sustainable, and equitable food system?
3. Can you describe your Council's policies that are relevant to creating a healthy, sustainable and equitable food system?
4. Can you describe the process your Council used in the development of the relevant food policy/strategy?
5. Can you describe who (individuals/groups/stakeholders) was involved in the process and how they participated or were included? What input did they have to the policy/strategy development and/or content? Were they involved only once or did they have the opportunity to comment/participate on several occasions, etc.?
6. Reflecting on the process of developing the strategy/policy, can you tell me about the amount of time that was given to enable wide involvement and participation? Was the length of time sufficient? If not, why not? Were there any other constraints/obstacles in the process of developing the policy/ strategy?
7. Reflecting on the process of developing the strategy/policy, is there anything that your Council might do differently if they were to do it again? If so, please provide details.
8. How have these policies been implemented "on the ground" or developed into programs of work?
9. What have been the drivers or enablers of your Council's work on food system issues, including its policies and programs?
10. Has your Council encountered any barriers to developing and implementing policies and programs on food system issues, and if so, what were they?
11. Does your Council work with state government in the development and implementation of policies and programs on food system issues, and if so, how/in what capacity?
12. Does your Council work with community or non-government organisations in the development and implementation of policies and programs on food system issues, and if so, how/in what capacity?
13. Are there any other key actors or organisations that your Council works with in implementing these policies and programs, and if so, how/in what capacity?
14. How could the role of Councils in creating a healthy, sustainable and equitable food system be strengthened?

Appendix C. Coding Tree for Local Government Case Study Focus Groups

Code	Subcodes
General case study information	Council name Date of focus group Dedicated food system policy (yes/no) Food system objectives in existing policy (yes/no) Interviewers Participants
Role of council in food system activities	
Relevant policies	
Motivators/rationale for policy development	Emissions reduction Food system sustainability Reducing food waste Reducing plastic waste Food security Protecting farmland Community health Community interest International action on food (systems) Joining together existing work
Benefits of council having dedicated food system policy	
Policy development processes	Consultation: targeting vulnerable populations, farmers Collaboration between council departments Research Theory Review/identify existing policies
Enablers of policy development	Funding Champion Council-directed interest State government mandate High-level (internal) leadership
Barriers to policy development	Lack of state government mandate Lack of state government funding Internal governance Engagement, lack of community interest
Implementation activities, outputs	Topics: Food security, Community health and nutrition, Food literacy, Waste, Protecting farmland, Growing food (urban agriculture, agriculture), Supporting local food systems, Tourism, Food system sustainability, Job creation Type of activity: Community forums/workshops/events, Community gardens, Food hub, Advocacy, Information/educational tools, Integrate food-related activities into other programs, Planning, Campaigns, Rebates for residents/community groups, Teaching kitchen/community kitchen, Teaching/demonstration garden
Policy implementation processes	Partnerships Create budget Evaluation Council structure Theoretical frameworks (Place-based approach(es), Collective impact) Seeking grants

continued

continued

Code	Subcodes
Enablers of policy implementation	Internal council prioritisation of food Staff member dedicated to food systems portfolio Collaboration between councils Community engagement Funding Collaboration between council departments and policy documents COVID-19 pandemic International collaboration State government mandate
Barriers to policy implementation	Lack of state government mandate Funding (lack of state government funding, targeted grants, lack of council funding) Staff turnover, organizational changes Community engagement Power, capacity of local government Lack of data COVID-19 pandemic Internal governance
Engagement with nongovernmental organizations	
Engagement with state government	Schools/education Health sector Planning
Engagement with federal government	
Engagement with other stakeholders	Food businesses, food retailers Farmers, producers Universities Businesses General public
Facilitating future action	Goals/objectives Tools/supports needed

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Sustaining New England's iconic tourism landscapes: An exploratory study to examine perceptions of value from farmers and fishermen

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Abstract

Tourism generates billions of dollars in New England. Maine and Vermont rely heavily on the iconic imagery of lobstering and dairy farming to attract visitors to their states. The collapse of either industry would not only deal a direct economic and cultural blow to their respective states but be compounded by their impact on the tourism industry. How do these industries work in symbiosis with tourism? From the biological world, symbiosis is the close interaction of two different species in a mutually beneficial or parasitic relationship. To what extent do these primary sector industries benefit from tourism and how might the benefits of tourism be more effectively shared with farmers and fishermen? Using in-depth interviews, this exploratory study captures perceptions of tourism's value to farmers in Vermont and fishermen in Maine as a place to start this important conversation. While tourists consume less than 10% of the bounty from Vermont dairy farmers and Maine lobstermen, producers capture a variety of other benefits from tourism, including such economic benefits as the opportunity to promote their company or industry brand, attract new customers, generate supplemental income, and create employment

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opportunities, along with non-economic benefits such as the opportunity to provide authentic experiences, create great places, showcase their conservation efforts, and highlight their family's pride and heritage. Public policy could redistribute the benefits of tourism to facilitate a more mutually beneficial symbiosis, including direct subsidies to producers, preservation of working landscapes, marketing and branding activities, and investment in cooperative infrastructure.

Keywords
Tourism, Agritourism, Aquatourism, Public Goods, New England, Maine, Vermont, Lobster, Dairy, Multifunctionality

Introduction

Tourism plays a significant role in the economy of New England, where the states of Maine and Vermont are both popular destinations. In 2019, 36 million people visited Maine, spending US$6.5 billion, which generated 9.6% of the state's GDP and 18.7% of employment (Maine Department of Labor [Maine DOL], 2020; Maine Office of Tourism [Maine MOT], 2020; U.S. Department of Commerce, Bureau of Economic Analysis [U.S. DOC BEA], 2020). During the same period in Vermont, 13 million visitors spent US$3 billion, generating 8.6% of the state's GDP (U.S. DOC BEA, 2020) and 10% of employment (Vermont Department of Labor [Vermont DOL], n.d.; Vermont Department of Tourism and Marketing [Vermont DTM], n.d.).

Tourism in both states derives enormous value from agriculture and fishing. These natural resource–based industries create the iconic landscapes visitors long to see, including red barns surrounded by sugar maples nestled among rolling fields full of grazing cows, and picturesque harbors where lobster boats float alongside docks on which traps are stacked next to shingled shacks hung with buoys. Wood-planked dairy barns and cows grazing in pastures are vacationers' images most associated with Vermont (Werneke, 2010), driving tourism to the state (KarenKarp&Partners, 2020). In Maine, 62% of visitors are motivated by culinary interests, with 57% reporting that they ate lobster and other local seafood (MOT, 2020).

While Maine and Vermont's tourism heavily depends on the iconic imagery of dairy farming and lobstering, these industries are under constant pressure from global economic forces that threaten their continued viability. In 2017, 6,808 farms in Vermont generated US$781 million in sales, with milk accounting for 65% of the state's total agricultural value (U.S. Department of Agriculture National Agricultural Statistics Service [USDA NASS], n.d.). At US$2.2 billion per year, dairy's impact on the state economy is significant, generating US$3 million per day in circulating cash and between 6,000 and 7,000 jobs (Vermont Milk Commission, 2019). The number of dairy farms, however, has plummeted from 4,017 in 1969 to 636 in 2020 (Hoffer, 2021) as farmers nationwide face a crisis of low prices caused by chronic overproduction and consolidation (Howard, 2021; Muirhead, 2014; Rathke, 2021; Vermont Milk Commission, 2019). Dairies with fewer than 200 cows are disappearing, while those with more than 500 are increasing (Heintz, 2018; Hoffer, 2021; Vermont Sustainable Jobs Fund, 2021). The disappearance of small dairy farms as the sector consolidates into industrialized operations threatens to undermine Vermont's iconic pastoral imagery— "green rolling hills populated with livestock and picturesque dairy barns" that, according to a recent marketing study, "drives much of the state's tourism activity and public perception" (KarenKarp&Partners, 2020, p. 2; Werneke, 2010).

The lobster industry faces equally dire challenges. In 2020, 5,773 Maine lobstermen harvested 97.9 million pounds of lobster worth US$412 million (Maine Department of Marine Resources [Maine DMR], 2022a), which accounted for 79% of the market value of all fisheries (Maine DMR, 2022b). Some scientists have called Maine's dependence on lobster a "gilded trap" unlikely to withstand a precipitous decline caused by environmental, economic, or political turbulence (Steneck et al., 2011). In fact, Maine is currently experiencing all three events at the same time. In 2018, China, which represented a growing middle-class market for lobster, enacted a retaliatory tariff that caused exports to plummet by 50% (Walcott, 2020). Federal regulations designed to protect the endangered right whale species have added to the cost of lobstering and, along some parts of the

coast, shut down fishing altogether during migration season (Routhier & LeClaire, 2021). Development pressure threatens water access as wealthy homeowners vie for waterfront properties (Carey, 2021). In addition, lobstermen are protesting offshore wind developments (Carrigan, 2021) and large-scale aquaculture (Hoey, 2021).The greatest long-term threat to the industry, however, is climate change. Since 2004, the Gulf of Maine has been warming faster than 99% of the world's oceans (Pershing et al., 2015). Warming water is associated with a disease that affects the hardness of the lobster shell as well as with an overall migration of the species north (Albeck-Ripka, 2018).

Although the iconic imagery of farming and fishing contributes to a lucrative tourism industry, producers themselves struggle to capture the value of their own cultural labor. Unlike dinners and hotel rooms, scenery cannot be provided only to paying customers and withheld from those who do not pay, a central challenge faced by individual farmers and fishermen (Baldock et al., 2011; Batie, 2003; Harvey, 2019; Mathews, 2012). This paper explores the need to alter the symbiosis between tourism and the primary sectors in favor of a mutually beneficial relationship, rather than a parasitic one.

Literature Review

Farmers and fishermen in New England do not earn much money from tourists. In Vermont, 13 million visitors spent approximately US$745 million on food in 2019, with an estimated 11%, or US$82 million, on dairy (Vermont DTM, n.d.). This represents 6.3% of the dairy industry's US$1.3 billion in sales (Vermont Dairy Promotion Council, 2015). In Maine, 26% of the state's 36 million visitors ate lobster during their trip, spending approximately US$45 million; this represents 9.3% of the industry's total catch and 2.6% of tourists' food expenditures (Maine DMR, 2020; MOT, 2020). Thus, less than 10% of the market value of dairy and lobster is consumed by tourists. Consumption of these products represents 2.7% of Vermont's US$3 billion tourism industry and less than 1% of Maine's US$6.5 billion tourism industry.

The very presence of tourists undermines the authenticity of rural landscapes. Enjoyment of the positive externalities created by farming and fishing invariably subjects producers to the "tourist gaze," which organizes landscapes around what visitors expect to see, sometimes blinding them to the poverty endemic in rural life (Urry, 1990). At its most benign, the tourist gaze interrupts work, leading to incessant distractions from visitors who pepper producers with questions. In one Maine town of fewer than 5,000 people with 79 commercial wharves, visitors often block roadways and driveways to photograph working fishermen, leading neighbors to complain to producers "simply for existing" (Grindle, 2017, p. 27). At worst, the tourist gaze can romanticize rural areas, imposing classist demands that producers exist to serve the tourist economy and that activities be staged for their benefit (Urry, 1995). Thus, the tourist gaze has the potential to drive the fundamental restructuring of the landscape away from production and toward entertainment, contributing to a parasitic relationship.

Dairy farming in Vermont and lobstering in Maine provide services for which producers are not compensated. In the case of farming, these public goods can include the conservation of natural resources; provision of habitat for biodiversity; rural business activity and economic development; and maintenance of culturally valuable landscapes and architecture (Cooper et al., 2009; Jervell & Jolly, 2003; Mander et al., 2007; Olsson & Rønningen, 1999; Organization for Economic Co-operation and Development [OECD], 2001; Otte et al., 2007). In the United States, these positive externalities are accepted as unintended side effects generated automatically, without producers or public agencies deciding to allocate resources to them (Aznar et al., 2007). European policy, on the other hand, has long recognized the necessity of spending public money for public goods (PMPG), devoting significant subsidies to rural producers in exchange for the noncommodity benefits they provide (Baldock et al., 2011; Cooper et al., 2009; Harvey, 2019; Stolze et al., 2016). This characteristic of agriculture to produce not only food and fiber, but also an array of environmental, cultural, and rural development benefits is referred to as multifunctionality. Pressure to defend the subsidization of multifunctionality before the World Trade Organization has

generated a compelling case that its crucial benefits (e.g., flood control in the case of rice paddies) are inextricably tied to agriculture, constitute public goods, and cannot be produced separately from agriculture (Norwegian Ministry of Agriculture, 2002). This rational defense of multifunctionality could be used to make the case, for example, that Vermont should subsidize its working farms because they provide nontrade benefits that cannot be separated from their production value, e.g., regenerative pastures for dairy farming have a scenic value that supports tourism. Furthermore, tourists are willing to pay to preserve these landscapes (Yadev et al., 2013). While much of the rationale for the European Union's subsidization of multifunctionality rests on the generation of environmental externalities, Italy has supported agriculture's role in the tourism industry (Giaccio et al., 2018; Porcaro, 2009) where, in contrast to Vermont, agritourism is one of the major sources of income for farmers (Santucci, 2013).

The case for multifunctionality can also be applied to fisheries (Vaughan et al., 2021). Lobstering in Maine is particularly important for its cultural heritage value (Billings, 2014; Galdauskas, 2008; Lewis, 1997, 2010; Nash, 2021). It is not only the eating of lobster, but also the sight of lobster traps stacked on a dock and fishing boats floating nearby that are an essential part of the coastal experience (Billings, 2014; Lewis, 2010). Besides providing food that is largely exported, lobstering supports business activity in rural areas, such as boat repair, fuel, and ice (Grindle, 2017), which helps keep small towns alive.

What value do farmers and fishermen in New England place on tourism? Do they recognize their role in attracting tourism to their state? Most of what is known about what producers think of tourism comes from the literature on agritourism. Tew and Barbieri (2012) conducted a survey of 164 farms in Missouri that provided agritourism opportunities, describing 16 distinct motivators in four dimensions: (1) increasing farm profitability, (2) generating market opportunities, (3) enhancing family connections, and (4) pursuing personal interests. The strongest motivators were economic. Indeed, for small farms, agritourism is positively correlated with profitability (Schilling et al., 2014). Non-economic reasons are also powerful motivators. Quella et al. (2021) conducted semi-structured interviews with 23 farmers and ranchers in five states, finding that agritourism provides many non-financial benefits, including quality of life, customer engagement, consumer education, and community and industry leadership. Some of these take priority over financial goals (Quella et al., 2021).

The current study builds on previous research by assessing the views of agritourism practitioners alongside those of nonpractitioners and shining a light on agritourism in relation to fisheries, an emerging field called "aquatourism." Agriculture and fisheries in Maine and Vermont are heavily dependent on singular commodities under constant pressure from global economic forces. While these cultural landscapes attract tourists to New England, it appears that tourism directly returns less than 10% of the market value of dairy and lobstering back into these primary sectors. The disappearance of dairy farming in Vermont and lobstering in Maine, however, would have a catastrophic impact on the broader tourism industry in each state. How can farmers and fishermen capture more tourism dollars to sustain their viability? How else can tourism add value to these industries without detracting from production—their primary purpose—and the authenticity they contribute to rural character? This research starts the conversation around these complex questions by looking at how tourism mutually benefits agriculture and fisheries from the perspective of producers, and also suggests ways they can work in a less parasitic relationship within and outside of traditional agritourism development.

Applied Research Methods

Research Question

Producers who sustain New England's iconic landscapes capture a very small percentage of direct tourism expenditures in Maine and Vermont. From the perspective of those farming and fishing, in what other ways might tourism benefit producers? How might producers benefit more?

Interview Strategy

A case study approach was chosen to capture both a breadth and depth of perspectives on tourism.

Case studies play a critical role in generating context-dependent knowledge, particularly when used to describe the dynamic actions of individual actors. The same case can also generate information at different levels of analysis, e.g., the firm and the industry (Flyvbjerg, 2006). This approach is particularly appropriate during the early stages of research or to provide "freshness in perspective" to a well-researched topic (Eisenhardt, 1989, p. 548). Theory-building research ideally begins with no theories and no hypotheses to test, which helps mitigate interviewer bias.

