Journal of Agriculture, Food Systems, and Community Development
ISSN: 2152-0801 online
https://foodsystemsjournal.org

Growing health: Building partnerships in healthcare and food systems for improved food access in Appalachia

Annie Koempel [a] *
University of Kentucky

Lilian Brislen [b]
University of Colorado, Denver

Krista Jacobsen,[c] Jessica Clouser,[d]
Nikita Vundi [e]
University of Kentucky

Jing Li [f]
Washington University in St. Louis

Mark A. Williams [g]
University of Kentucky

Mark V. Williams [h]
Washington University in St. Louis

Submitted February 7, 2022 / Revised May 25, June 13, and July 6, 2022 / Accepted July 6, 2022 / Published online September 19, 2022

Citation: Koempel, A., Brislen, L, Jacobsen, K., Clouser, J., Vundi, N., Li, J., Williams, M. A., & Williams, M. V. (2022). Growing health: Building partnerships in healthcare and food systems for improved food access in Appalachia. *Journal of Agriculture, Food Systems, and Community Development, 11*(4), 261–271. https://doi.org/10.5304/jafscd.2022.114.022

Abstract

Hospitals not only provide access to healthcare services in rural areas; they also serve as major employers and economic drivers. The goal of this pilot study was to improve our understanding of how a rural healthcare system in Appalachian Kentucky could be leveraged to expand access to fresh fruits and vegetables. We conducted 11 semi-structured interviews with food system and healthcare stakeholders in Hazard, Kentucky, to (1) improve our understanding of key barriers to accessing and utilizing fresh produce for healthcare worker and patient populations, (2) identify models for direct-to-consumer market channels and farm-to-institution programming in collaboration with a local hospital, and (3) explore the potential of those models to

[a] * *Corresponding author:* Annie Koempel, MA, RD, LD, The Food Connection, and Dietetics and Human Nutrition, University of Kentucky; 308 Funkhouser Building; Lexington, Kentucky 40506 USA; ann.koempel@uky.edu

[b] Lilian Brislen, PhD, Institute for Engaged Food Systems Research, University of Colorado, Denver, Colorado.

[c] Krista Jacobsen, PhD, The Food Connection, and Department of Horticulture, University of Kentucky, Lexington, Kentucky.

[d] Jessica Clouser, MPH, Kentucky Consortium of Accountable Health Communities, University of Kentucky, Lexington, Kentucky.

[e] Nikita Vundi, MPH, DrPH, Kentucky Consortium of Accountable Health Communities, University of Kentucky, Lexington, Kentucky.

[f] Jing Li, MD, MS, Department of Medicine, Washington University in St. Louis, St. Louis, Missouri.

[g] Mark A. Williams, PhD, Department of Horticulture, University of Kentucky, Lexington, Kentucky.

[h] Mark V. Williams, MD, Department of Medicine, Washington University in St. Louis, St. Louis, Missouri.

Funding Disclosure

Igniting Research Collaborations, University of Kentucky (https://www.research.uky.edu/internal-research-support-programs/igniting-research-collaborations)

foster greater consumption of fruit and vegetables among community members.

Stakeholders emphasized the need for staff support and funding during program development and discussed the difficulty in maintaining prior local food and health promotion efforts when pilot funding expired. Other considerations included the importance of community ownership, robust communication and coordination among stakeholders, and attunement to the opportunities and challenges of a hospital-based approach. Direct farm-to-consumer models were considered feasible but would require accommodation for low-income consumers, such as vouchers, sliding-scale payment methods, or "double dollar" programs. Farm-to-hospital initiatives were discussed in the context of the COVID-19 pandemic and reduced hospital cafeteria usage, which may limit the success of some events but highlights the potential for to-go options such as pre-prepared salads, lightly processed snacks, and medically tailored meal kits.

Results of this study illustrate the challenges and opportunities of leveraging a rural hospital as an anchor institution for expanding local food system development in rural Appalachia. This study also offers insights into the intersections of health, culture, and economy in an Appalachian community, and provides a framework for expanding local food system initiatives.

