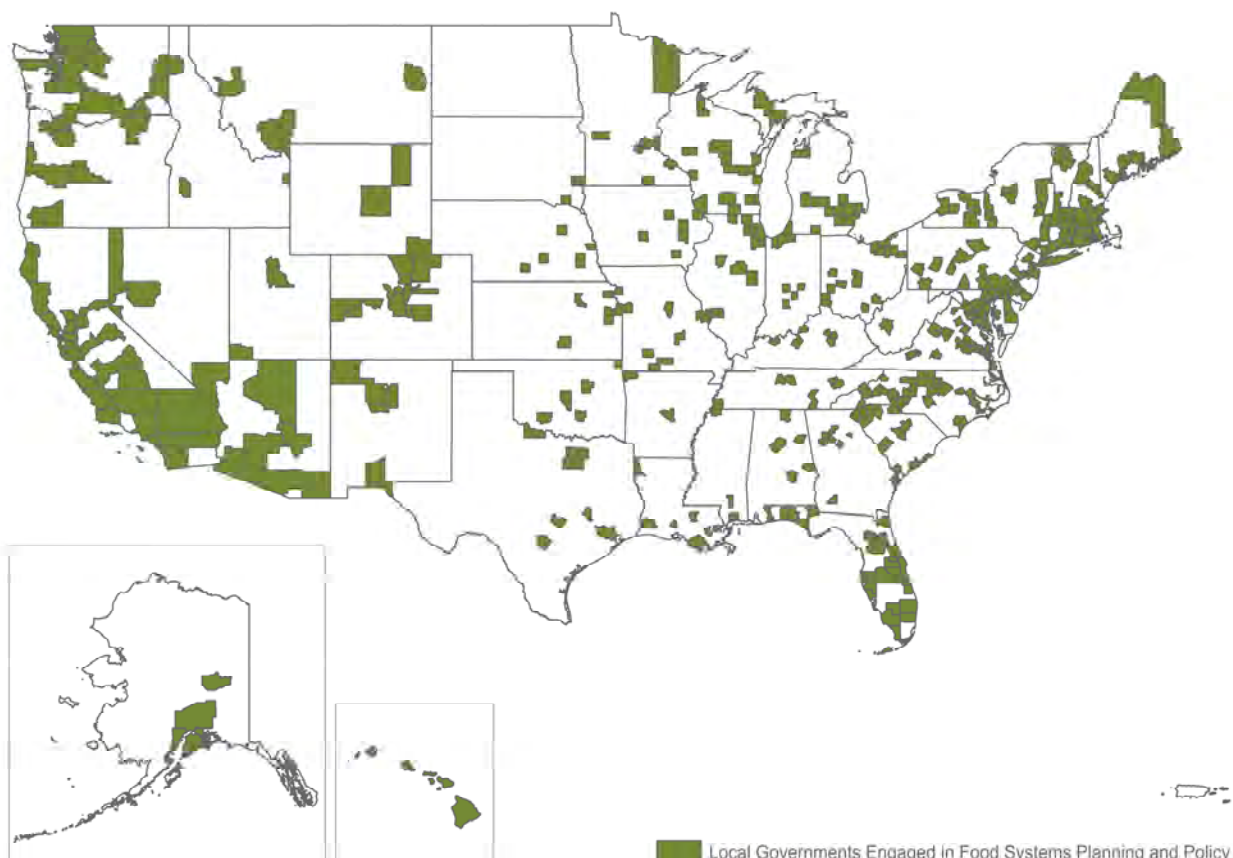


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Local Government in Food Systems Work

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*Map created by Zhu Jin at the University at Buffalo (SUNY)
Food Systems Planning and Healthy Communities Lab*



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About this issue: The 11 manuscripts in this issue were selected for publication following a call for submissions developed by the guest editors in partnership with JAFSCD and its advisors. Submitted manuscripts underwent the journal's peer-review process and an additional review by the guest editors of the special issue.

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IN THIS ISSUE

Reflexive and inclusive: Reimagining local government engagement in food systems

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Introduction

It is time to shift the trajectory of how local governments engage in communities' food systems.

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Local and regional government (LRG) involvement in food systems is essential and welcome, of course. However, recent experiences, as well as what is on the horizon, suggest that practitioners

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About this issue: This special issue is sponsored by the Growing Food Connections (GFC) national initiative. The 11 manuscripts in this issue were selected for publication in this special issue following a call for submissions developed by the guest editors of this special issue in partnership with JAFSCD and its advisors. Submitted manuscripts underwent the journal's peer-review process and an additional review by the guest editors of the special issue.