The research team began with the goal of generating knowledge about two different cases: farming in Vermont and fishing in Maine. Initial interviews were conducted with six professionals representing government, academia, and associations to illuminate background research and selectively identify producers for interviews. Invitations were emailed to an initial list of eight producers and two producer-led organizations. To recruit additional subjects, a snowball sampling technique was used whereby producers were asked to recommend others. Recruitment continued for a period of six months until a balanced distribution of responses between states was reached, and the attainment of new insights was exhausted.

Semi-structured interviews were scheduled for 30–40 minutes via phone, Zoom, or in-person. Each subject was emailed a consent form and list of questions in advance. The interviews, which ranged in length from 25 to 75 minutes, consisted of nine open-ended questions. The interviewer was given "freedom to digress" to follow emerging themes (Lune & Berg, 2017).

Responses from a total of 17 people were collected, including seven farmers and one industry professional in Vermont and eight fishermen and one industry professional in Maine. To protect confidentiality, no names are reported in this article. Twelve respondents were women, and five, men. By industry, five were part of the dairy sector, five in lobstering, three in aquaculture, two in diversified agriculture, and one in fiber.

Of the 17 respondents, five did not consider themselves to be practitioners of agritourism or aquatourism. Of the 12 who did, practitioners participated in varying degrees, including direct sales; hospitality through food carts, pop-ups, restaurants, and lodging; education, including tours, farm stays, workshops, and retreats; entertainment, such as concerts; recreation, such as access to trails; and coordination and participation in culinary trails.

Analytic Strategy

The research team employed the principles of grounded theory to identify patterns and themes from the interviews (Glaser & Strauss, 1968):

1. Each interview was captured by detailed notes.
2. An inductive approach was used to open-code responses to each question, identifying themes within and across interviews.
3. Axial coding was used to connect latent meanings with broader themes, e.g., *regenerative agriculture* and *biodiversity* are examples of *environmental sustainability*.
4. A conceptual framework was developed, *Economic* and *Non-Economic Benefits*, with subcategories under each.
5. Interviews were selectively coded for a third time according to the conceptual framework, encompassing both manifest and latent themes expressed in response to any question, e.g., *a family-friendly atmosphere* is created through *Place-making*.
6. Only one instance of a theme expressed by a respondent was tallied.
7. Only themes expressed by at least one-third of producers were included.
8. Results were analyzed within and across cases.

Results

As shown in Figure 1, a variety of economic and non-economic themes emerged from the interviews. The top economic benefit from tourism was the opportunity to offer direct sales, while the top non-economic benefit was the opportunity to provide consumer education. Other economic benefits mentioned by interviewees included the opportunity to promote their company or industry brand, attract new customers, generate supplemental income, and create employment opportunities. Other non-economic benefits included the opportunity to

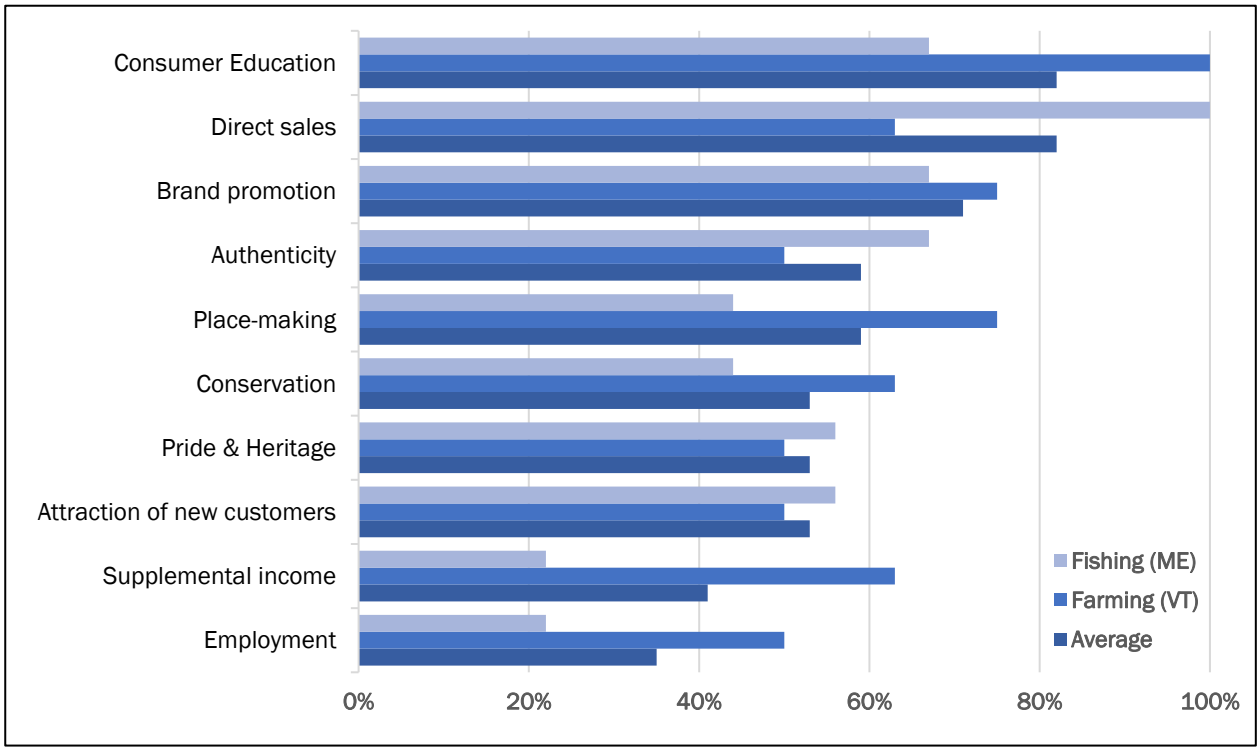
provide authentic experiences, create great places, showcase their conservation efforts, and highlight their family's pride and heritage.

Economic Benefits of Tourism

Direct sales. Five of eight Vermont producers and all nine Maine producers cited the opportunity to provide direct sales as an important benefit of tourism. Terms used to describe this theme included *financial input*, *direct-to-consumer*, *income*, *margin*, and *cash*, along with mentions of specific sales channels. The primary sales channel for farmers was the farmstand, whereas fishermen sold off the dock or from their own restaurants, food carts, e-commerce platforms, roadside coolers, or homes. While some respondents maintained website, Facebook, and Instagram pages, others advertised with just a phone number in a local directory. One Maine oyster farmer who did not advertise confessed that, "We do sell direct-to-consumers, mostly to locals and out-of-towners who have a second, third, or fourth home here. They find us on the web. We have a farm stand in our garage on a self-serve honor system. … People love it." For many producers, direct sales take out the middleman, offering them a higher margin that is a critical component of their business model. For example, one Vermont dairy farmer who derived 95% of revenue from wholesale described how they were able to capture a premium for selling retail ground beef from bulls culled from the herd, which helped them stabilize their income. "Otherwise, you don't get much for those cows," they remarked. "But we can feed our family and friends with food they appreciate. The [retail] business has grown every year. Plus, when tourists come to the store, they can feed chickens and see the cows." For fishermen, being in a tourist-friendly area translated to a bump in sales price during the high season of summer. Another benefit of tourism was the opportunity to feature local farm and fishery products besides their own, through either a farmstand or foodservice channel.

Brand promotion. Six of eight Vermont producers and six of nine Maine producers cited the opportunity for brand promotion as an important benefit associated with tourism. Terms to describe

Figure 1. Economic and Non-Economic Benefits of Tourism Cited by Producers



this theme included *reputation*, *image*, and *best in the world*. Some producers ascribed the benefits of brand promotion directly to their own business. For example, one Vermont farmer stated that their consumer-education efforts helped brand the farm, driving direct sales. Other farmers who did not offer direct sales still recognized that tourism facilitated sales in their industry. "We didn't get many direct sales from the tourists at [local resort]," explained one Vermont dairy farmer. "But we gained support for [national dairy brand] and that resulted in increased milk sales for [them]. We've traveled to events around the country with them and we want to be good stewards of the brand." Other producers recognized that the economic benefits of brand promotion extended to a variety of products in their industry. "Tourists want to support small local businesses," stated one Maine lobsterman. "They want to eat seafood from Maine—mostly lobster but the reputation extends to other species, like crabs, oysters, and fresh fish."

Attraction of new customers. Although many producers depend on a regular local market, tourism attracts new consumers who not only buy direct but eagerly attend special events. "We depend on repeat local residents, especially with raw milk," explained one Vermont dairy farmer. "That said, we can offer only so many cheesemaking workshops to local residents. So, visitors, especially second homeowners, come to our workshops and bring us weekend traffic." Four of eight Vermont producers and five of nine Maine producers cited the importance of tourism in generating a new audience of consumers to buy their products and services. Due to cultural differences, visitors add vitality to special events. "During the high season, 20% to 30% of the people who come here are from out of town. It's fun to meet people from away. This is not *Yankee* magazine. We are funky and authentic," explained another Vermont farmer. "People driving this part of the state will make a wrong turn and end up here. We blow their minds with a genuine experience. With the lambs in the field, it's a real community, and they connect with that brand." These special events play an important role for producers, attracting visitors from out of town, introducing newcomers to the community, and serving as the gateway to direct sales. While distance imposes a significant constraint on retaining tourists as regular customers, special events contribute to the culture of a community, influencing whether visitors return on vacation or purchase a second home in the area. The latter, however, contributes to development pressure, which was cited by producers as the greatest negative impact of tourism. "People come to Maine for vacation. Tourism augments the industry. But then people buy real estate because they like it here and that threatens the industry," explained one Maine oyster farmer. "With the working waterfront, there is always going to be that threat. We bought our house 20 years ago, and no local has moved in since then. But five or six out-of-staters have."

Supplemental income. Five of eight Vermont producers and two of nine Maine producers cited the importance of agritourism in generating supplemental income. Supplemental refers to income from channels beyond direct-to-consumer, such as guided tours, lodging and meals, and fees from recreation and special events. Technology platforms like Yonder and Airbnb Experiences have enabled producers to monetize an activity, such as a tour, that they used to give away for free. What starts out as an experiment can quickly turn into an essential driver of their business model. "1984 was the really bad year for dairy," recalled one Vermont farmer. "At first, we did it to get us through the downturn, but there has never been a year when the income wasn't critical to the season. … The cows can pay for the cows but someone has to pay for the family. For us, agritourism has been the family living component." The amount of supplemental income generated by agritourism varied wildly between respondents, ranging from 5% to 50% of sales. Some indicated that the pendulum has swung too far in the direction of agritourism. "People will push boundaries, send their kids out to the field, go into barns without permission," explained one Vermont dairy farmer who decided to cut back on special events. "At one time, we were hosting a potluck once a week. We also had concerts that would draw 20–30 right into our living room. With all of that activity, people started to look at us as a public space without boundaries."

Maintaining clear boundaries between public access and private living or commercial production spaces was paramount to producers practicing agritourism successfully and sustainably and harkens back to the warnings of Urry.

Employment. Four of eight Vermont producers and two of nine Maine producers described the importance of tourism in generating seasonal or year-round employment for locals. "If it wasn't for tourism, I couldn't be a farmer. My husband is in the construction industry, building houses for second homeowners. I can't make enough from farming to support my family," lamented one Vermont dairy farmer. "Without tourism, I would not be farming." Other producers found such demand for their agritourism enterprises that they were able to hire workers to manage or implement them. "During the high season, we host a weekly pizza night that draws about 100 people, with music and craft beer. We'll have 14 workers on the farm," described another Vermont farmer. "Between pizza night and the store, we anchor the town. Farms are places where community happens." For some producers, their "go-to" source for workers was family and friends, possibly because these jobs were seasonal or part-time. In other cases, producers desired an ambassador they trusted who reflected their values. Others were deliberate about growing their enterprise the way any small business might aspire. "We want to keep growing, but we need to find the right balance," stated one Maine oyster farmer. "What is the right level? So, you can still know everyone, but keep that startup energy."

Non-Economic Benefits of Tourism

Consumer education. All eight Vermont producers and six of nine Maine producers described the personal satisfaction they receive from educating customers. Terms used included *teach*, *engage*, *higher purpose*, *feedback*, *childlike wonder*, and *lightbulb moment*. While some were describing this connection as a regular outcome of their agritourism enterprise, others received personal satisfaction from an incidental encounter that they wanted to make more predictable and purposeful. For the most part, the establishment of a personal connection served as the driver for a more expansive agenda, whether hidden or explicit. "I get the personal satisfaction of touching people's lives. We create these emotionally powerful experiences that we hope will change their behavior later—eat local, choose organic, don't use pesticides. It's like a domino effect of human behavior," explained one Vermont farmer. Indeed, most were explicit about wanting to change consumption patterns, using terms like *mindset*, *choice*, and *behavior*. By changing hearts and minds, if only one person at a time, they believed that the benefits would accrue not only to their industry but for the betterment of the environment. "We want visitors to understand that the Maine oyster is as elite as the lobster and why Maine has the best oysters in the world. We also want them to understand aquaculture as a whole, to turn to the water and learn how we grow the sustainable seafood that's important to the planet," declared one Maine oyster farmer. "If you look at it on a micro-scale—one pound of beef versus one pound of farm-raised salmon, fish is more sustainable. But the bivalve is the most sustainable protein on the planet because it also improves water quality." In this way, producers leveraged their personal satisfaction in educating consumers to the level of a mission, especially when they perceived that the public does not have accurate information. "My big goal … is to talk to people. People have come up to [me] and said, they can't believe I'm a fisherman: I must hate the environment. Others have said, 'How do you sleep at night?' There's so much [negative] propaganda out there," lamented one Maine lobsterman. Removing the veil of mystique around lobstering might help change public policy. Such a campaign was coined by one respondent as, "Save a lobsterman."

Authenticity. The desire to educate consumers is deeply connected to authenticity. "We are the opportunity to engage people and teach them where their food comes from. People have the desire to connect and engage with something that's authentic," declared a Vermont dairy farmer. "Sometimes, our visitors tell us that they gave the kids a choice between Disney World or the farm. Obviously, the ones that came chose the farm. There are no crowds and no 45-minute wait lines." Four of eight Vermont producers and six of nine Maine

producers described the opportunity to engage visitors in an authentic experience as a valued benefit of tourism. Terms used to describe this theme included *real*, *reality*, *experience*, and *genuine*. Some producers described authentic interactions with customers as part of scheduled agritourism activities. "We wouldn't be open if we didn't have tourism. Seafood does not have a long shelf life: you have to move it. … There's no smoke and mirrors. We think it's important to be authentic and true to who you are. It's classic and picturesque," explained the wife of one lobsterman, who operated a trap-to-table restaurant. "When he's lobstering, my husband is tired, and he is dirty. It's so far removed from the reality where people are traveling from. I always make it a point to ask where my customers are coming from. Virtually all of them work 9-to-5 in big metropolitan areas. They ask, 'How long have you been out? You haul traps with your hands?' Lobstering is so far removed geographically and culturally from what they do." Similar to brand promotion, the authenticity associated with direct interaction with farmers and fishermen was considered by respondents to be part of the genuine brand attraction of Maine and Vermont.

Place-making. Six of eight Vermont producers and four of nine Maine producers described the quality of place they were trying to build through agritourism. Terms used to describe this theme included *family-friendly* and *kid-friendly* along with *bond*, *mission*, and *anchor*. The mix of tourists with locals adds an intangible vitality to special events. "There are three overlapping spheres. True locals. True tourists. Then there's the middle group, who have some connection and have chosen to make Maine their home. We need to keep all three of those spheres," explained one Maine oyster farmer, who recognized their goal as engagement and not entertainment. "We really want the community aspect so that we get people coming back year after year for a cocktail hour on Saturday night or to learn how to make a lobster roll. … It's not super templated. It's not a corporate structure but collaborative by design." Other producers described the importance of tourism in improving the physical quality of place in their villages and downtowns. "It used to be deserted down here. The waterfront was more industrial, with several chicken processing plants. Now people will come down for a walk with their dogs and it's more of a destination," described one Maine lobsterman.

Pride and heritage. Four of eight Vermont producers and five of nine Maine producers described how tourism enabled them to share their pride in sustaining the heritage of their family. Terms used to describe this theme included *proud*, *privileged*, *pioneer*, *passion*, and *honor*, along with the generations of family members before them. For the latter, pride was grounded in the heritage of their background. "My great grandfather was a sword fisherman. My grandfather was a lobsterman. My father was a lobsterman. My son is probably going to be a lobsterman. So that's five generations," explained one Maine lobsterman. "People will ask, 'How do you get to be a lobsterman?'" For some, pride was simply the act of being observed, whereas others described the pride associated with visitor interaction. "There is a couple from New York City who live up the road. They started with pizza night, then the CSA, and now they shop every day at the store. Their baby was born on the last CSA pickup of the year. On their way home from the hospital, they stopped by the farm and picked up their share. We got to meet the baby," recalled one farmer. "So, we are 'their farm.' That is truly an honor. We supply their whole diet." For this Vermont farmer, the emotional connection generated by community engagement provided validation during times of chaos.