Keywords
Rural, Farm-to-Institution, Social Determinants of Health, Prevention, Procurement, Hospitals, Appalachia

Introduction

Healthcare-based local food systems initiatives have grown rapidly across the U.S. in recent years. These initiatives typically emphasize improved health through the introduction of fresh, local produce, which may help prevent the development of chronic diseases such as diabetes, heart disease, and cancer (Aune et al., 2018; Diener & Rohrmann, 2016; Esmaillzadeh et al., 2006). These initiatives range from lunchtime vegetable specials in the cafeteria to federally funded produce prescription programs (Aucoin & Fry, 2015; Dolstad et al., 2016; Raison & Scheer, 2015). The largest U.S. healthcare system (Kaiser Permanente) even hosts farmers markets on its campus (Cromp et al., 2012). Beyond patient care, farm-to-healthcare initiatives serve as a driver for the growth of local food economies and the expansion of access to fresh and seasonal foods for healthcare workers and the broader community (Bryce et al., 2017; Buyuktuncer et al., 2014; Forbes et al., 2019; Hileman, 2021; Joshi et al., 2019).

In Appalachian Kentucky, healthcare systems are one of the largest sources of employment and serve as hubs for social and economic activity (Kentucky Center for Statistics, n.d.). Recent research in the region indicates the potential for healthcare systems to serve as sites that expand both local food system development and improved access to fresh fruits and vegetables. Transportation is a key barrier in central Appalachia, where the distance between locations is compounded by the mountainous terrain (Schoenberg et al., 2013). Fresh food tends to cost more than the national average due to the costs associated with transporting it into the area and the distance consumers must travel to reach fresh food sellers (Suarez et al., 2015; U.S. Department of Agriculture, 2014). For these reasons, healthcare organizations can be natural allies to agricultural and local food enterprises. Hospitals are more centralized and familiar and may provide the initial investment (of time, money, and space) necessary to implement a decentralized model to improve access to fresh and local food.

Through the work of multiple community-based organizations, initiatives, and individual consumer demand, the region has experienced growth in demand for locally raised, healthy food in farmers markets, restaurants, and independent grocery stores (Hindman Settlement School, 2017; Jones, 2017; Kentucky Department of Agriculture, n.d.; Kentucky Department of Tourism, 2018). Researchers studying opportunities for local food economies in the region found growing demand for local food, a robust pool of established and emerging farm operations, and a significant amount of underutilized farmland currently in hay production (Rossi et al., 2018). Expansion of small-scale local production focused on consistent supply to even one wholesale or institutional customer has

the potential to increase regional capacity.

At the same time, researchers in the region have found that food insecurity consistently ranked as a pervasive social need for Medicare and Medicaid beneficiaries in the region (Kentucky Consortium of Accountable Health Communities). These findings align with national data that indicate food insecurity in Kentucky(14.4%) outpaces that of the United States as a whole (10.9%) (Feeding America, 2018). Taken together, low population density and limited transportation pose a particular challenge for healthy food access.

Despite challenges in addressing food insecurity, communities across Appalachia have a history of cooperative and innovative approaches to serving disadvantaged populations at the intersection of food and health. Building from an assets-based framework, leveraging the resources and opportunities embedded in regional anchor institutions is a key strategy for growing wealth in under-resourced and marginalized communities like rural Appalachia. The study presented in this paper had two goals: (1) to identify possible models for developing direct-to-consumer and farm-to-institution market channels in collaboration with a rural hospital, and (2) to foster greater fruit and vegetable consumption among community members. The data provide preliminary recommendations for how community health initiatives can integrate local food system partners in ways that honor community identity and foodways while providing healthful foods and growing regional economies.

Methods

This qualitative descriptive study (Sandelowski, 2000) was guided by a community-based participatory design to engage key stakeholders in the planning of a farm-to-hospital initiative. The purpose of the qualitative interviews and focus groups was to gather contextually rich insights from community members regarding opportunities and challenges relative to community food security and culinary skill-building. The semi-structured interview guide was adapted from the USDA Community Food Security Assessment Toolkit (Cohen et al., 2002). The interview guide was reviewed and refined by the research team to fit the goals of the study and tailor it to the target audience. The study was approved by the University of Kentucky Institutional Review Board.

A focus group (N=10) was conducted with members of an advisory board for a separate study that targeted addressing the health-related social needs of community-dwelling Medicare and Medicaid beneficiaries in Eastern Kentucky. Participants in this group represented healthcare systems, Medicaid Managed Care Organizations (MCOs), community service providers, local public health departments, and community development initiatives and organizations.

Due to the ongoing COVID-19 pandemic, all focus groups and interviews were conducted via the Zoom video conferencing platform. Participants were asked to use video if they were comfortable to foster rapport and increase engagement. All interviews were recorded after verbal informed consent was obtained from participants. Due to the remote nature of the focus-group interviews, participants who were not comfortable with recording were told that they could leave the interview without any repercussions.

Data Analysis

Interview notes were compared against audio recordings to confirm accuracy and were then entered into NVivo (Version 12) for coding. An a priori coding schema was developed based on project priorities (Table 1). Three coders analyzed a single transcript and reached an average of 95% agreement across all codes. They were judged to have sufficient consistency to code the remaining interviews independently.

Table 1. Coding Schema

Realms of activity: How participants interact with the food and/or healthcare systems
General food environment
Community food system assets
Examples of successful initiatives
Causes, exacerbating factors and impacts of food insecurity in the county
Key challenges and bottlenecks for future food/nutrition initiatives
Areas for further research needed
Key considerations

Results

Participants described Perry County as home to an engaged, cooperative community with a history of obtaining grant funding and initiating food and health pilot programs to serve disadvantaged populations. Perry County has seen a movement toward local or healthy food in area restaurants and grocery stores, as well as programs that train and support community members as they learn to grow food.

Examples of successful initiatives reported by participants include a sliding-scale community supported agriculture operation (CSA), Farmers Market Double Dollars for Supplemental Nutrition Assistance Program (SNAP) beneficiaries, senior vouchers, pop-up farmers markets, cooking demonstrations, and farm-to-table dinners with varied pricing structures to increase access. Its primary hospital, Hazard Appalachian Regional Healthcare Regional Medical Center, has a history of food and health pilot programs, including an onsite farmers market, grocery store (during COVID-19), diabetes education programming, and collaborations with a local venture capital company, AppHarvest, to deliver fresh tomatoes to the hospital to distribute among patients, staff, and community members.

Such initiatives represent efforts and contributions from diverse sources and collaborations, including nonprofit and community organizations (e.g., Community Farm Alliance, North Fork Local Food), faith-based organizations (e.g., Food and Faith Coalition, local churches), city and county government, state agencies and health departments, area growers and local businesses, and a network of area primary care clinics that have been active in food security and social determinants of health. Importantly, there is also a deep bench of similar agencies and organizations in surrounding counties whose experience, insight, and skills can be leveraged to further the goal of expanding access to fresh, local foods for area residents. Examples of potential partners include healthcare organizations, nonprofits, institutions of higher education, farmer support and training programs, community kitchens and value-added or processing facilities, and fresh-food prescription and voucher programs. These organizations, and particularly one that is among the largest employers in the area—the healthcare system—offer prime opportunities for partnerships and capacity-building to further expand access to fresh, local foods.

Opportunities and Visions to Leverage Existing Partnerships

Four interconnected opportunities and strategies were identified by participants. First, participants supported the location of the hospital as a focus of efforts to expand access to local food. Healthcare representatives specifically mentioned hospitals as resources and optimally situated to both get information "to patients about fresh stuff, about farmers markets, about the Kentucky Double Dollars program, and senior vouchers" and also to tap into federal dollars, such as Medicaid. Nonetheless, food system participants noted that past efforts to enhance access to local food did not engage industry settings such as hospitals or manufacturing facilities where employees congregate and may work long hours. One individual noted that doing so could help bridge the cultural "disconnect in the college domain and the working middle class" that has often existed in local food efforts.

Second, participants highlighted the importance of considering a "hub-and-spoke model" when thinking of a centralized hospital-based approach to expanding local food access. One participant suggested eventually expanding a hospital-based farmers market with dispersed minimarkets at primary care clinics to reach rural consumers.

Relatedly, participants also suggested that building on existing partnerships—including Cooperative Extension, older adult service organizations, community gardens, and county fairs—could help maintain community interest and ownership. In fact, leveraging such relationships was viewed as crucial to ensuring that the "spokes" of a hub-and-spoke model could be activated and community engagement maintained.

Finally, as funding was a perennial concern of all participants in their work to enhance healthy and/or local food access, they shared various ideas for payment and funding models that had been or could be used to overcome financial barriers. Some participants suggested developing diverse payment and funding models to ensure long-term inclusivity

and success. Examples included prescription programs (e.g., a Farmacy program); vouchers funded through employee benefit and wellness programs, community foundations, or payors (e.g., MCOs); and sliding-scale markets with voluntary designation by participants into tiered payment categories. Policy change was cited as a potential method of expansion, not only in the funding arena, but through the expansion of federally funded benefits—such as SNAP—to pay for CSAs or meal kits.