Conservation. Five of eight Vermont producers and four of nine Maine producers described the opportunity to showcase their efforts to protect the environment as an important benefit of tourism. Terms used to describe conservation practices included *preservation*, *sustainability*, *biodiversity*, *regenerative agriculture*, *stewardship*, *climate change*, and *lushness*, along with concern for rural working landscapes and the elimination of pollution. This environmental ethic is part consumer education and part conservationist. "The intangible [benefit] is creating a positive experience for visitors with a livestock and dairy farm. … A lot of people have a negative view of livestock because they contribute to climate

change," explained one Vermont dairy farmer, "but our farm embodies the tenants of regenerative agriculture. We sequester carbon, which has beneficial impacts for people down the watershed." Although many respondents enjoyed connecting with customers, their ultimate goal was not only to change behavior but to model the change they wanted to see in the world, where regenerative agriculture is the new organic. "You see it in the biodiversity of the species and the lushness of the grass and the way the wildlife has come back," described one Vermont dairy farmer. "We see it especially in the pastureland and the return of clovers, which has gone bonkers." For these and other farmers, the desire to educate is ultimately rooted in a conservation ethic. "We are trying to set an example of how to farm in a way that preserves the environment," explained another Vermont dairy farmer.

This conservation ethic is also strong on the waterfront, where it manifests itself as a zero-tolerance policy on pollution. "All the lobstermen are into preserving the land and very much against pollution of the ocean from plastics and oil," described one Maine lobsterman. "The wharf down here is really good. If there is even a small drop of oil, they are ready with Dawn [dish detergent] to clean it up. We work really hard to preserve the environment." While many fishermen welcomed the opportunity to demonstrate by example, they were vocal about the negative impact of some parts of the tourism industry on their ability to earn a living, e.g., cruise ships dumping raw sewage and megayachts cutting through their fishing lines.

Discussion

Given their vulnerable markets and fragile landscapes, exploring how agriculture and fisheries might capture more of the tourism sector's rising prosperity is important. Producers interviewed indicated that tourism can benefit farmers and fishermen in a variety of ways that are not well-reflected in sales data—ways that might be further supported in order to develop a more positive symbiosis between these industries.

The cultural landscapes sustained by agriculture and fisheries are positive externalities that form the basis of the Vermont and Maine experiences. Producers recognize that they are the subject of the tourist gaze, driving tourism to rural working landscapes even if they are not directly engaged in agritourism or aquatourism. "Lobstering is a huge interest for a lot of visitors. They want to try it and taste it, especially the softshell lobster. They come for the experience of eating seafood at restaurants and seafood shacks on the water where they can enjoy a nice view," explained one Maine lobsterman. "They stop in the parking lot and take pictures of the fishing boats. They always want to come over and talk to me." While the tourist gaze risks the loss of authenticity, those interviewed recognized it as an opportunity for engagement and consumer education.

Besides attracting tourism, producers perceive that they form the bedrock that keeps towns and villages alive for locals and visitors alike, especially in times of crisis like the COVID-19 pandemic. These perceptions were mostly discussed within a positive framework and described as a source of pride, within limits. "We are that literal postcard with the rolling hills dotted with pastures. Although we have seen breakdowns in the local food system during COVID, it's the dairy economy that built the agricultural railroad. We are the working capital for Vermont farms," declared one Vermont dairy farmer. "Dairy keeps the feed stores in business and the fire department staffed. This is all part of a rural resiliency that's taken a lot of hits."

However, whether measured by GDP, jobs, or wages, revenue from tourism in Maine and Vermont greatly exceeds that from agriculture and fisheries. Moreover, producers do not directly capture a share of the rising prosperity of tourism unless they fundamentally reorient their business model toward agritourism and aquatourism, which is not a viable option or desire for many. Without a mechanism beyond agritourism to monetize these positive externalities, other solutions are needed.

State Subsidies for Farming and Fishing

One solution is a subsidy to maintain working rural landscapes. However, a state subsidy has not been done on a significant scale before. In fact, only one respondent called for a direct subsidy of tourism dollars to producers. "A portion of tourism dollars should be returned to farmers to maintain Vermont," suggested one farmer. "Vermont should

say, 'Here is your set lump sum from the state as a maintenance for tourism.' 'We believe in our local food system, we love our farms,' but it's just talk. There is no financial or economic infrastructure behind it."

Another option is to incentivize modernization. An emerging example is the North Atlantic right whale situation, which was raised by most of the lobstermen interviewed. Scientists estimate that there are fewer than 350 right whales left (National Oceanic and Atmospheric Administration, 2022); the species has been decimated by ship strikes and rope entanglements in the U.S. and Canada. On August 31, 2021, the National Marine Fisheries Service enacted a seasonal closure from lobstering of a 950-square-mile area in the Gulf of Maine, which was upheld by the U.S. Supreme Court. While public relations were not enough to override federal policy, it has spurred Maine lawmakers to action, with consideration of a US$30 annual million fund, partly derived from tourism revenue, to help lobstermen invest in ropeless traps (LaClaire, 2022). If funded, this program would represent a direct subsidy to producers, which would be a marked change from Maine's track record of providing indirect subsidies through actions like land protection.

Land Conservation for Agriculture and Fisheries

While producers enjoyed opportunities to showcase their conservation efforts, they also recognized that tourism generated development pressure that negatively affected their industry. "We have to pay for parking, and we have to pay for the berthing," noted one lobsterman. "These are traditional Maine occupations, but we are getting priced out." Indeed, over 70% of respondents described how competition for real estate was a real threat to their business. These challenges have only intensified during the pandemic, with an estimated one-third of Maine real estate listings swallowed up by homebuyers from out of state (Landry, 2021). Competition is robust for waterfront and farmland alike. "Today I saw more plates from out-of-state than Vermont. People are buying up all of the houses and all of the land. Farms and land trusts can't compete with them," described one dairy farmer. "You have to draw lines and prioritize the viability of small farms." Some producers faced a paradox: with tight production margins, they relied on pluriactivity, such as employment in the residential construction sector, to provide a second income. Yet these new homeowners might fragment parcels of land needed for pasture or object to the noises and odors inherent to farming operations.

One method of preserving land is the purchase of development rights to provide permanent protection. Since 2008, the Land for Maine's Future Program has invested millions of dollars to permanently protect 29 waterfront properties totaling 44 acres, including wharves and piers that provide access to the water for working fishermen, along with space for fishing-related co-ops. Increasingly, such projects are occurring through nonstate players. In 2021, the Gulf of Maine Research Institute (GMRI) purchased Union Wharf in Portland for US$12.35 million. Built in 1793, the wharf is described as a "firewall" between the tourism-focused Eastern waterfront and the industrial-focused Central zone. While not the highest bid, GMRI's was chosen because of its vision to sustain the working waterfront, including a commitment to provide wharf space for fishing vessels and their suppliers, with costs for maintenance and improvements underwritten by tenants on the upper floors engaged in the "blue economy" (Woodard, 2021) —"the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystem (United Nations, n.d., para. 1).

Beyond states and nonprofits, another way to raise revenue is by actually charging visitors for the positive externalities provided by farmers and fishermen. For example, this fee could be tacked onto a lodging charge. Research demonstrates that visitors are willing to pay a modest sum for these positive externalities if there were a mechanism to compel their contribution (Yadav et al., 2013). Such a funding mechanism also benefits those not involved in agritourism or aquatourism.

Marketing and Branding

When asked how the tourism industry could support them, practitioners of agritourism and aquatourism desired more state and industry support for marketing and branding. For example, the

Maine Aquaculture Association and the Vermont Cheese Council both sponsor culinary trails that list over 50 sites that welcome the public for tours, direct sales, samples, and meals. These trails not only drive visitation to individual farms; they extend the benefits of brand promotion to places and regions, such as the Damariscotta River in Maine, known as the "Napa Valley" of oysters. "Having so many options through the Maine Oyster Trail keeps more people interested in oysters. Although we are all competitors, it will raise all boats," explained one Maine oyster farmer. "Someday, it could be like wine country, where the *terroir* supports a certain flavor profile."

Trails not only showcase the industry but reinforce each state's brand. "Vermont benefits from having a national ethos built around fresh air and clean water," explained one Vermont dairy farmer. "It's rolling hills with little villages, along with that community feeling." On an annual basis, over 20,000 unique visitors explore the Vermont Cheese Trail website, which exposes the brand to a global audience even in the absence of visitation. In fact, not a single cheesemaker closed during the pandemic, with those that sold online faring the best. This example offers some evidence that the benefits of culinary trails accrue even to producers who are not open to the public and do not participate in agritourism directly. To achieve broader economic impact, state tourism dollars should invest in technology platforms that make it easier for visitors to discover these experiences and plan their itineraries around them, along with increasing marketing efforts to facilitate the purchase of New England products once they return home as a way of reliving their vacation experience. In addition, digital directories could highlight where to buy the products of working farms and waterfronts, whether or not they participate in direct sales.

Cooperative Infrastructure

Of the practitioners interviewed, 60% were making plans to increase their aquatourism and agritourism ventures. Despite this enthusiasm, offering tours does not make economic sense for every producer. "I've got 800 traps. Every day, I haul 200 to 300 of them," explained one Maine lobsterman. "I get up at 4 AM, on the boat by 5, then I get back by 3 PM. Then it's bait and fuel after that." Besides a schedule that places them away from shore for a good part of the day, fishermen are limited legally in their capacity to transport visitors. Whereas ambitious farmers could give tours to 50 people at a time, most fishermen hold a "6 pack" license that limits them to six people on their boat at a time. Fewer than 10 of Maine's 4,500 lobstermen offer tours by boat. Another challenge is a physical layout that precludes engagement. "I work out of the town dock. It's a really busy, intimidating environment for a tourist. Not a good time to communicate," explained one Maine lobsterman, continuing "They aren't really allowed on the dock." The mystique of the lobstermen might even be reinforced by the absence of engagement; they leave in the early morning hours when tourists are sleeping, they operate from industrial wharves that do not permit visitors, and they rarely offer tours to the public. Unless working waterfronts are positioned within view of the public gaze, interaction might be limited to a telescopic lens from a ferry boat.

Potential solutions include the creation of tourist infrastructure that benefits producers but does not make them create a new venture. This model is already at work in Maine's oyster industry, where tour operators who are not producers themselves run boat and kayak tours that stop at selected oyster farms for a spirited talk with a fisherman and a sampling of fresh oysters. Thus, the tour operator assumes the risk while the producer benefits from a flat fee for their time, retail price for their oysters, and the opportunity to sell both swag and oysters-to-go. This model is similar in spirit to a foodie tour where the operator stops at various restaurants, paying retail price for samples they make available to a large group of people.

On a microscale, this model has been deployed by boat operators who provide a demonstration of lobstering using an educational license and/or led by a retired producer. How might this scenario be applied to working lobstermen? Perhaps a tour operator could narrate from a separate boat, at a safe distance, conducting an interview during an appropriate pause in harvesting. Another model might apply the demonstration approach on a boat owned in common with producers or create a safe place on a working dock where direct sales and/or

consumer education can be offered. While lobster pounds have traditionally served this role, these places rarely offer the opportunity for direct interaction with fishermen. Another option could involve work in exchange for education, such as "fisherman for a day," where tourists voluntarily do chores during an overnight lodging stay. Another concept that might be expanded is pick-your-own operations, where visitors pay to harvest product. Although such a model might require training, a higher charge, akin to a charter fishing expedition, could make the investment worth it.

Conclusions

The perceived quality of productive landscapes drives tourism to working waterfronts and rural areas in New England. While producers recognize that they play an important role in shaping and sustaining these iconic landscapes, farmers and fishermen do not appear to receive much in the way of direct monetary benefit from tourism. Tourists purchase less than 10% of the bounty from working landscapes, accounting for less than 4% of tourism's total revenue. In-depth interviews with producers in Maine and Vermont reveal that there is potential for a mutually beneficial relationship between tourism, agriculture, and fisheries that leans toward symbiosis. To accomplish this goal, public policy could redistribute the benefits of tourism to include direct subsidies to producers, preservation of working landscapes, marketing and branding activities, and investment in cooperative infrastructure. As a next step, a descriptive survey could be distributed to a larger set of farmers and fishermen through their industry associations to test the viability of these policy recommendations.

Additionally, this exploratory study builds on the work of Tew and Barbieri (2012) and Quella et al. (2021) by validating that fishermen participate in aquatourism for many of the same reasons that farmers participate in agritourism, while also introducing new motivations, such as the desire to promote the brand, authenticity, and conservation practices of their industry and state. This study is one of the pioneers to use an expanded definition of aquatourism, which has traditionally referred to such watersports as sailing and diving, to include educational, hospitality, and recreational experiences led by working fishermen. Aquatourism activities led by working fishermen in this study included direct sales on the dock and farmstand as well as through e-commerce platforms; food-service through catering, restaurants, food carts, and pop-ups; special events, such as tastings, festivals, and workshops; and boat tours with product samplings.

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The school food solution: Creating a healthy school food environment with Canada's Food Guide

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Abstract

In 2021, Canada's federal government made a historic commitment to develop a national school food policy. Among overlapping challenges of increasing food insecurity, rising food costs, and the impact on food systems from climate change, there is now an opportunity to create a school food environment that ensures universal access to nutritious foods and supports sustainability in food systems. A universal school food program can ensure that all children, regardless of income, access the recommended nutritious foods and can promote climate-friendly diets. Such school food programs can also support local farmers and regional economies. In this paper, we outline the policy context for the new Canada's Food Guide and the researched benefits of school food. We argue that Canada's Food Guide can support a healthy school environment that is equitable and that promotes sustainability in the food system by embracing founding principles of diet equity and sustainability. Our concluding discussion outlines issues to be addressed in implementation.

Keywords

School Food, Food Policy, Canada's Food Guide, Sustainable Food Systems, Policy Implementation, Nutrition Equity, Food Environment, Climate Friendly Diet, Plant-Based, Local Procurement

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Introduction

In 2019, the Government of Canada created the country's first-ever national food policy. Its six "priority outcomes" included "improved food-related health outcomes" to reduce the burden of nutrition-related chronic disease in the country and "sustainable food practices" to reduce the impact of the food system on the climate and environment (Agriculture and Agri-Food Canada, 2019). Also in 2019, the Minister of Health released a revised version of Canada's Food Guide as part of Canada's Healthy Eating Strategy. These nutrition guidelines recommend that Canadians eat less processed foods and more plant-based proteins, as well as fruits, vegetables and whole grains (Health Canada, 2021). The revised Canada's Food Guide encourages people to cook at home more often, incorporate cultural traditions into mealtimes, and enjoy food with others (Health Canada, 2021).

Then, at the end of 2021, the federal government pledged to change Canada's status as the only G7 country without a school food program. The commitment was to "develop a National School Food Policy and work toward a national school nutritious meal program" (Office of the Prime Minister of Canada, 2021-a, para. 23; 2021-b). A national school food program allows Canada to join with Finland, France, Senegal, Honduras, and Iceland in the School Meal Coalition, a group of over 60 governments and 50 U.N. agencies and organizations committed to "a healthy meal for every child, every day" (School Meals Coalition, n.d., para. 1). The revised Food Guide ought to be an integral component in the implementation of this national policy.

On the backdrop of these three food policy directives, we argue that a national school food program based on the 2019 Canada's Food Guide should be informed by the founding principles of diet equity and sustainability. These principles have the potential to allow more children to eat the recommended healthy foods and also to promote sustainability in the Canadian food system. Such an approach would build on the successes of other countries and have the potential to innovate in ways that could inform other jurisdictions' approaches to school food.