Challenges with Enhancing Access to Local Food

While recognizing the successes and positive effects of past and current initiatives, participants identified four areas of consideration for future efforts to increase healthy food access: funding, community ownership, communicating with and engaging key stakeholders, and considering the hospital-based approach. Each of these themes is discussed in more detail below. Table 2 lists additional challenges and considerations that were less frequently discussed by participants (that is, minor themes).

Funding as a Key Barrier to Food System Projects

Funding was the most-cited barrier to the implementation of food-related pilot programs. Healthcare stakeholders noted the importance of insurance reimbursement to the successful implementation and sustainability of programming. Over the past few years, interview participants observed the initiation of multiple local food programs, only to see the grant money run out and the program end. For example, a participant shared that "Around 2016/2017 [the schools] had a farm-to-school program and the coordinating was driven by dedicated people. Eventually those people left, and the lovely grant money went away, so most of the program also disappeared."

Related to that, stakeholders mentioned the need for a designated coordinator to sustain and grow programmatic efforts. Again, the reliance on grants, which often provide short-term funding for discreet efforts, could often provide an initial boost, but without long-term support, those positions could not be sustained.

Community Ownership of Project Development and Implementation

Stakeholders were adamant that growth of local food system efforts had to first take root in the soil of community. "One of the sensitivities [among people living in eastern Kentucky]," a healthcare representative stated, "is that people in the big city are coming to fix or save us." In order for any initiative to have long-term success, one participated noted that "it has got to be theirs, and it HAS to be their energy and resources to keep it over time." This sentiment was repeatedly vocalized. As a leader in local agriculture stated in an interview, "we have found natural connections that can make the program successful because people are invested [in] other participants."

Other participants noted how "natural connections" are multiscalar. Conversations between community members form the first layer of connections, as word of mouth and social media spread excitement and invite participation. "I think it just keeps building off of the synergy," a program di-

Table 2. Additional Challenges and Considerations

Evaluation and return on investment:
• Change in health outcomes is generally not feasible during the scope of typical evaluation efforts.
• Lack of access to appropriate data (e.g., medical claims or patient health records) can limit evaluation efforts.
Access:
• Transportation is a major barrier across the region.
• Broadband internet access is a major barrier to remote educational opportunities.
Relationships and partnerships:
• Community leader and advocate are needed to spearhead communication with community.
Grower considerations:
• Consumers may be unfamiliar with the seasonality of locally grown products.
• Planning ahead is crucial so farmers can adjust their growing plans.

rector said, "and when people see their neighbors selling at the farmers market and talking to them, this is a hope story."

Community ownership also develops via the relationships between community members and flagship institutions, such as churches and hospitals. As one participant stated, "churches are key here." Others noted that engaging churches could be one way to extend the resources provided by the centralized hub to more rural community members who cannot reach it. Such an approach would not be without effort, though. "It would take someone being able to go out there," one participant reflected, to "meet them where they are and talk with them."

Participants also highlighted that community ownership could be facilitated by growing partnerships between institutions and community organizations and nonprofits. Community Farm Alliance (CFA), whose mission is to encourage and develop the feasibility of family-scale agriculture (Community Farm Alliance, 2021), and Grow Appalachia (GA), which seeks to create resilient and economically viable food systems (Grow Appalachia, 2021), were regularly mentioned in interviews and focus groups as key partners in the overall project. A program coordinator said that CFA and GA were great partners, then reflected: "They struggle with the same constraints that we are talking about. They have a lot of knowledge but not a lot of money." They suggested that by leveraging hospital resources, they could expand collaborations to bolster the feasibility and success of local agricultural enterprises.

Communicating With and Engaging Key Stakeholders

Participants routinely reflected sensitivities to the perspectives and experiences of their communities when they spoke about their efforts to enhance access to local food. So often, investment in expanding food access is predicated on a desire to improve population health. As some participants, noted however, a focus on a disease state can be stigma-inducing and was therefore avoided:

> The presentation of the material is not about participants having diabetes or heart disease. We don't like to say X county has the most heart disease in the state. We don't want to impose stigma. We don't want outside groups to come in and create an image of them that is not theirs.

Expanding outreach and communication activities beyond the early adopters or "joiners" of many local food initiatives was also noted as an important focus for many participants. As one community member noted, "people are on board [with farmers markets], but it's the same people. We need to do better with outreach." Indeed, one key strength of the hospital-based food hub approach was that it had the potential to bring healthy foods to individuals who may not have the time, transportation, or social connections to visit a farmers market, but who could benefit from the enhanced access to fresh food. Food system stakeholders commented on the growth of interest in marketing and buying local foods in the region. One program director reflected, "I don't think everybody is out there searching for that local supplier," they said, "but I think if it's easy. … I certainly think that we're to the point now, in terms of the consumer mindset, they're going to go local because everybody has been told enough that local is better." In this way, trusted institutions, community organizations, and sites of local food purchasing can act (and have acted) as advocates of the local food system, extending their reach beyond the main stakeholders.

Education and Skill Development

Encouraging people to explore, cook, and eat different foods is seen by stakeholders as a challenge. A healthcare representative gave this anecdote as explanation. "A food truck came in around Thanksgiving and [one thing they gave out was eggplant] … and the trash cans were filled with eggplant. Not sure if it's a knowledge issue, maybe not knowing how to prepare [it]. There is a need to introduce people to how to prepare [vegetables] properly so they know how to enjoy it."

Culinary enrichment activities, including sampling, cooking demonstrations, and skill building, were suggested as a means to move eggplants to a dinner plate instead of in the garbage. While partic-

ipants noted high demand for traditional Appalachian fruits and vegetables such as tomatoes, corn, and beans, introducing new ways of enjoying those foods was a challenge. "There's a good market for traditional foods like sweet potatoes," an extension employee shared, "We tried to look into new ways of preparing them, but it hasn't caught on."

Discussion

This study explores the opportunities and challenges of leveraging a rural healthcare system to expand community access to fresh local foods, informed by community stakeholders. Due to the inherent connection between food and health, healthcare organizations can be natural allies to agricultural and local food enterprises. Furthermore, hospitals are a major employer in the region. By partnering with local growers, hospitals can become sites of preventative health efforts for employees and the community at large as well as providing a direct link between patients, employees, and local growers. While the hospital as an employer offers the potential for employer-based vouchers to incentivize participation, the healthcare setting opens opportunities for reaching patient populations through fruit and vegetable prescription programs or other incentives. As part of an institution with considerable purchasing power and general funds, hospital dining services' procurement provides a considerable avenue for a local food systems initiative.

While there was substantial support among participants for anchor institutions, such as rural hospitals, to serve as food hubs, participants suggested that a hub-and-spoke model was preferable to further expand access to fresh food among rural-dwelling residents. Transportation is a key barrier for many central Appalachia residents, where the distance between locations is compounded by the mountainous terrain (Schoenberg et al., 2013). Hospitals are centralized and familiar to many residents and may provide the initial investment (of time, money, and space) necessary to eventually implement a decentralized model to improve access to fresh and local food. Potential partners for hub-and-spoke activities may include primary care clinics, who serve as natural partners in preventive medicine, and also churches, which are often the site of both information- and food-sharing (Schoenberg, 2017; Schoenberg & Swanson, 2017). Logistically, a decentralized model may be more complex, but it would further improve consumer access to seasonal produce.

The support of partnerships vocalized by participants extended beyond the hub-and-spoke approach, however, and extended to community ownership at multiple levels: community members who are excited to spread the word, institutions who can share information and leverage resources, and community organizations who can collaborate and build connections.

By building on existing relationships, Cooperative Extension Services, older adult organizations, county fairs, and community gardens could be valuable sites for information exchange. Suggested models to expand the inclusivity of programming included sliding-scale payments, fruit and vegetable prescriptions, and farmers market vouchers.

Substantive challenges to hospital-based local food initiatives included adequate and sustainable funding, although participants offered ideas for diversified funding streams, including employer-sponsored wellness initiatives and policy reforms to help reimburse efforts to address food insecurity. Even if fully funded, community ownership over programs through the input of community partners and advocates is crucial. Communication with stakeholders and the broader community are necessary to the success and adoption of the program, particularly to those most at risk or hardest to reach. The hospital-based approach provides benefits such as familiarity and serving as a natural ally to local agricultural enterprises via a commitment to preventative health. But it also includes challenges, such as the centralized location that may prove difficult for all rural residents to reach affordably and regularly. Additional challenges consist of how to evaluate the program to best show institutional return on investment, overcoming barriers to accessibility (including transportation and broadband internet), finding and building partnerships with key community advocates, and taking into account grower considerations such as seasonality and planning the growing season ahead of time.