The current policy environment in Canada presents this opportunity (Carbone et al., 2020). A similar opportunity was missed in the mid-1940s during the Second World War when many other Western industrialized countries developed their programs (Carbone et al., 2020; Ruetz & McKenna, 2021). COVID-19 has exposed inequities in Canada's food system with regard to food access (Ayer, 2020) and has highlighted food insecurity issues related to income inequality (Statistics Canada, 2020; Tarasuk & Mitchell, 2020). Also, in 2021, forest fires, extreme heat, and devastating flooding in several provinces drove home the 2021 Intergovernmental Panel on Climate Change (IPCC) report, which warned of "widespread, rapid and intensifying" (2021a, p. 1) climate change. It included a call for immediate action (IPCC, 2021b) to protect many aspects of social systems, including food. Parts of the Canadian food system were directly affected by these extreme weather events, as crops and livestock were lost and food supplies were restricted (Woo & Hui, 2021). This reminded Canadians of the food system's vulnerability to climate events at a time when inflation has been raising food prices (Charlebois et al., 2021). These concurrent and overlapping food-related challenges underline the importance of establishing a national school food program that can respond to the current context. We outline our proposal by firstly summarizing the policy context for the new Canada's Food Guide. We provide an overview of the researched benefits of school food programs that have bolstered recent advocacy efforts in Canada. Next, we reason how a school food program based on Canada's Food Guide has the potential to promote a more healthy and just school food environment by embracing the founding principles of diet equity and sustainability. Our concluding discussion outlines issues to be addressed.

Background and Context

2019 Canada's Food Guide

When the revised Canada's Food Guide was launched in 2019, its plant-based approach diverged from past editions. The new focus on proteins from plants and its centering of water as the drink of choice inspired some to cast it as a

push toward veganism (Kirkey, 2017). The dairy and livestock industries voiced concern over Canada's Food Guide turning away from animal proteins as important sources of nutrients (Rieger, 2018). Conversely, the Dietitians of Canada (2019) and the Heart and Stroke Foundation (2019) praised the document for reflecting the position of nutrition experts and for drawing on evidence-based research rather than industry-commissioned reports (Lavigne & Lengyel, 2019; Wilson & Shukla, 2020). In emphasizing plant-based proteins, the Canada's Food Guide aligns with both the Planetary Health Diet created by the EAT-Lancet Commission on Healthy Diets From Sustainable Food Systems (Lancet Planetary Health, 2019) and the position on diet and sustainable food systems articulated by Nordic countries (Wood et al., 2020). Similar to the Brazil Food Guide (Ministry of Health of Brazil, 2014), this revised guide not only made new behavioral recommendations to Canadians but also cautioned about the impact of food marketing (Health Canada, 2021).

Some scholars and advocates criticized Canada's Food Guide for failing to consider the affordability and accessibility of culturally appropriate and healthy foods (Dibe, 2020; Duignan, 2019; Wilson & Shukla, 2020). A national survey conducted at the time found that there was a perception among respondents that the recommended foods would cost more and that they did not match people's preferred diets (Charlebois et al., 2019). Further, many Indigenous and racialized households are unable to meet the recommendations due to higher rates of poverty (Dhunna & Tarasuk, 2021; Olstad et al., 2021; Tarasuk & Mitchell, 2020). For example, 28.4% of Black households experience food insecurity compared to only 10% of White households in Canada (Dhunna & Tarasuk, 2021). And according to the Government of Canada, 27 First Nations communities had "long-term drinking water advisories," meaning a lack of access to water (Government of Canada, 2022). The Canada's Food Guide recommendations alone are not able to advance food security without significant investment in social policy and restitution for structural racism.

School Food in Canada Today

With no national school food program in Canada, provincial and territorial governments, school boards, not-for-profit organizations, and charities currently plan and implement the existing patchwork of school food programs and policies (Critch, 2020). Although the federal government provides monetary support to provincial and territorial governments (Hernandez et al., 2018; Martorell, 2017), governments, charities, and foundations fund the current system through grants, leading to different school food programs competing against each other for limited funding while relying on volunteers and donations (Ruetz & McKenna, 2021; Valaitis et al., 2014). This reliance on precarious funding sources is higher in lower-income and racialized neighborhoods with higher degrees of marginalization and inequitably unhealthy food environments (Toronto Public Health, 2015). It has been argued that this current patchwork of programs places the burden and responsibility onto marginalized communities and families themselves (Allen & Guthman, 2006; Carbone et al., 2020; Ruetz & McKenna, 2021).

Currently, almost three-quarters of Canadian children bring lunch from home (Tugault-Lafleur et al., 2018). While a small number acquire lunch at school, as some institutions have cafeterias and food programs, other students seek food off campus (Tugault-Lafleur et al., 2018). This includes fast-food joints, corner stores, and other rapid-service food businesses, judging from the noon-hour crowds of teenagers near public high schools. Notably, Tugault-Lafleur and colleagues (2018) found that 5.9% of students do not eat any lunch at all. In 2017, the UNICEF Report Card on child well-being ranked Canada 37th out of 41 high-income countries in food security and nutrition (Wolff et al., 2017). A vocal consortium of academics and activists (including the Coalition for Healthy School Food, with which co-authors have collaborated) has been advocating for the federal government to start a universal and national school food program; this program would provide nutritious food for every child in the public school system, no matter their income level or where they live in the country (Coalition for Healthy School Food, n.d.). While the provision

of education in Canada is under provincial jurisdiction, advocates point to the 1.2 million Canadian children who live in food-insecure households (Tarasuk & Mitchell, 2020) who would benefit from a federal-level policy.

Documented Benefits of School Food Programs

School food advocacy builds on the benefits of meal programs documented in the literature. Canadian research shows that school food programs with nutrition education and standards increase children's nutrition knowledge and willingness to try fruits and vegetables, which can have lasting individual and population health benefits (Colley et al., 2019). Likewise, school food programs in Europe are associated with increased consumption of fruit and vegetables when nutrition education is included in the program (Van Cauwenberghe et al., 2010). Implementing school food programs is also associated with improved behavior and academic performance (Anderson et al., 2017; Kleinman et al., 2002). These benefits were echoed in a systematic review by Cohen et al. (2021). They found that universal free school meal programs in developed countries are associated with improvements in school attendance, academic performance, the nutritional quality of children's diets, and food security status. Further, advocates argue that a national school food program can help remedy childhood exposure to highly processed foods (Macari et al., 2019). In Canada, over half of children's and adolescents' total energy intake comes from ultra-processed foods (Polsky et al., 2020). Moubarac and colleagues (2013; 2017) found that consumption of ultra-processed foods has increased steadily while consumption of unprocessed foods has been declining in all sociodemographic groups. However, food-insecure households are associated with increased nutritional vulnerability and are more likely to have poorer diets (Kirkpatrick & Tarasuk, 2008; PROOF, n.d.).

In addition to supporting population health goals, school food programs have been structured to support food systems goals. Some countries with national school food programs–such as Brazil (Ruetz & Fraser, 2019), South Korea (Gaddis & Jeon, 2020; Ting, 2020), Scotland (McKendrick & Cathcart, 2021), Finland (Ahponen, n.d.; European Commission, n.d.-a), and Italy (European Commission, n.d.-b; Municipality of Rome, Italy, n.d.)—have designed meal programs so that they support regional food economies and sustainable agriculture. For example, in Italy and parts of France (Coalition for Healthy School Food, 2021a; Elton, 2013), ingredients for school meals are procured from organic farms in the regional foodshed. These linkages between regional agriculture and school meal programs have been found to provide farmers with a steady income and provide fresh and nutritious food to children (Allen & Guthman, 2006). Results from some farm-to-school programs also indicate a positive impact on the nutritional quality of food and students' nutrition self-efficacy and willingness to try fruits and vegetables. There are, however, mixed findings about whether farm-to-school programs increase fruit and vegetable consumption, with some studies finding positive impacts and others reporting no difference (Prescott et al., 2020).

In Canada, some existing school food programs promote local agriculture and short supply chains. The Ontario Student Nutrition Program ran a Tasty Ontario Tuesdays program from 2017 to 2018. The program provided more than 40,000 students from 150 schools with local fruits and vegetables, contributing CA$55,000 of produce purchased from local Ontario farmers (Ontario Student Nutrition Program, n.d.; Ruetz & Smithers, 2018). Farm to Cafeteria supports programs that connect farms with institutional food services, including over 1,000 Canadian schools, spending roughly CA$16 million on local food purchases per year (Farm to Cafeteria Canada, n.d.). In Alberta, the Nanâtohk Mîciwin program, run by Maskwacîs Education Schools Commission (MESC), provides healthy meals for all 11 MESC schools, supports local food production, and builds relationships between local farmers, schools, and community partners (MESC, n.d.).

The School Food Solution

Schools offer an ideal setting to improve diet. Children spend a large proportion of their day in class and consume, on average, one-third of their energy intake during school hours (Hunter et al., 2020; Tugault-Lafleur et al., 2017). This is one reason

why the World Health Organization (2012) identified schools as a key player in the global promotion of public health. Canada's Food Guide has the potential to support an equitable healthy school environment that promotes sustainability in the food system if it is informed by the founding principles of diet equity and sustainability.

Diet Equity Through Culturally Appropriate Food and Nutrition

Canada's Food Guide provides evidence-based nutrition standards for school food that, in a universal program, can ensure all public-school children in Canada receive a nutritious meal regardless of their income or neighborhood. The development of nutrition standards for schools has been demonstrated to optimize student nutrition (Critch, 2020; Foster et al., 2008; Gearan & Fox, 2020; Jaime & Lock, 2009; Tugault-Lafleur et al., 2019; Vereecken et al., 2005; Wojcicki & Heyman, 2006). School nutrition standards influence the increased intake of fruits and reduced intake of saturated fat and sodium (Micha et al., 2018). With mandated nutrition standards in India, national school food programs have led to better nutritional status and intergenerational nutrition benefits (Chakrabarti et al., 2021; Chutani, 2012; Laxmaiah et al., 1999). In Sweden, nutrition standards have led to higher nutrient intakes (Persson Osowski et al., 2017). Similarly, school food nutrition standards in South Korea (Gaddis & Jeon, 2020; Ting, 2020) and Finland (Ahponen, n.d.; European Commission, n.d.-a) allow children to have nutritious meals daily. Further, marginalized neighborhoods often have lower access to healthier food stores—such as in Canada's largest city, Toronto (City of Toronto, 2014). These neighborhoods have a higher need for school food programs (de Wit, 2012). In Canada, nutritional health is inequitably distributed, with the quality of diets and food security reported to be lower among children in low-income, racialized, Black and Indigenous households (Olstad et al., 2019, 2021; Tarasuk & Mitchell, 2020). Tugault-Lafleur et al. (2019) found that the diet quality of foods consumed by Canadian students during school hours in 2015 was lower among students from food-insecure households compared with those from food-secure households.

A school food program based on Canada's Food Guide can help to address these inequities. Importantly, a *universal* program ensures that no one is left behind, regardless of where they live or which public school they attend. Children who live in households where adults must choose between paying rent and covering the cost of food can be sure to have access to healthy foods at school. Children in neighborhoods with unhealthy food environments, where the cost of healthy foods exceeds the price of highly processed options, can also count on eating well at least once a school day. That means that children who do not have the same dietary advantages as those raised in families with well-stocked pantries and fridges are not nutritionally deprived. While it would not replace income-based solutions to food insecurity, a universal school food program based on Canada's Food Guide would help reduce the diet inequities experienced by marginalized communities (Haines & Ruetz, 2020) and contribute to a broader social safety net.

There is also an opportunity for a new universal school food program to address some of the criticism of the 2019 Canada's Food Guide concerning its challenges in reaching culturally diverse, racialized, and Indigenous populations with its dietary recommendations (Barco Leme et al., 2022; Duignan, 2019; Wilson & Shukla, 2020). Some observers were concerned that the Canada's Food Guide image of a "healthy plate" presented in the style of Euro-Western cuisine did not represent diverse understandings of nutrition, food cultures, or cuisines. Rather than taking a Eurocentric one-size-fits-all approach to food (Wilson & Shukla, 2020, p. 203), a school food meal program can apply the Canada's Food Guide's principles of healthy eating to a variety of cuisines through community engagement. School food programs can be designed in partnership with local communities, allowing for the expression of food culture in tandem with the food guide. As mentioned, the Nanâtohk Mîciwin program in Alberta demonstrates how community-led programming can incorporate Indigenous foods, traditions, and cultures when developing healthy menus (MESC, n.d.). Also, engaging multiple diverse Indigenous community members is essential in program plan-

ning; as Johnston (2019) explains, each Indigenous community has their unique traditional diets based on their culture and territories.

Other countries, such as France and Italy, use the school meal program to educate about food culture. This approach could be adapted to the Canadian context, where children from diverse cultural cuisines who attend the same school might come together and share a meal at lunch (Rossi et al., 2021; Vieux et al, 2018). The approach would have to be tailored to the disparate foodsheds of each province, taking into consideration climate, geography, and food supply. While a nationally funded program that is locally responsive is a policy feat, in Scotland, federal funds are distributed to local councils that organize catering in schools (Coalition for Healthy School Food, 2021c). With the 2019 Canada's Food Guide serving as a nutritional compass, school food programs led by community members can determine the menu. In doing so, they can adapt nutrition standards to the distinct cultural food practices of their diverse communities as well as the constraints and opportunities of the local foodshed.

Sustainability in Food Systems

School lunch programs can also support sustainable food systems (Oostindjer et al., 2017). It has been argued previously that a school meal program in Canada could help to promote sustainability transitions in the food system (Kirkpatrick et al., 2019). Canada's Food Guide, here too, offers direction. In promoting a plant-based diet, the 2019 Canada's Food Guide has been said to promote a climate-friendly diet. By turning away from meat and dairy, it de-emphasizes the dietary importance of some of the most climate-intensive categories of foods. Thus, Canada's Food Guide forwards sustainability in diet. A universal, national school meal program based on this document could have the potential to offer not only more equitable access to healthy foods, but also offer the promise of supporting sustainability in food systems. A school menu that is low in greenhouse gas emissions could center on vegetables, white meat, and legumes, as proposed by Rossi et al. (2021).

Feeding children chili made with kidney beans, as opposed to ground beef, is likely a carbon-positive decision—particularly if the beef was raised in a carbon-intensive farming system (Broom, 2019). However, to ensure that a universal national school food program meaningfully supports a climate-friendly diet, one would have to consider not only the nutritional content and type of food—kidney beans versus beef—but also the environmental impact and sustainability of the food system that produced it (Elton & Cole, in press). Not all plant-based food is good for the environment; almond milk is an example of a plant-based food with a high environmental cost (Winans et al., 2020). Conversely, livestock agriculture oftentimes is a key component of small-scale regional farming, providing manure used as fertilizer for crops and animal proteins that, when sold, offer on-farm income for farms dedicated to agroecology of the kind that is often found in rural areas across the country (Elton, 2013). To truly forward sustainability, a school food program would need to rely on the 2019 Canada's Food Guide and consider what evidence-based sustainable food systems look like in a particular region. This raises questions about how best to evaluate the sustainability of a nationally funded, locally administered program. In other countries, such as Germany, the government oversees sustainability in meal planning. In that country, five federal ministries, including the Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection, contribute to the design of sustainable and healthy menus (Coalition for Healthy School Food, 2021b). In Scotland, the nonprofit Soil Association has developed Food for Life Scotland, which collaborates with local authorities and suppliers to ensure school meals are sustainable and healthy (Coalition for Healthy School Food, 2021c).

National governments have structured school food programs to support not only kids' nutrition and sustainability but also the regional economy. In France, the government legislated the food program to support small-scale, regional farmers. The motivation is rooted in the belief that public procurement can have social and economic benefits (Swensson, 2018). A similar approach has been taken in Brazil, where governments have designed school food programs to support agroecological

transitions to more sustainable farming through the National Policy for Agroecology and Organic Production (Resque et al., 2019). There are other jurisdictions too, including in North America, where local procurement is key to lunch programs (Resque et al., 2019; Watson et al., 2018). These are just some of many well-studied examples of farm-to-school procurement programs that can inform a Canadian strategy.

Finally, following Canada's Food Guide recommendations offers the potential to further other food-related social goals. A focus on sustainability could include promoting food literacy and environmental education (Hernandez et al., 2018; Kirkpatrick et al., 2019). It has been argued that a successful school food program must include a component of food literacy (Haines & Ruetz, 2020; Hernandez et al., 2018). The integration of education based on Canada's Food Guide into a food program has the potential to help educate children about food, healthy eating, and food systems, too (Bergman et al., 2020; Haines & Ruetz, 2020; Hernandez et al., 2018; Lucas et al., 2017).