Building ownership of local food initiatives in

a community requires thoughtful and inclusive outreach and communication efforts. As seasoned community representatives, participants offered nuanced insight into considerations associated with engaging hard-to-reach populations. For example, the proliferation of third-party certifications (e.g., Organic, Bio-Dynamic) and unregulated terms used for marketing (e.g., "natural," "pastured") has resulted in significant confusion and misinformation across all consumer groups. This confusion, along with the inevitable association of marketing terms with ethical and moral values, has resulted in sensitivities across the farm-to-table spectrum and some consumers to feel judged for purchasing food with or without certain labels. Designing markets in ways to maximize inclusivity and reducing unnecessary labeling may help.

Similarly—and in accordance with others' research—our participants noted that individuals with lower incomes have food preferences just like everyone else, and will often exchange or return free food that does not align with their preferences (Dickinson, 2020; Fitchen, 1997; Kolavalli, 2019). Furthermore, local narratives of unappealing foods (such as trash bags full of eggplant) often take on lives of their own, shaping community food preferences over time. Such stories can be difficult to supplant and may require repeated exposure to positive experiences.

Unfortunately, food preferences cannot be "hacked" or "disrupted"—there is no technological fix for the social and emotional layers tied to everyday food consumption and lifelong preferences. However, the tension between diversifying crops and consumer demand can create a space for information exchange and an opportunity for communities to build initiatives that embody shared goals and values. Growers can learn what, from the perspective of the community, "must" be grown to honor local tastes and traditions, while customers can learn culinary enrichment skills that might—slowly—invite them to incorporate new foods.

This study aligns with previous research that demonstrates the benefits of increasing access and affordability of locally grown fruits and vegetables by a large employer (Alia et al., 2014; Backman et al., 2011; Saleh et al., 2010; Sorensen et al., 1999). Little research has been conducted on implementing such preventative health programming in rural areas, particularly farm-to-hospital initiatives. By engaging with key stakeholders early in the development process, the research team can take critical challenges into account and operationalize potential opportunities.

Limitations

There are several potential limitations to the interpretation and representation of results in this study. First, these results may not be easily generalizable to other rural areas, even in the same state. Second, participants were largely stakeholders working in nonprofits and healthcare; while their insights are valuable to establishing a local food program, their knowledge is limited to their own experiences. In other words, they can only guess why and how people in their community purchase and eat locally grown produce. Third, social desirability bias is a natural limitation of focus group and interview research; the research team undertook every effort to make communication open and honest (Sriram et al., 2018). Strengths of this study include inviting the participation of a range of individuals from diverse institutional settings in eastern Kentucky early in the project development stage.

Implications

Results of this study illustrate the major challenges to and opportunities for implementing a farm-to-hospital initiative in rural central Appalachia. The use of clinic spaces to support farm-to-consumer enterprises is feasible and provides opportunities to expand institutional partner engagement as well as reach a more diverse consumer base—especially if customers could utilize sliding-scale payments and/or vouchers. Robust and sustainable funding is necessary to programmatic success, but participants were optimistic that exploring institutional partnerships and policy reforms allowing for reimbursement for social services (e.g., food access), could help diversify funding streams for this work. Additional considerations for programmatic success include outreach to hard-to-access, lower-income populations and the implementation of adequate evaluation metrics. A consistent, compensated staff position can help to improve communication between the institution and local growers.

Next steps will be to continue to develop a farm-to-hospital program with the continued guidance of a steering committee of stakeholders. It will seek to operationalize the available opportunities and work with community members to overcome challenges and barriers. This study suggests that a farm-to-hospital program could be successfully implemented in eastern Kentucky. In this way, hospitals can serve local communities as sites of preventive health.

Acknowledgments

The research team would like to thank the community stakeholders who took the time to meet and talk with us. We value their time, input, and perspective, without which this research would not be possible.

References

Alia, K. A., Freedman, D. A., Brandt, H. M., & Browne, T. (2014). Identifying emergent social networks at a federally qualified health center-based farmers' market. *American Jounal of Community Psychology, 53*(3–4), 335–345. https://doi.org/10.1007/s10464-013-9616-0

Aucoin, M., & Fry, M. (2015). Growing local food movements: Farmers' markets as nodes for products and community. *The Geographical Bulletin, 56,* 61–78.

Aune, D., Keum, N., Giovannucci, E., Fadnes, L. T., Boffetta, P., Greenwood, D. C., Tonstad, S., Vatten, L. J., Riboli, E., & Norat, T. (2018). Dietary intake and blood concentrations of antioxidants and the risk of cardiovascular disease, total cancer, and all-cause mortality: A systematic review and dose-response meta-analysis of prospective studies. *American Journal of Clinical Nutrition*, *108*(5), 1069–1091. https://doi.org/10.1093/ajcn/nqy097

Backman, D., Gonzaga, G., Sugerman, S., Francis, D., & Cook, S. (2011). Effect of fresh fruit availability at worksites on the fruit and vegetable consumption of low-wage employees. *Journal of Nutrition Education and Behavior, 43*(4, Suppl. 2), S113–-S121. https://doi.org/10.1016/j.jneb.2011.04.003

Bryce, R., Guajardo, C., Ilarraza, D., Milgrom, N., Pike, D., Savoie, K., Valbuena, F., & Miller-Matero, L. R. (2017). Participation in a farmers' market fruit and vegetable prescription program at a federally qualified health center improves hemoglobin A1C in low income uncontrolled diabetics. *Preventive Medicine Reports, 7*, 176–179. https://doi.org/10.1016/j.pmedr.2017.06.006

Buyuktuncer, Z., Kearney, M., Ryan, C. L., Thurston, M., & Ellahi, B. (2014). Fruit and vegetables on prescription: a brief intervention in primary care. *Journal of Human Nutrition and Dietetics*, *27*(Suppl. 2), 186–193. https://doi.org/10.1111/jhn.12109

Cohen, B., Andrews, M., & Kantor, L. S. (2002). *Community Food Security Assessment Toolkit* (Report No. EFAN-02-013). U.S. Department of Agriculture. https://www.ers.usda.gov/publications/pub-details/?pubid=43179

Community Farm Alliance. (n.d.). *Mission*. Retrieved 2021 from https://cfaky.org/about/mission/

Cromp, D., Cheadle, A., Solomon, L., Maring, P., Wong, E., & Reed, K. M. (2012). Kaiser Permanente's farmers' market program: Description, impact, and lessons learned. *Journal of Agriculture, Food Systems, and Community Development, 2*(2), 29–36. https://doi.org/10.5304/jafscd.2012.022.010

Dickinson, M. (2020). *Feeding the crisis: Care and abandonment in America's food safety net*. University of California Press. https://doi.org/10.1525/9780520973770

Diener, A., & Rohrmann, S. (2016). Associations of serum carotenoid concentrations and fruit or vegetable consumption with serum insulin-like growth factor (IGF)-1 and IGF binding protein-3 concentrations in the Third National Health and Nutrition Examination Survey (NHANES III). *Journal of Nutritional Science*, *5,* Article e13. https://doi.org/10.1017/jns.2016.1

Dolstad, H. A., Woodward, A. R., Green, C. L., & McSpirit, S. J. (2016). Interest in nutrition and local food systems among food-insecure households in an Appalachian community. *Journal of Hunger & Environmental Nutrition*, *11*(3), 340–353. https://doi.org/10.1080/19320248.2016.1146191

Esmaillzadeh, A., Kimiagar, M., Mehrabi, Y., Azadbakht, L., Hu, F. B., & Willett, W. C. (2006). Fruit and vegetable intakes, C-reactive protein, and the metabolic syndrome. *American Journal of Clinical Nutrition*, *84*(6), 1489–1497. https://doi.org/10.1093/ajcn/84.6.1489

Feeding America. (n.d.). *What hunger looks like in Kentucky*. Feeding America. Retrieved 2018 from https://www.feedingamerica.org/hunger-in-america/kentucky

Fitchen, J. M. (1997). Hunger, malnutrition, and poverty in the contemporary United States: Some observations on their social and cultural context. In C. Counihan & P. Van Esterik (Eds.), *Food and culture: A reader* (pp. 384–401). Routledge.