Concluding Discussion

A school food program based on Canada's Food Guide has the potential to promote a more healthy and just school food environment by building on the founding principles of diet equity and sustainability, as we have reasoned. While generations of Canadian children have not had the benefit of a national lunch program, there is a silver lining in designing a program at this moment in history, when there is awareness of the structural and social causes of food inequity, including anti-Black racism (Roberts, 2020), cultural genocide (Mosby & Galloway, 2017), and land theft from Indigenous peoples (Mintz, 2020). Also, the health risks of ultra-processed foods are well known (Moubarac, 2017), as are the climate and environmental impacts of climate change. However, we acknowledge that designing a national program in a country where 13 provinces and territories will administer a nationally funded program is not a simple task. Below is a list of issues relating to diet equity and sustainability that must be addressed to ensure the success of implementing a national school food policy.

Firstly, to meaningfully address diet equity, Black and Indigenous professionals and communities must be included in the design of the national program using anti-racism principles (Coalition Team, 2020). They should be included in the initial stages and then in planning the multitude of local programs that will be built with federal dollars. Secondly, to ensure that all children have access to healthy meals prepared with whole foods, as opposed to convenient pre-packaged ultra-processed foods such as granola bars with added sugars and other plastic-wrapped snacks that were offered in many school programs during the pandemic, there will be infrastructure and staffing needs. Few schools have kitchens, with the ones that existed having been closed in the last decades (Elton, 2013). However, other countries such as France have figured out how to deliver healthy meals to kids through catering contracts with private companies where tens of thousands of meals are cooked each day; there are also public canteens that offer a similar service but are government-run (Engler-Stringer, 2022).

In terms of supporting local and sustainable food systems, seasonality in the northern hemisphere is a concern, considering the prime growing season is during the summer, when school is out. One solution could be a food preservation program informed by greenhouse-gas data (to ensure compliance with sustainability metrics) that continues employing canteen workers during the school holiday to preserve local ingredients for the off-season. In this case, freezers and storage of canned goods would need to be included in the program design. Investments also can be made in cold storage of crops such as carrots, onions, potatoes, squash, and so forth. Further, many foods are produced year-round in the country, including eggs, dairy, and poultry that are organized to meet market demand by farmer-run supply management programs. There is also a year-round supply of meats, lake and ocean fish, pulses and grains, mushrooms, and greenhouse produce. Food waste and sustainability concerns with regard to packaging and distribution of meals must also be addressed. National standards for local programs can guide this process, as well as labor justice standards for all workers.

Despite the many complexities that inevitably must be addressed, the opportunity to design an equitable and sustainable program is possible, shaped by Canada's Food Guide, as also recommended by the Coalition for Healthy School Food (Coalition for Healthy School Food, 2022). Such a program would also conform to the health and sustainability outcomes prioritized by the national food policy. Echoing Ruetz and McKenna (2021), the national school food program must be sufficiently funded by the federal government. Programs run with adequate resources can provide fair wages to community members and create secure employment that supports local economies (Ruetz & Fraser, 2019). Sufficient social investment can help build program infrastructure and social networks within school communities to keep programs running well and adequately adhere to nutrition standards to promote the health and well-being of children in the long term (Critch, 2020; Ruetz & McKenna, 2021; Valaitis et al., 2014). Program implementation should be guided by well-defined nutrition, environmental, and education standards, coupled with proper monitoring parameters and evaluation plans to ensure that standards and goals are met. Evaluations should capture changes in local procurement, ecological impact, relationships with local farmers and agricultural workers, food literacy, dietary intake, and social impacts on low-income households and school communities.

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A decade of the *Missouri Hunger Atlas:* Information for action

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Abstract

For over a decade, researchers at the University of Missouri Interdisciplinary Center for Food Security (ICFS) have produced five editions of the *Missouri Hunger Atlas*. Through a series of indicator maps and tables, the *Atlas* engages readers visually to help them understand the extent of local food insecurity across the state. The *Atlas* also assesses the performance of public and private programs that help people struggling to obtain sufficient healthy food. In this reflective essay, we discuss the process of creating the *Atlas*, the choice of indicators and data acquisition, the evolution of the *Atlas* over time, and how various groups use the *Atlas*

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for policy and action. The *Atlas* has become a go-to resource for a wide range of users, including policymakers, academics, food bank staff, Extension specialists, and advocates for low-income families. The first ten years of the *Atlas* have demonstrated that measurement is a dynamic process, requiring ongoing adjustments by researchers through discourse with data providers, stakeholder groups, and communities. Given the popularity of the *Atlas* and the availability of comparable secondary data for other state and county geographies, replication of this model by other states is feasible.

Keywords
Hunger, Food Insecurity, Indicator, Need, GIS, Mapping, Performance, Comparison, Food Affordability, Decision Support

Introduction

For more than a decade, researchers at the University of Missouri Interdisciplinary Center for Food Security (ICFS) have produced five editions of the *Missouri Hunger Atlas*, which visually engages readers to better understand hunger and food insecurity in the state. Through a series of indicator maps and tables, the *Atlas* details the extent of food insecurity in the 114 Missouri counties and the City of St. Louis. The *Atlas* also assesses the performance of a host of public and private programs that aim to help people struggling to obtain sufficient healthy food (Bass et al., 2019).

With the *Atlas*, the ICFS seeks to raise awareness among Missourians about hunger and food insecurity in their communities and state, as well as provide information on the public and private programs addressing the issue. The *Atlas* is also designed to help public and private decision-makers assess trends of need, as well as help them assess program performance. In this reflective essay, we discuss the process of creating such an atlas, the choice of indicators and data acquisition, the evolution of the *Atlas* over time, and how various groups across the state use the *Atlas* for policy and action.

Why the *Atlas* is Important

The mission of ICFS is to better understand and address the causes and consequences of hunger and food insecurity. The ICFS aims to build more food secure communities through research, teaching, and engagement (University of Missouri, 2022). Research has demonstrated the devastating social and economic impacts of hunger, which are more intensively absorbed by marginalized groups and vulnerable populations (Fang et al., 2021). COVID-19 has also revealed how adverse global events are linked to food insecurity, and present the need for greater food system readiness, response, and resiliency (Béné, 2020).

The *Missouri Hunger Atlas* was introduced in 2008 as a tool for anti-hunger advocates and policymakers to address an alarming upward trend in food insecurity (Coleman-Jensen et al., 2014). It also filled critical gaps in local, county-level data on hunger need and performance of programs that address the need. At the time, such a compilation of data was difficult to find. The U.S. Department of Agriculture (USDA) Food Environment Atlas and Food Access Research Atlas (formerly known as the Food Desert Locator) were introduced in 2010 and the Feeding America Map the Meal Gap in 2011 (Feeding America, 2022; National Sustainable Agriculture Coalition, 2014; USDA Economic Research Service, 2022a). Despite the introduction of these and other tools, the *Atlas* has remained relevant for Missouri's anti-hunger advocates and policymakers because of its focus on distilling complex, county-level information into an accessible format.

This historical analysis begins by retracing the path of social action that led to the *Missouri Hunger Atlas*. It identifies and discusses several distinct features of the *Atlas* and how it is constructed and has been modified over time, and concludes with the current status of food security in Missouri and lessons learned from the first ten years of the *Atlas*.

History of ICFS and the *Atlas*

In 2000, a team of University of Missouri Rural Sociology faculty and students partnered with local nonprofits on social action research topics identified by the organizations. These partnerships were developed to assist local grassroots organizations that did not otherwise have the staff, capacity, or budget to conduct research. With guidance from Dr. Sandy Rikoon, the group founded the Missouri

Action Research Connection (MARC) to help community organizations address research questions they identified in order to better accomplish their goals and missions. Among the first partners was the Central Missouri Food Bank (CMFB), which needed help finding a new location and learning more about its clients to better meet their nutritional needs. This first project led to additional partnerships, and by 2003 a group of faculty and students from the MU College of Agriculture, Food and Natural Resources (CAFNR) coalesced around this focus on food security issues (University of Missouri, 2022).

In 2004, the group formally organized as the MU Interdisciplinary Center for Food Security, with official approval from CAFNR and the MU Provost's Office. Faculty representing four departments (Dr. Sandy Rikoon, Rural Sociology; Dr. Joan Hermsen, Sociology; Matt Foulkes, Geography; Dr. Nikki Raedeke, Nutritional Sciences) successfully applied for the ICFS's first competitive grant in 2005. The number of faculty and students affiliated with the ICFS has continued to grow and new projects have been initiated.

The first *Missouri Hunger Atlas* was compiled in 2008 in response to rising trends in food insecurity in the state. Data from 2005 showed that Missouri was one of 17 states with rising rates of food insecurity with hunger, and among the top five states in the rate of increase in hunger since 2000 (Foulkes et al., 2008, p. 1). The *Atlas* sought to support the work of policymakers and advocates with reliable state- and county-level data on hunger and food insecurity in a consolidated source. This would provide a snapshot of food insecurity measures of need and program performance across several domains.

Five editions of the *Atlas* have since been published (2008, 2010, 2013, 2016, 2019). Special editions of the *Atlas* for the Kansas City and St. Louis metro areas were released in 2010. A regional report for Missouri's 4th Congressional District was compiled in 2020. The *Atlas* has been printed in spiral-bound hard copies for distribution and made available as a PDF on the ICFS website (University of Missouri, 2022). Individual county data tables are also downloadable for users seeking specific results for their areas.

Distinct Features of the *Atlas*

Several features of the *Missouri Hunger Atlas* make it distinct from other food insecurity indicator projects. The *Atlas* is designed as a comparative tool rather than an absolute measurement tool. Results are primarily reported as percentages, rather than absolute numbers, which allows for comparison between counties of varying population sizes. While this opportunity for comparison is an important component of the *Atlas*, the authors caution that critical evaluation of the data is still necessary. Direct comparison of counties may disguise important differences between counties that shape these indicators. For example, the "participation rate of 80 [percent] in a highly populated area [like St. Louis] may mean that more people remain nonparticipants than in a county with a lower population and 70 [percent] participation rate" (Foulkes et al., 2008, p. 5).

Results on indicators of hunger need and program performance are also ranked for Missouri's 114 counties and the City of St. Louis. These 115 rankings are grouped into five categories (Very Low, Low, Average, High, and Very High) following a quintile classification method that divides the state into five equal fifths, each including one-fifth of the categories in the state (National Center for Geographic Information and Analysis, n.d.). Categories are then mapped for visualization of results statewide. This allows decision-makers to see how counties or regions are faring relative to other parts of Missouri, and to track the relative position of counties over time.

More recent editions of the *Atlas* also include a novel food affordability measure. This measure operationalizes food affordability as the percentage of household budget spent on food. *Atlas* researchers originally developed this composite variable for the 2013 edition (Cafer et al., 2013). This measure highlights the disparity of food costs for many individuals and households as a result of income, accessibility, and local costs of food. Reporting food affordability results by county helps raise awareness of inequities, as the effects of hunger/food insecurity often fall disproportionately on people who are low-income and live in places that lack access to affordable food (Cafer et al., 2019).

While the *Atlas* is comparable to other data

tools, such as the USDA Food Environment Atlas, it differs in several ways. The Food Environment Atlas includes a variety of indicators related to the retail food environment, food assistance programs, food insecurity, food taxes, local foods, health and physical activity, and socioeconomic characteristics (USDA ERS, 2022a). However, certain indicators in the Food Environment Atlas, such as those for the National School Lunch Program (NSLP), Supplemental Nutrition Program for Women, Infants, and Children (WIC) participation, and Supplemental Nutrition Assistance Program (SNAP) participation, are only available at the state level. While this state-level data can be useful (and it should be noted that the Food Environment Atlas does include other county-level indicators), it may not satisfy the data needs of many decision-makers. For these important federal safety net programs, the *Atlas* provides county-level estimates of program eligibility combined with county-level program participation administrative data requested from state agencies, which also estimates the percentage of the eligible population that participates in the programs. The ICFS deliberately made the choice to use only county-level indicators, and eliminated those not available at the county level, to provide a consistent and localized assessment of hunger need and program performance.

Another difference is the *Atlas*'s focus on comparative data that can clearly articulate both county-level needs on the one hand and how a county performs when addressing those needs through public and private programs. This data is presented in maps and county data tables. The tables are especially useful because they present the need and performance data side by side, making the comparisons easy to understand. *Atlas* readers commonly report that this "need versus performance" feature is one of the most popular and useful pieces of information provided by the *Atlas*.

The *Atlas* also differs from the USDA Food Access Research Atlas, which combines measures of poverty and supermarket location to document census tracts where food access may be an issue. By comparison, and as noted above, the *Atlas* primarily focuses on the presentation of food insecurity measures along with food assistance program eligibility and participation data. While the tools are similar, they highlight different measures and provide unique information for understanding food insecurity.

The *Atlas* is also comparable to Feeding America's Map the Meal Gap (Feeding America, 2022). While these data tools share similarities, they also differ in important ways. Both tools present county-level data related to food insecurity. Significantly, while the 2008 and 2010 editions of the *Atlas* utilized a novel method for estimating county-level food insecurity, more recent editions have used the Feeding America estimates. Both tools present information related to federal safety net programs, although they take different approaches. As noted previously, for SNAP, WIC, and NSLP, the *Atlas* provides an estimate of program eligibility and combines that with administrative data to also estimate the percentage of the eligible population participating in each program. Map the Meal Gap takes a different approach by segmenting estimates of program eligibility among the food insecure population: (1) those who fall below the SNAP threshold (130% of poverty), (2) those who fall between 130% and 185% of poverty, and (3) those who are above the threshold (185% of poverty) for other nutrition programs. Map the Meal Gap does not include information about program participation. Similarly, both tools present data related to food affordability, but do so in unique ways. Features of the *Atlas* include the presentation of county-level demographic, health, and economic data; food bank food distributions per person in poverty; and the composite need, performance, and need vs. performance indicators.

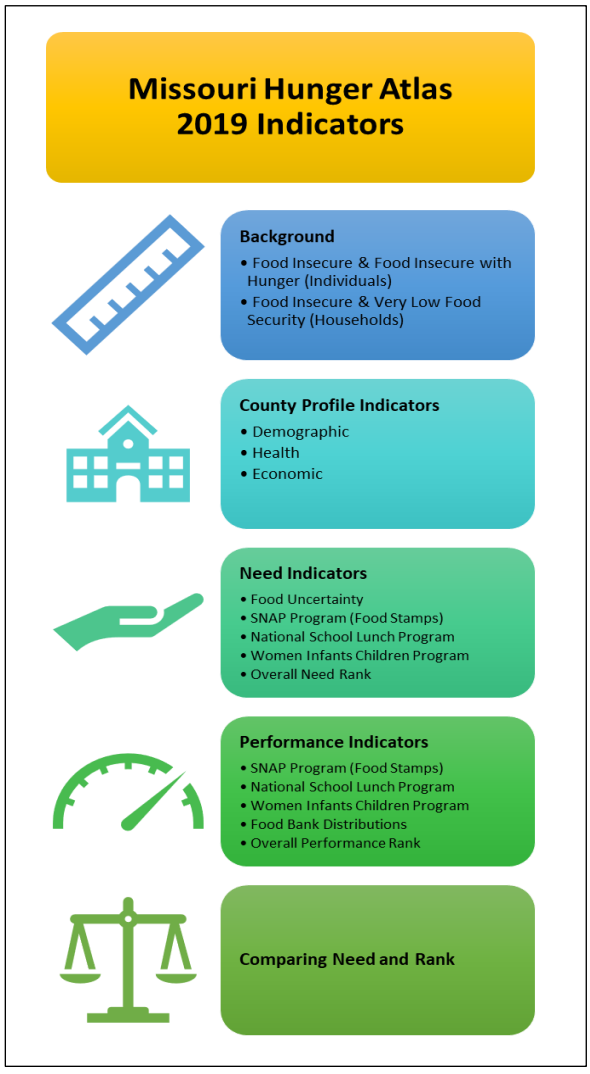
Overall, the *Atlas* is an accessible data tool for data experts and lay audiences alike. It focuses on select measures and presents them in an accessible format and style. Policymakers, state department administrators, educators, and local advocates often remark on its accessibility and appreciate how the data is presented.

Organization of the *Atlas*

The *Missouri Hunger Atlas* is organized into several sections (Figure 1). Each edition provides a background of state-level trends in food insecurity, recommendations for how to read and interpret the *Atlas*, and a complete breakdown for how each

indicator was operationalized and obtained. Need Indicator and Performance Indicator sections feature measures of publicly funded programs, including the Supplemental Nutrition Assistance Program (SNAP), Special Supplemental Nutrition Program for Women Infants and Children Program (WIC), and the National School Lunch Program (NSLP), as well as private assistance in the form of emergency food relief provided through regional food banks. A combination of need and performance indicators are utilized to create single overall need and performance rankings for each county. The overall need and performance measures are finally utilized to identify how performance relates to need. This comparison classifies county results in high/low quadrants for both need and performance (see detailed explanation below).

Figure 1. *Missouri Hunger Atlas* Sections



The *Atlas* also provides visual representations of the data. Maps are provided for several indicators, allowing readers, policy makers, and advocates to observe at-a-glance how issues are impacting different parts of the state. Each map provides county-level results, grouped and color-coded using a quintile classification method (National Center for Geographic Information and Analysis, n.d.) (Figure 2).

County data tables are a central feature of the *Atlas*. County tables make up the largest and final section of the data book, providing a printable one-page summary of each county's results, ranks, and state comparisons (Figure 3).

As stated above, the overall need versus overall performance comparison is a unique and highly valued section of the *Atlas*. County results on overall need and overall performance are reduced from five categories (Very Low, Low, Average, High, Very High) to three categories (Low, Average, High). Need and performance results are linked together to compare counties. This enables counties to be placed in one of four quadrants: High Need/High Performance, High Need/Low Performance, Low Need/High Performance, and Low Need/Low Performance counties (Figure 4). Counties with either Average Need or Average Performance are excluded to better highlight cases at either end of the spectrum. Each quadrant provides a lens for further analysis. For example, High Need/Low Performance counties may call for further attention and assessment of challenges and barriers, while High Need/High Performance counties may provide cases to explore effective strategies and best practices. The limitations of such comparisons should be noted, however; social, economic, and cultural contexts can differ widely between counties.

Stages in Constructing the *Atlas*

Construction of the *Atlas* involves at least nine steps (Figure 5). The process begins with the design of a primary data table, which includes all variables to be utilized in calculations, conversions, and presentation of results. Data acquisition, for-

matting, and cleaning are done for each indicator included in the *Atlas*. Standardized results for each indicator are added to the primary data table and utilized for all calculations. Research team members cross-check the accuracy of calculations and conversions and analyze the results. This procedure provides the basis for developing descriptive summaries, graphs, maps, and tables to present results in each section. The process moves on to final stages of proofreading, editing, layout and design of the data book, followed by signoffs and approvals for printing and dissemination. From the start of the process to the finished publication, construction of the *Atlas* is completed in less than 12 months.

Indicator Selection

Estimating hunger is a complex and multidimensional endeavor (Carlson et al., 1999). Through a review of relevant literature on hunger and food security indicators, the ICFS research team arrives at a set of indicators for inclusion in the *Atlas*. They choose a cross-section of contextual (demographic), outcome-based (program), and proxy (unobservable but highly related) variables to provide a more complete picture of hunger need and program performance in each county of the state.

Demographic measures of the unemployment rate and percentage of single-parent households, and health-related measures of hypertension, obesity, and diabetes are included due to their well-established linkages with hunger and food insecurity. Proxy indicators are also selected based on research affirming their linkages to hunger and food insecurity (Bartfeld & Dunifon, 2005). Overall, four criteria guide the rationale behind the selection of indicators for the *Atlas* (Table 1).

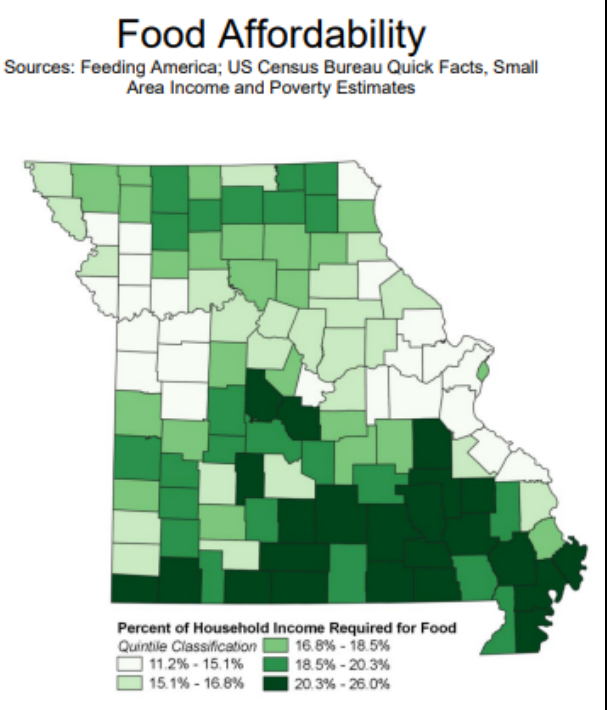
Data Acquisition

The inclusion of measures is contingent on access to reliable data. ICFS researchers obtain data from the U.S. Census and the American Community

Figure 2. Food Affordability Map ("Need" Section)

Food Affordability (MAP)
An estimate of the percent of income required each week by households in 2017 to meet average expenditures on food for that county. This indicator was calculated using the average weekly median household income and the average cost of meals as calculated by Feeding America.
Sources: Small Area Income and Poverty Estimates (SAIPE), U.S. Census Quick Facts, Feeding America, 2019 Map the Meal Gap

In order to better understand the context of rising food insecurity in Missouri a new economic indicator, food affordability, was introduced in the 2013 edition of the Missouri Hunger Atlas. The percent of income needed to meet basic household food needs is an important determining factor in the quantity, quality, and types of food families purchase because low-income households often have to make tough choices about how to spend their money, which may ultimately lead to smaller amounts of household funds available for food expenditures. Higher food costs significantly limit household food choices. The food affordability indicator is a county-level estimate of the percent of income required for food each week. It was calculated using the median household income divided by the average household size and then divided by 52 to obtain the average weekly median household income. The average costs of meals, obtained from Feeding America, were multiplied by 21 meals each week, assuming three meals each day. This number was then divided by the average weekly median household income and multiplied by 100 to obtain a percent of weekly income used to purchase food.



Survey as well as state and national agencies, and hunger relief organizations. Data acquisition is done through phone calls, email, web-based data request submissions, and data downloads from the following sources:

- **Feeding America**, Map the Meal Gap
- **Missouri Department of Elementary and Secondary Education**, Food and Nutrition Services
- **Missouri Department of Health and Senior Services**, Missouri Public Health Information Management System (MOPHIMS), Community Data Profiles, CountyLevel Study
- **Missouri Department of Social Services**, Research and Data Analysis Unit
- **Missouri Feeding America—affiliated regional food banks**, Food Distribution Reports
- **Operation Food Search**, Food Distribution Reports
- **U.S. Census**, American Community Survey 5-Year Estimates, Population and Housing Unit Estimates, Small Area Income and Poverty Estimates
- **U.S. Department of Agriculture**, **Economic Research Service**, State Fact Sheets, Household Food Insecurity in the United States

Figure 3. County Data Table

NEED INDICATORS	COUNTY	STATE	RANK
Food Uncertainty 2017			
% Individuals Food Uncertain	17.5	14.2	Very High
% Individuals < 18 Food Uncertain	18.3	17.5	Low
% Individuals Food Uncertain w/ Hunger	6.6	5.3	Very High
Supplemental Nutrition Assistance Program (SNAP/Food Stamps) 2018			
% Total Population Income Eligible	31.4	19.4	Very High
% < 18 Years Income Eligible	24.9	26.1	Low
Free and Reduced-Price Lunch (National School Lunch Program) 2018			
% Students Enrolled	51.1	49.5	Average
Women, Infants, and Children Program (WIC) 2017			
% < 5 Years Income Eligible	57.7	43.3	High

PERFORMANCE INDICATORS	COUNTY	STATE	RANK
Supplemental Nutrition Assistance Program (SNAP/Food Stamps) 2018			
Number of Monthly Participants	2,522	720,543	-
% Total Population Participating	9.9	11.8	Low
% Income Eligible and Participating	35.4	63.2	Very Low
Number of Monthly Participants < 18 Years	1,053	325,938	-
% < 18 Years Participating	22.5	23.6	Average
Free and Reduced-Price Lunch (National School Lunch Program) 2018			
% Students Enrolled and Participating	79.9	74.7	Very High
Women, Infants, and Children Program (WIC) 2017			
Number < 5 Years Participating, Monthly	482	89,338	-
% < 5 Years Eligible and Participating	71.1	55.9	High
Food Bank Distributions 2018			
Total Pounds Distributed in County	779,920	140,373,817	-
Lbs Per Capita Below 100% Poverty Level	131	163	Low

ADAIR COUNTY

OVERALL RANK*	
NEED	PERFORMANCE
Very High	Average

***Overall Rank: Need** is from a composite score including % food uncertain, % SNAP eligible, % NSLP enrolled, and % < 5 WIC eligible.
Performance is from a composite score including % eligible and participating in SNAP, NSLP,WIC, and pounds of food distributed per capita < 100% poverty.

COUNTY PROFILE	COUNTY	STATE		COUNTY	STATE
Demographic Indicators 2017			Economic Indicators 2017		
Total Population	25,377	6,113,532	Population Below Poverty Level	5,943	861,679
Population < 18 Years	4,689	1,382,971	% < 18 Below Poverty	20.7	20.0
Population > 64 Years	3,678	1,007,033	% > 64 Below Poverty	9.8	8.8
Health Indicators 2016			Median Household Income ($, Annual)	38,750	51,542
Obesity Prevalence (%)	27.9	31.2	Unemployment Rate (%)	4.4	3.8
Diabetes Prevalence (%)	8.0	11.1	Single-Parent Households (%)	10.5	16.2
Hypertension Prevalence (%)	29.1	33.7	Food Affordability (%)	18.7	16.0

Missouri Hunger Atlas 2019, Page 30

- **U.S. Department of Labor, Bureau of Labor Statistics**, Local Area Unemployment Statistics

Team members acknowledge the support of many individuals within public and private agencies who assist with retrieval and sharing of data. The *Atlas* is a cooperative endeavor that is possible only through ongoing partnerships with these data providers (Bass et al., 2019).

In 2021, a codebook for *Missouri Hunger Atlas 2019* was developed to serve as a technical guide for the production of future atlases. The codebook incorporates lessons learned over the first ten years, breaking down the methodology and providing step-by-step instructions for generating results for each indicator, from data collection and conversions to calculations and reporting.

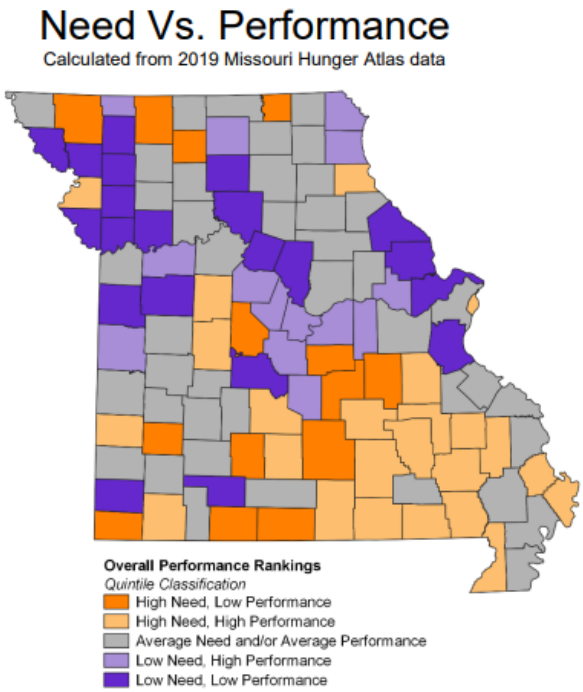
Evolution of the *Atlas*

To better understand the history of the *Atlas*, and to support current efforts to modernize the *Atlas* and transition it to an online web application, an inventory of *Atlas* indicators, data sources, and methods was created dating back to 2008. Beginning with the primary data table for the 2019 edition, *Atlas* indicators, sources, timespans, and calculation methods were documented in a historical data table or "harmony" spreadsheet. This initial data table was reviewed by ICFS and MU Center for Health Policy colleagues for feedback and input. Data from the remaining atlases (2016, 2013, 2010, and 2008) was then added, annotating changes to indicators, labels, descriptions, and sources from publication to publication.

The inventory yielded an analysis of how the *Missouri Hunger Atlas* has evolved over time. The evolution can be characterized by (1) constants

Figure 4. Need vs. Performance Comparison

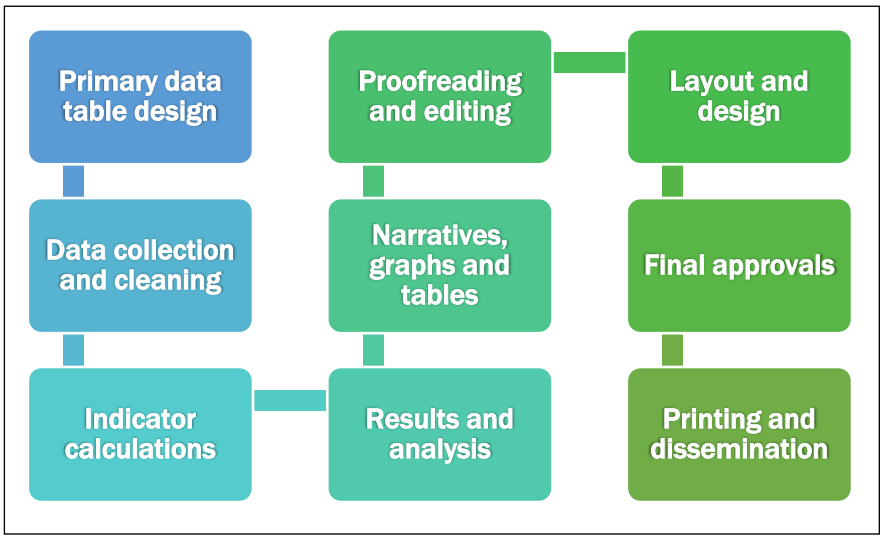
High Need/High Performance		High Need/Low Performance	
Barry	Marion	Crawford	Nodaway
Barton	Mississippi	Dade	Ozark
Benton	Oregon	Grundy	Phelps
Bollinger	Pettis	Harrison	Schuyler
Buchanan	Reynolds	McDonald	Taney
Butler	Ripley	Maries	Texas
Dent	St. Louis City	Morgan	Webster
Dunklin	Scott		
Howell	Shannon		
Iron	Washington		
Laclede	Wayne		
Madison	Wright		
Low Need/High Performance		**Low Need/Low Performance**	
Bates	Miller	Andrew	Howard
Clark	Moniteau	Boone	Jefferson
Cole	Osage	Camden	Johnson
Cooper	Pulaski	Cass	Lincoln
Gasconade	Sullivan	Chariton	Linn
Lafayette	Warren	Christian	Newton
Lewis	Worth	Clay	Pike
		Clinton	Platte
		DeKalb	Ray
		Gentry	St. Charles
		Holt	



At the other end of the spectrum are twenty-one counties that have comparatively low percentages of populations with hunger needs but are also doing comparatively worse in meeting the requirements of these populations. Many of these

Missouri Hunger Atlas 2019, Page 24

Figure 5. Stages in Constructing the *Missouri Hunger Atlas*



(attributes which have remained unchanged throughout), (2) changes in indicators, and (3) changes in co-authors. The following sections provide a summary of this evolution, a discussion of how the *Atlas* has been used by various stakeholder groups, the ten-year progress of food security in the state, and a conclusion, with lessons to apply for the future.

Many attributes of the Missouri Hunger *Atlas* have been consistent over the first decade. The overall layout, section headings and organization of the data book, how to read and interpret *Atlas* results, emphasis on comparisons, county-level results, printable one-page county tables, maps for data visualization, and use of quintile classifications of counties have all remained unchanged. For overall need and performance comparisons, the methodologies, composite variables, and weights assigned to variables have remained durable as well.

The evolution of indicators from 2008–2019 is visually highlighted in Appendix 1. Indicators remaining consistent over the five editions include county profile demographic variables and certain measures for the Supplemental Nutrition Assistance Program (SNAP), Special Supplemental Nutrition Program for Women, Infants, and Children Program (WIC), and National School Lunch Program (NSLP). Several indicators included in the 2008 and 2010 editions were not retained in later versions, largely due to lack of data for all counties, and the narrowing of the *Atlas* to focus on the most essential measures. For example, Summer Food Service Program and Child & Adult Care Program performance measures appeared only in early editions. While these program results were originally included for informational purposes, not all counties participate in those programs, making comparisons between counties impossible. Availability of county-level data for all counties became an important determining point for which indicators were included in the *Atlas*.