Forbes, J. M., Forbes, C. R., Lehman, E., & George, D. R. (2019). "Prevention produce": Integrating medical student mentorship into a fruit and vegetable prescription program for at-risk patients. *The Permanente Journal*, *23*(2) . https://doi.org/10.7812/TPP/18-238

Grow Appalachia. (n.d.). *Our mission*. Retrieved 2021 from https://growappalachia.berea.edu/about/

Hileman, E. (2021). Empowerment, love, and connection: Lessons learned from the Farmacy Project, a food-is-medicine program in Rutland, Vermont. *Journal of Agriculture, Food Systems, and Community Development, 11*(1), 11–13. https://doi.org/10.5304/jafscd.2021.111.011

Hindman Settlement School. (n.d.). *East Kentucky Food & Dance Trail*. Retrieved November 2021 from https://web.archive.org/web/20200815165346/http://ekyfoodanddance.org/

Jones, S. (2017, October 11). Can local food help Appalachia build a post-coal future? *The Nation*. https://www.thenation.com/article/archive/can-local-food-help-appalachia-build-a-post-coal-future/

Joshi, K., Smith, S., Bolen, S. D., Osborne, A., Benko, M., & Trapl, E. S. (2019). Implementing a produce prescription program for hypertensive patients in safety net clinics. *Health Promotion Practice*, *20*(1), 94–104. https://doi.org/10.1177/1524839917754090

Kentucky Center for Statistics. (n.d.). *Labor market information report library*. Retrieved November 2021 from https://kystats.ky.gov/KYLMI

Kentucky Department of Agriculture. (n.d.). *Farmers' markets*. Retrieved November 2021 from https://www.kyproud.com/farmers-markets/

Kentucky Department of Tourism. (n.d.). *Explore local food*. Retrieved November 2021 from https://www.kentuckytourism.com/food

Kolavalli, C. (2019). Whiteness and food charity: Experiences of food insecure African-American Kansas City residents navigating nutrition education programs. *Human Organization*, *78*(2), 99–109. https://doi.org/10.17730/0018-7259.78.2.99

Raison, B., & Scheer, S. D. (2015). Potential of local food use in the Ohio health care industry: An exploratory study. *Journal of Agriculture, Food Systems, and Community Development, 5*(3), 131–147. https://doi.org/10.5304/jafscd.2015.053.011

Rossi, J., Meyer, A. L., & Knappage, J. (2018). *Beyond farmers markets: Local food opportunities in southeastern Kentucky's retail and institutional industry*. Kentucky Center for Agriculture and Rural Development (KCARD). https://cedik.ca.uky.edu/files/beyond_farmers_markets_final.pdf

Saleh, S. S., Alameddine, M. S., Hill, D., Darney-Beuhler, J., & Morgan, A. (2010). The effectiveness and cost-effectiveness of a rural employer-based wellness program. *Journal of Rural Health*, *26*(3), 259–265. https://doi.org/10.1111/j.1748-0361.2010.00287.x

Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing & Health*, *23*(4), 334–340. https://doi.org/10.1002/1098-240X(200008)23:4%3C334::AID-NUR9%3E3.0.CO;2-G

Schoenberg, N. E. (2017). Enhancing the role of faith-based organizations to improve health: A commentary. *Translational Behavioral Medicine*, *7*(3), 529–531. https://doi.org/10.1007/s13142-017-0485-1

Schoenberg, N. E., Howell, B. M., Swanson, M., Grosh, C., & Bardach, S. (2013). Perspectives on healthy eating among Appalachian residents. *Journal of Rural Health*, *29*(Suppl. 1), s25–s34. https://doi.org/10.1111/jrh.12009

Schoenberg, N. E., & Swanson, M. (2017). Rural religious leaders' perspectives on their communities' health priorities and health. *Southern Medical Journal*, *110*(7), 447–451. https://doi.org/10.14423/SMJ.0000000000000671

Sorensen, G., Stoddard, A., Peterson, K., Cohen, N., Hunt, M. K., Stein, E., Palombo, R., & Lederman, R. (1999). Increasing fruit and vegetable consumption through worksites and families in the Treatwell 5-a-Day study. *American Journal of Public Health*, *89*(1), 54–60. https://doi.org/10.2105/AJPH.89.1.54

Sriram, U., Morgan, E. H., Graham, M. L., Folta, S. C., & Seguin, R. A. (2018). Support and sabotage: A qualitative study of social influences on health behaviors among rural adults. *Journal of Rural Health*, *34*(1), 88–97. https://doi.org/10.1111/jrh.12232

Suarez, J. J., Isakova, T., Anderson, C. A. M., Boulware, L. E., Wolf, M., & Scialla, J. J. (2015). Food access, chronic kidney disease, and hypertension in the U.S. *American Journal of Preventive Medicine*, *49*(6), 912–920. https://doi.org/10.1016/j.amepre.2015.07.017

U.S. Department of Agriculture [USDA]. (2014). *Food Environment Atlas*. USDA Economic Research Service. https://www.ers.usda.gov/data-products/food-environment-atlas/go-to-the-atlas/