Table 1. *Missouri Hunger Atlas* Indicator Selection Criteria

1. **Proxy power:** The indicator says something of central importance about hunger, and gets to the heart of matter.
2. **Communication power:** Researchers and collaborators have mutual agreement on what the indicator measures.
3. **Data power:** Quality data is accessible to compare counties, available and calculatable on an annual basis, gathered and administered consistently over time, and affordable and cost-effective to use.
4. **Policy power:** The data can be watched and tracked over time to see if interventions matter.

Source: Friedman, 2015.

In some instances, the source of data from the same agencies changed over time. For example, data for county demographic health variables for obesity, diabetes, and hypertension originated from the Missouri Department of Health and Senior Services. In 2008, results came from the 2003 Health and Preventative Status Report. Results for the 2010 data book came from the 2007 Missouri County-Level Study Questionnaire. Working with key personnel from each data provider was crucial to navigating changes that had occurred between *Atlas* time intervals.

Within the Need section, food insecurity measures changed most frequently since the first *Atlas*. Food uncertain and food uncertain with hunger labels replaced food insecure and food insecure with hunger in 2010. These changes in terms were due to a revised modeling methodology that was comparable but not identical to that used by the data providers. The new terms were also found by partners to be more meaningful and revealing. (Team members also acknowledge that the meaning of the term food security is more broadly understood now than ten years ago, when it tended to carry connotations of food safety as well as food scarcity.) Household estimates of food insecurity were replaced by estimates of individuals beginning in 2016, providing a more relatable and compelling image of the extent of hunger in Missouri. The 2016 edition also marked the inclusion of the results of Feeding America's Map the Meal Gap report, replacing prior ICFS modeling using data from U.S. Census, American Community Survey, Bureau of Labor Statistics, and U.S. Department of Agriculture sources.

Other shifts included updates to variables measuring similar phenomena, such as a shift in 2016 from female-headed households to single-parent households, a measure encompassing more family structures. Rates of food insecurity in 2019 were significantly higher than the national average for households with children headed by a single caregiver, although female-headed households were still 75% more likely to be food insecure than male-headed households (Coleman-Jensen et al., 2020). Beginning with the 2010 *Atlas*, inclusion of the poundage of food distributed by regional food banks added an important variable on the extent of direct food provision to needy families in each county.

Changes in some data sources and methods were a combination of internal decisions that the team made and external changes due to factors beyond the team's control. To estimate SNAP eligibility, the 2019 *Atlas* team elected to use 125% of Federal Poverty Level as the guideline for income eligibility in place of the 130% of Federal Poverty Level used by SNAP. Lowering the threshold from 130% to 125% compensated for a small number of people who meet the SNAP income threshold but are not eligible for benefits due to other disqualifying criteria (personal assets, immigrant status, employment status). This adjustment aimed to provide an estimate of SNAP eligibility more in line with reality. The *Atlas* team continues to investigate models for predicting SNAP eligibility that provide a more specific estimate.

Atlas indicators are constantly a work in progress and are updated every three years with the latest information and more validated measures. The stated goals for the *Atlas* include use by diverse groups and dialogue among individuals that may lead to evolving ideas about indicators. Users are welcomed to add comments or make suggestions about the indicators and the presentation of findings (Bass et al., 2019). *Atlas* authors indicate that changes have been prompted by user feedback, narrowing down to more meaningful measures and adjusting to county-level data limitations.

Regarding changes in team members, an evolving group of co-authors produced five editions of the *Missouri Hunger Atlas*, as well as two special additions for St. Louis and Kansas City. Teams ranged in size from as few as four to as many as ten faculty, staff, and graduate students as co-authors and contributors. As Rural Sociology faculty and co-founder of ICFS, Dr. Sandy Rikoon provided author continuity for the *Atlas* through the 2008–2019 period. The ICFS has remained committed to faculty and students working collaboratively on the applied research, gathering and analyzing data and compiling the *Atlas*. Teams worked closely with data experts and analysts from the Office of Social and Economic Data Analysis and the Missouri Census Data Center, as well as

with state agency contacts and food bank representatives. The team timeline for compiling the *Missouri Hunger Atlas* from start to finish was typically less than one calendar year.

Uses of the *Atlas* for Policy and Action

The *Missouri Hunger Atlas* is used primarily for purposes of advocacy, research, extension education, and policy decision-making support. Researchers draw from the *Atlas* as a resource for case studies and other analyses in education and the social sciences. Extension specialists in community and economic development and in food and nutrition education utilize the *Atlas* for conducting needs assessments, writing local and regional grant proposals, and making presentations to community groups. They also indicate that the *Atlas* can be a tool to start conversations with municipal and county leaders on issues of hunger and food security, with data that allows for comparisons to neighboring areas.

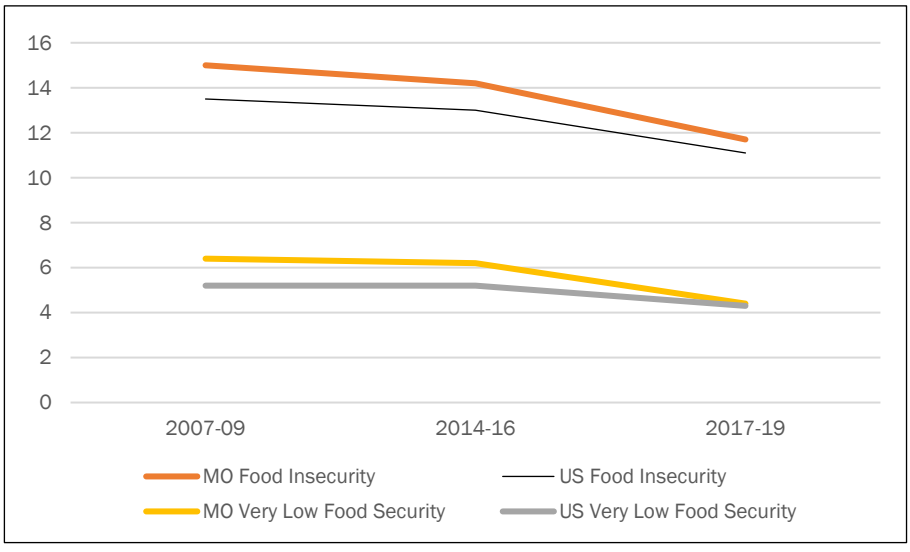
Anti-hunger advocates use the findings to inform their audiences and raise public awareness of the extent of food insecurity, as well as the degree to which publicly funded programs are addressing hunger. The *Missouri Hunger Atlas* is prominently featured on the Feeding Missouri website under *Missouri Hunger Facts* (Feeding Missouri, 2022). Empower Missouri, a statewide advocacy organization working on issues of food, shelter, and justice, highlighted *Atlas* findings during its 2020 annual conference to prepare attendees with a toolkit for action on hunger issues during COVID-19 (Kerrigan, 2020). The Missouri Community Action Network, widely recognized for developing the Community Action Poverty Simulation as an experiential learning tool, featured *Atlas* results in the 2020 *Missouri Poverty Report*, co-authored with Missourians to End Poverty (Missouri Community Action Network, 2022). The Boone Indicators Dashboard, which informs diverse organizational partners on community performance in four priority issues areas, includes the *Missouri Hunger Atlas* on its resource page (Boone Impact Group, n.d.).

Policymakers and program managers find the *Atlas* to be an informative tool that deepens their understanding of the geography of food insecurity in the state, and how counties have fared on rankings and trends over time. For example, legislators are often interested to learn how counties in their districts compare to other regions of the state across indicators. The *Atlas* is also consulted by agency program managers for data points to monitor the comparative effectiveness of hunger-fighting programs they administer.

Progress on Food Security

The extent to which the *Missouri Hunger Atlas* has contributed to impacts on hunger and food insecurity in Missouri is beyond the scope of this paper, but it is noteworthy that the state has made progress on this issue over the same period the *Atlas* has been published (Figure 6). Since 2007, the average percentage of food-insecure households in Missouri has decreased from 15% to 11.7%, and the average percentage of very-low-food-secure households dropped from 6.4% to 4.4% (USDA Economic Research Service, 2022b). In comparison to national averages, food-insecure

Figure 6. Missouri and U.S. Food Insecurity, 2007–2019



households in the U.S. dropped 13.5% to 11.1%, and very-low-food-secure households decreased 5.2 to 4.3% over the same period. The trend over the ten-year-plus period shows that Missouri is closing the gap on food insecurity, bringing levels closer to national averages. While this is good news and a positive trend for Missouri, much is still to be done to address food insecurity in the state.

Lessons Learned

Hunger is a complex and multi-faceted issue affecting the lives of many Missourians. Measurement of the true extent of hunger is imprecise, and at best an estimation or approximation. The *Missouri Hunger Atlas* offers a set of collective clues, piecing together a picture of how food insecurity impacts counties and the state. The first ten years of the *Missouri Hunger Atlas* have demonstrated that measurement is a dynamic process, requiring ongoing adjustments by researchers through discourse with data providers, stakeholder groups, and communities.

The *Missouri Hunger Atlas* has become a go-to resource for a wide range of intended users, including policymakers, academics, food bank staff, Extension specialists, and advocates for low-income families. The stated goals of the *Atlas* include providing measures to assess trends in need and program performance, raising awareness of the extent and depth of food insecurity and hunger at the local level, increasing knowledge of how public programs and food banks are reaching food-insecure people, and helping decision-makers assess performance to improve delivery of resources and assistance. Anecdotal evidence gathered through stakeholder meetings and general feedback suggests that these goals are at least in part being met.

Readers have also noted the novel features of the *Atlas* which they find useful in making comparisons and exploring relationships between counties and regions. Indicators of food affordability and comparisons of need vs. performance are quite distinct among hunger and food insecurity resources. Use of the *Missouri Hunger Atlas* to initiate conversations with community leaders about food insecurity and hunger is an additional outcome that has been emphasized by educators and advocates. Use of the *Atlas* as a tool for community action and social change deserves further investigation. Going forward, researchers can consider how the selection of *Atlas* indicators can raise consciousness about emerging issues, such as how food security relates to concerns of diversity, equity, and inclusion.

Conclusion

Over the first ten years, the *Missouri Hunger Atlas* has received a positive response from numerous stakeholder groups who have used the data books in multi-faceted ways to inform strategies and support their decisions in the fight against hunger. Users indicate the *Atlas* makes state and county-level food insecurity and hunger data from public sources more accessible by combining them into one resource for Missouri. Methodologies converting data to ranks, indices of hunger need and performance, and need vs. performance comparisons provide the foundation for new insights by decision-makers.

The goal of this paper is to support the development of an online version of the *Missouri Hunger Atlas*, as an updated decision-support tool for educators, policymakers, and communities. Beginning with the 2019 edition and working back to the 2008 edition, the history and evolution of *Atlas* indicators, data sources, timespans, and methods have been clearly documented. This information will be utilized in harmonizing *Missouri Hunger Atlas* indicators and data requests with other decision-support projects, and in developing a consistent set of indicators across editions. Future plans include moving the *Atlas* to an annual timeline (as Missouri Kids Count does), and documenting processes so as to support the efficient management of the *Atlas* in the future.

Given the receptivity for the *Missouri Hunger Atlas* and the availability of comparable secondary data for other state and county geographies, replication of this model is feasible by other states. An atlas can be a mechanism by which other land-grant universities can raise public awareness of food insecurity, build data partnerships with agencies, provide enhanced decision support to key audiences, and leverage diverse stakeholder engagement around hunger and food security.

In 2021, the ICFS and the MU Center for Health Policy jointly met with *Atlas* users, stakeholder groups, and data contributors to transition the *Atlas* from a data book every three years to an online web application. *Missouri Hunger Atlas* readers can now access previous data books, as well as browse, map, and download data, and print county results online.[1] As we build a modernized online version of the *Atlas* with enhanced data visualization and trend analysis, the opportunity is also ripe for conversations on extending the *Missouri Hunger Atlas* beyond Missouri.

Acknowledgments

The authors would like to thank Dr. Sandy Rikoon and all previous contributors to the *Missouri Hunger Atlas*.

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Appendix 1. *Missouri Hunger Atlas* Indicators, 2008–2019

Interdisciplinary Center for Food Security
University of Missouri

Missouri Hunger Atlas Indicators, 2008-2019

https://foodsecurity.missouri.edu/missouri-hunger-atlas/

Atlas Section	Code	Indicator	2019	2016	2013	2010	2008
BACKGROUND							
	1.1	Individual food insecure & food insecure w/ hunger					
	1.2	Food insecurity rates among Missouri households					
COUNTY PROFILE INDICATORS							
Demographic	2.1.1	Total population					
	2.1.2	Population under 18 years					
	2.1.3	Population over 64 years					
Health	2.2.1	Obesity					
	2.2.2	Diabetes					
	2.2.3	Hypertension					
Economic	2.3.1	Population below poverty					
	2.3.2	Population under 18 years below poverty					
	2.3.3	Population over 64 years below poverty					
	2.3.4	Median household income					
	2.3.5	Unemployment rate					
	2.3.6a	Single parent households					
	2.3.6b	Female headed households					
	2.3.7	Food affordability					
NEED							
Food uncertainty	3.1.1a	% individuals food uncertain					
	3.1.1b	Households food uncertain					
	3.1.1c	% total population food insecure					
	3.1.2a	% children under 18 in food uncertain households					
	3.1.2b	Households with children food uncertain					
	3.1.2c	% < 18 yrs food insecure					
	3.1.3	% > 64 yrs food insecure					
	3.1.4a	% individuals food uncertain with hunger					
	3.1.4b	Households food uncertain with hunger					
	3.1.4c	% food insecure with hunger					
SNAP (Food Stamps)	3.2.1	% total population income eligible					
	3.2.2	% under 18 income eligible					
	3.2.3	Monthly participants					
	3.2.4	% of total population					
	3.2.5	Monthly participants < 18yrs					
	3.2.6	% of < 18 yrs population					
	3.2.7	Monthly benefits					

National School Lunch (NSLP)	3.3	% of K-12 students enrolled in free & reduced-price lunch (MAP)					
Women, Infants, Children (WIC)	3.4.1	% of children under five income eligible					
	3.4.2	Monthly participation					
	3.4.3	Monthly infants & children					
	3.4.4	% of < 5 yrs participating					
Overall Need Rank	3.5.1a	% of population food uncertain (see 3.1.1a)					
	3.5.1b	% of population food insecure					
	3.5.2	% total population income eligible for SNAP/Food Stamps (see 3.2.1)					
	3.5.3	% of K-12 students enrolled in free & reduced-price lunch (see 3.3)					
	3.5.4	% of children under five income eligible (see 3.4.1)					
PERFORMANCE							
SNAP (Food Stamps)	4.1.1	Number of Monthly Participants					
	4.1.2	% total population using SNAP					
	4.1.3	% income eligible and participating					
	4.1.4	Number of Monthly Participants Under 18					
	4.1.5	% of Under 18 Population Participating					
	4.1.6	Avergage Monthly Benefits					
	4.1.7	% of food insecure					
	4.1.8	% of food insecure w/ hunger					
	4.1.9	% of < 18 yrs food insecure					
	4.1.10	% of < 100% poverty					
National School Lunch (NSLP)	4.2	% enrolled and participating (MAP)					
Women, Infants, Children (WIC)	4.3.1	Number of children under 5 participating monthly					
	4.3.2	% of eligible children under 5 participating					
	4.3.3	Number of monthly participants					
Summer Food Service Program	4.4.1	Number of sites					
	4.4.2	Total Reimbursements					
	4.4.3	Reimbursements per student					
Child & Adult Care Program	4.5.1	Total Reimbursements					
	4.5.2	Reimbursements per capita < 5 yrs and < 100% poverty					
Food Bank Distributions	4.6.1	Total pounds in county					
	4.6.2	Pounds of food distributed per capita below poverty level (MAP)					
	4.6.3	Pounds (lbs) per capita food insecure					
Overall Performance Rank	4.7.1	% of income eligible residents who received SNAP/food stamps (see 4.1.3)					
	4.7.2	% of students enrolled and participating in free and reduced-price lunches (see 4.2)					
	4.7.3	% of income eligible infants and children receiving WIC benefits (see 4.3.2)					
	4.7.4	Pounds of food distributed per capita < 100% poverty (see 4.6.2)					
COMPARING NEED AND PERFORMANCE							
	5.1	Comparing need and performance (quintile classification map)					

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Perilous Bounty and the future of farming in America

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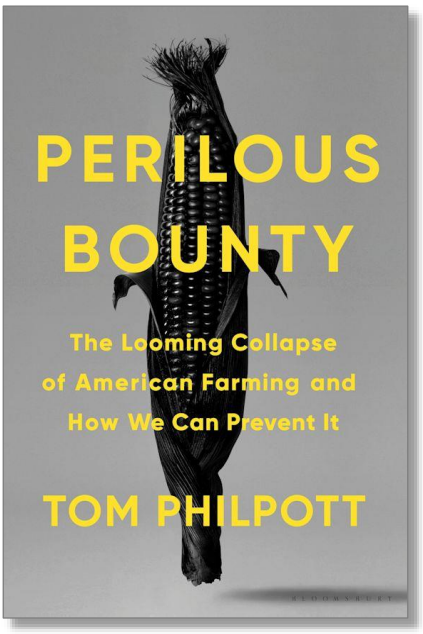

Review of *Perilous Bounty: The Looming Collapse of American Farming and How We Can Prevent It,* by Tom Philpott. (2020). Published by Bloomsbury Publishing. Available as hardcover, paperback, and eBook; 256 pages. Publisher's website: https://www.bloomsbury.com/us/perilous-bounty-9781635573138

Submitted November 21, 2022 / Published online December 7, 2022

Citation: Chinburg, L. (2022). *Perilous Bounty* and the future of farming in America [Book review]. *Journal of Agriculture, Food Systems, and Community Development, 12*(1), 187–189. https://doi.org/10.5304/jafscd.2022.121.012

In *Perilous Bounty*, Tom Philpott builds a meticulously researched argument that the U.S. is too reliant on farming methods and economic systems that are destroying our critical ecosystems. Mixing investigative journalism, eye-opening statistics, and farmer profiles, he paints a stark picture of the current state of industrial agriculture. He focuses on the two predominant U.S. agricultural regions, presents the major challenges facing each region, and discusses the "handful of seed-pesticide corporations, investment funds, and magnates who benefit from these dire trends" (p. 8).

He begins in California, where the agricultural industry faces drought, catastrophic flooding, reduced snowmelt, and overdrawn aquifers. A primary takeaway is that as aquifers are overdrawn, "dwindling water means ever more emphasis on pricey export-oriented snack crops—and less on fruit and vegetable crops" (p. 72). The depletion of groundwater threatens future agricultural production in the state on which we depend for more than 90% of the "broccoli, carrots, garlic, celery, grapes, tangerines, plums, and artichokes; at least 75% of the cauliflower, apricots, lemons, strawberries, and raspberries; more than 40% of our lettuce, cabbage, oranges, peaches and peppers" (p. 17), as well as nearly 100% of the almonds, walnuts, and pistachios we eat. In short, aquifer depletion is severely threatening our national salad bowls. This is exacerbated by the effects of climate change, with increased likelihood of droughts and flooding.

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He then discusses the Corn Belt, a group of Midwestern states that produce 90% of U.S. corn and 80% of soybeans (p. 75). Philpott highlights the corn and soybean monocultures that strip the area's soil of its vitality. He describes the effects of "gully washers," rain-driven erosion events that have contributed to the loss of 33% of Corn Belt topsoil (p. 131) and create streams of toxic manure and fertilizer runoff that poison vital ecosystems like the Gulf of Mexico, where "nutrient runoff from row crops and confined livestock operations deliver 60% of the nitrogen load" (p. 144). Historically, the rich soil of the Corn Belt was covered by perennial grasses and wildflowers, which anchored the soil even in the case of heavy rains (p. 126). Now, the corn and soybean fields are left bare from November through June, leaving them vulnerable to heavy rain events, which are only increasing in intensity with climate change.

He also criticizes the corporations that stand to benefit from monocultures, such as Monsanto, which profits from the use of its own pesticides and herbicides on crops it designed to resist those same pesticides and herbicides. This practice contributes to the common practice of incredibly high chemical usage on fields and the creation of a relentless cycle, a "permanent chemical war against ever-evolving weeds, with Monsanto and its peers playing the role of defense contractors" (p. 112).

Philpott wraps up in a more hopeful tone, meeting with Ohio farmer David Brandt, who makes use of a more diverse crop mix to increase resilience and boost productivity. Through Brandt, Philpott illustrates how techniques like cover cropping can be used to build healthier soils, decrease reliance on fertilizers and herbicides, and reduce erosion. As more farmers adopt these strategies nationwide, Philpott argues, we all stand to benefit. Not only will our farmland be more resilient, but these techniques will contribute to less runoff-based pollution and combat the effects of climate change.

In *Perilous Bounty's* final pages, we learn that despite increasing consumer interest in local agriculture, "we have reached the limits of 'market-as-movement' to transform the food system" (p. 189). Philpott argues that for meaningful change, we will need much more, referencing the Green New Deal and vaguely calling for mass mobilization and activism. Without such initiatives, he warns, we are "heading into a hotter, less stable future with a food system that's as durable as an ice cube dropped on a sunny street" (p. 192). Overall, Philpott delivers a book heavy on facts, reporting, and exposition, while hinting at potential solutions in the closing chapters.

For the most part, the book accomplishes what it set out to do. Philpott creates an unforgettable portrait of a failing system. He makes convincing use of quantitative analysis to support a succession of vivid warning signs that necessitate immediate action. This is perhaps the book's greatest strength. It would be impossible to finish *Perilous Bounty* and remain unsure of the impact that our agricultural system has on the environment, and the fact that there are major corporate players across multiple industries that stand to benefit from continued inaction. Another strength is Philpott's decision to frame these impacts in the context of self-preservation rather than simply environmentalism.

In a 2019 interview with Varshini Prakash, founder of the Sunrise environmental organization, Ezra Klein (2019) noted that framing environmentalism as an act of altruism versus self-preservation was a major obstacle to the mass realization of the dangers of climate change. In *Perilous Bounty*, there is no danger of the reader missing the urgent self-preservation argument that Philpott makes. Especially in the California chapters, he drives home the near-apocalyptic dangers we face if we do not take issues like drought and megafloods seriously. He takes multiple pages to describe the catastrophic effects a megaflood would have, projected to include the submergence of the entire Central Valley and an estimated US$725 billion in damages (pp. 43–51).

Despite his use of impossible-to-ignore statistics and graphic descriptions of the consequences we face, Philpott still leaves us with questions. While it is powerful to be inundated with a deluge of facts and figures about the end of the agricultural world, to make an effective argument out of such a fear-mongering approach requires concrete solutions and a well-argued path forward. Philpott does not always succeed with these. While there are

moments of optimism throughout *Perilous Bounty*, they are few and far between. We get a short chapter on cover cropping, peppered throughout by reservations that such practices are not catching on, and then we get a mention of the Green New Deal in the final two pages of the book. Philpott is not required to save the world all by himself, and he succeeds in laying out the problems and their potential repercussions, but his argument would be more compelling if it concluded with a firm call to action. Therefore, the book falls short of accomplishing the second half of the lofty goal put forward in its subtitle: "*The looming collapse of American farming and how we can prevent it.*"

Overall, however, Philpott is successful in contributing to our collective knowledge of contemporary agriculture in the United States. *Perilous Bounty* catalogs the dangers we are facing with rigorous attention to detail. It belongs on the shelves of both academic and non-academic audiences. In academia, it would be useful in either high-level undergraduate or graduate courses in agriculture, environmental studies, or sustainable food systems as a solid overview of the current state of agriculture. Non-academic audiences, such as activists and non-profit groups, would find it useful in establishing a baseline understanding from which to create change.

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How power is created and exercised—often invisibly

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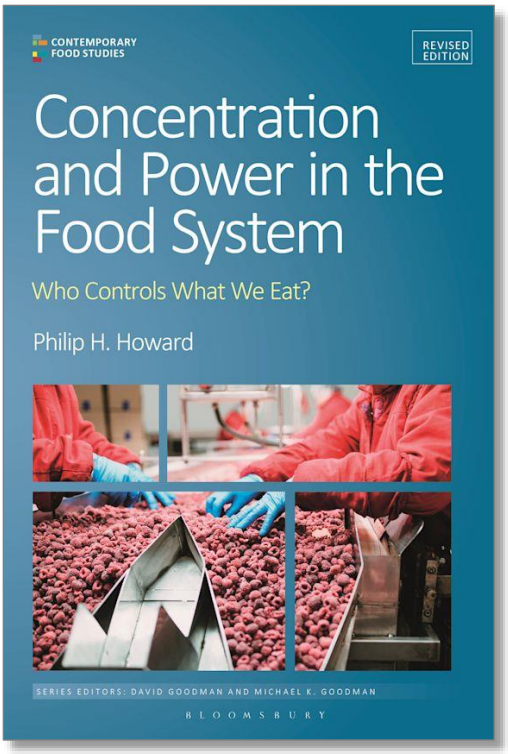

Review of *Concentration and Power in the Food System: Who Controls What We Eat? Revised edition,* by Philip H. Howard. (2021). Published by Bloomsbury Academic. Available as hardcover, paperback, and e-book; 232 pages. Publisher's website: https://www.bloomsbury.com/us/concentration-and-power-in-the-food-system-9781350183070/; author's website: https://philhoward.net/

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The steady drumbeat of headlines this year revealing the harms caused by concentrated ownership in the food system (Anderson & Weaver, 2022; Gutman, 2022; Hope-D'Anieri, 2022; Krupnick, 2022; Qiu, 2022; Snodgrass, 2022) shows renewed interest in a topic that was a central concern of American politics in the late 19th and early 20th centuries. The revised edition of Philip Howard's *Concentration and Power in the Food System* comes just in time to help us understand not only the degree and nature of concentration in our food system, but also how various kinds of concentration enable the exercise of power in ways that were unanticipated by earlier anti-trust legislation and which need to be addressed in new ways.

Chapter 1 introduces basic concepts about how market concentration is understood and measured, along with some of its consequences. Howard, working from a political economy perspective, points out that the effects of concentration are broader than those measured by economic criteria and argues that these effects, along with the supposed efficiencies, need to be better documented. His descriptions of how firms maneuver to increase and exercise their power over consum-

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ers, other producers, and regulatory environments supports a counter-argument to claims that concentration is a natural and desirable step in the direction of greater efficiency.

Chapter 2 describes how anti-trust legislation enacted in the late 19th and early 20th centuries to prevent concentration in the food system was weakened and undermined in the 1970s following heavy investment by industry to influence conservative politicians and federal judges. To the extent that regulators were paying attention to concentration, they were focused on its effects on consumer prices. What they were not paying attention to was the shift in power toward retailers, such as Walmart, which by 2018 had captured one quarter of the food retail market, more than twice its closest competitor, and whose overall annual sales are larger than the GDP of all but 23 countries. As such retailers gained market share, they became increasingly able to depress the prices they pay to their suppliers, as well as wages they pay to their employees, and to force changes along the entire supply chain.

A valuable aspect of this book for both scholars and regulatory activists is Howard's attention throughout the work to the inadequacy of current regulatory approaches for addressing modern forms of concentration. In the case of retail, for example, in addition to controlling greater shares of the food retail market, the top firms have also become increasingly vertically integrated, extending their control of supply chains by owning processing facilities and contracting directly with farmers. This type of concentration flies under the radar of concentration ratios based on horizontal integration. When these same firms are also major players in completely different industries, ranging from entertainment to finance, their ability to cross-subsidize further depresses competition and diminishes their need to innovate.

Chapter 3 focuses on distribution, which, while less concentrated than either retail or processing, has become increasingly dominated by a small number of large firms whose size enables them to serve and maintain some leverage with large retailers, as well as to force down prices paid to suppliers. As these large distributors become less responsive to the needs of their smaller customers, there may be an opportunity for local values-based supply chains to gain some ground, especially with institutional buyers that are susceptible to public pressure and local politics.

In Chapter 4, on packaged foods and beverages, Howard illustrates the stark changes of recent decades. Whereas Pabst's attempt to purchase another brewery in 1959 was blocked by regulators because it would have given Pabst a 4.5% market share—a ruling upheld by the Supreme Court in 1966 in order to prevent "concentration of the beer industry into fewer and fewer hands" (p. 58)—today the top two firms control more than 60% of the market. Some beer companies, taking a page from Nike's playbook, do not own any breweries, but acquire brands and contract with brewing facilities to produce their various beers. On Howard's website,[1] readers will find even more detailed information about how the growing popularity of craft beers has disguised concentration in the industry as large firms retain the names of acquired companies—a practice exemplified by AB InBev, which owns more than 500 brands. Other case studies in this chapter include soy milk, for which more than three quarters of the market is controlled by a single firm (White Wave), and bagged salad.

Chapter 5 describes how the several large firms that dominate commodity processing are able to manipulate prices. As the ownership of processing facilities has become more concentrated, the number of facilities has declined and become more geographically concentrated, leading to regional monopolies. Howard's description of how the dominance of several large firms at multiple stages in the supply chain has eliminated the operation of market forces shatters the notion that markets and regulation are in conflict. Rather, Howard's work provides strong support for the argument that regulation is necessary in order for markets to work as they are supposed to.

Howard also describes the political influence of grain-trading firms, especially how they have been able to influence international trade policy

[1] https://philhoward.net/

and food aid, and points out that the same few companies that dominate the processing market for each of the major commodities are also active in financial speculation on these commodities.

Chapter 6 describes how government support, including subsidies and research, has driven a resource-intensive model of overproduction that gives input providers the benefit of high sales and processors the benefit of low prices. Public support flows through farmers' hands to input providers as the farmers are caught on a treadmill: producing increasing volumes of food at consequently diminishing prices and falling further behind the faster they run. As more of them fall off, farms become fewer and larger. Howard details a variety of strategies that companies use to diminish farmers' bargaining power while pushing them to take on a greater share of investment and risk. As solutions, he mentions the EU policy of gearing subsidies toward environmental stewardship and rural development rather than production, and the American niche strategy of direct-to-consumer sales.

Chapter 7 pairs well with Vandana Shiva's work. Here, Howard draws a parallel between the enclosure movement in Britain and the contemporary process whereby input providers have strengthened their control over the food system by establishing intellectual property rights over plant and animal genetics in a context of diminishing diversity. He describes the merger of seed and chemical companies and tells the story of the first fully patented genetically engineered crop, Monsanto's Roundup Ready soybeans, which were developed for use with their glyphosate herbicide Roundup. The seeds are sold not as a product to be fully owned by the customer, but under license, enabling Monsanto to enforce various contractual obligations on the farmers, including the use of its herbicide and an aggressively enforced prohibition on saving seeds. Such maneuvering enabled Monsanto to maintain an 80% share of the glyphosate market even 6 years after its patent expired.

This chapter also touches on how increasing computerization in the highly concentrated equipment industry and the leading companies' control over data platforms makes it hard for farmers to switch hardware and exposes them to new forms of dependency. Howard's warnings and framing of this problem will pair well with Cox's forthcoming work (in press) on the role of open-source technology in building a just and sustainable food system.

Chapter 8 describes the corporate take-over of the organic sector, highlighting the role of venture capital in pushing consolidation. As with previous chapters, this one includes an abundance of information on mergers and acquisitions. Howard's excellent infographics unfortunately are printed such that they are too small to read, but they can be found on his website.

Like many academic works analyzing problems, this one is a bit short on solutions. Popular countermovements and direct-to-consumer marketing are offered as suggestions but are not explored in depth and remain unconvincing in the face of the author's own portrayal of extremely concentrated corporate control. Perhaps Howard is too aware of the power of agribusiness over public institutions to believe that sweeping regulatory change is possible, but his book makes it seem urgently necessary—if only to create space for grassroots alternatives.

Concentration in food and agriculture has long been a topic of interest for rural sociologists and human geographers. This well-referenced book draws on both classic works and leading contemporary scholars to bring readers up to speed on this subject. Howard's original contribution is twofold: First, he meticulously documents contemporary concentration in the food system, including its less obvious forms. Second, he describes how this concentration enables—and is intended to enable—the exercise of power. His clear, direct writing style will make both the facts and the concepts accessible to students, journalists, activists, and lawmakers, giving them the tools they need to talk about and understand economic power.

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