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Special JAFSCD Issue

Local Government in Food Systems Work



and scholars must reimagine the roles local governments play and how they play them. Failure to reflect and correct course on public policy measures to strengthen community food systems will be judged as short-sighted by historians, much the same way that urban renewal policies are critiqued today.

Thus it is critical to ask: How are LRGs engaging in the food system, and how are they reflecting on this engagement? How is this engagement advancing or impeding the planning, policy, and creation of inclusive, equitable, and just food systems? How is this progress being monitored and measured? And, more importantly, how should local governments be changing the nature of their engagement to ensure equitable and just outcomes? These are the key questions tackled in this special issue of the *Journal of Agriculture, Food Systems, and Community Development* (JAFSCD).

LRG interest and involvement in food systems in the United States and Canada have been invigorated in the last decade (Raja, Born, & Kozlowski Russell, 2008; Raja & Whittaker, 2018). LRGs, including general-purpose governments such as city, town, and county governments, as well as special-purpose governments such as school districts, have responded to the calls of residents, community advocates, and scholars to address problems in the food system that have been thoroughly described elsewhere (Pothukuchi & Kaufman, 1999). The nature of this response across the U.S. is documented by the Growing Food Connections (GFC) initiative, a national and comprehensive action-research initiative designed to build the capacity of local governments to promote food access and agricultural viability. GFC is the sponsor of this special issue of JAFSCD. Experience from the GFC initiative, which is led by the guest editors of this special issue, points to wide variation in where and how local and regional governments are engaging in the food system (<http://www.growingfoodconnections.org>). Indeed, the cover illustration of this special issue maps the geographic breadth of LRG engagement in communities' food systems. Some LRGs are rapidly adopting and implementing public policies

to strengthen food systems, while others are still trying to figure out *whether and how* they should get involved. LRG engagement varies widely in the degree of formality: some local governments are convening conversations, while others are passing laws and ordinances. Purposeful inaction by local and regional governments, we argue, is a policy decision, too.

Although there are many ways to categorize public policies (Salamon, 2002), for heuristic purposes we categorize LRG policies as (i) soft policies, (ii) official plans, (iii) ordinances, bylaws, and regulations that are legally enforceable, (iv) actions that provide physical infrastructure, as well as (v) fiscal enactments that influence community food systems. The first two offer broad guidance, whereas the remaining three facilitate implementation. Soft policies include actions like resolutions and declarations, which are not enforceable by the power of law. Official or formal plans prepared or adopted by LRGs provide guidance about the future of a community with implications for its food system and include community food systems plans and comprehensive plans. Plans also set the stage for developing implementation tactics and tools in a community. Ordinances, or local laws, enacted by LRG entities regulate community food systems practices (e.g., zoning codes). Fiscal enactments result in public expenditures or the generation of public revenues tied to the food system (e.g., a tax law). Of course, many local and regional governments use a combination or variants of these policy tools. Interested readers can visit the Growing Food Connections database for hundreds of examples of LRG policies engaging with the food system.¹ The growth in local government plans and policies for food systems necessitates a critical lens that interrogates why and how these policies are developed, implemented, and evaluated.

Contributions of Manuscripts

The 11 articles making up this special issue illustrate the complex nature of current local government engagement in community food systems. They represent experiences of local governments

¹ <http://growingfoodconnections.org/tools-resources/policy-database/>

from across the U.S. and Canada, specifically from the states of California (multiple local governments), Maryland (Baltimore), New York (Buffalo and New York City), North Dakota (Cass County), Minnesota (Clay County and Minneapolis), Pennsylvania (Philadelphia), and Washington (Seattle), as well as the provinces of British Columbia (multiple municipalities) and Ontario (Toronto) in Canada. Some authors are scholars while others are practitioners, and some are scholar-practitioners, a dual role not unusual for scholars who work on food issues. Collectively, the articles illustrate new frontiers in and challenges to governance of community food systems; analyze how local government policies and plans are being developed to strengthen community food systems; probe the progress and challenges in implementing policies; and, importantly, analyze the ways in which local governments are monitoring and evaluating community food systems policy, as summarized below.

New Governance Issues

As with other local issue areas, food system *governance* arrangements are increasingly aimed at solving local problems (Andree, Clark, Levkoe, & Lowitt, in press). Governance takes us beyond 'government' in at least two ways. First, it acknowledges that more than just the public sector is involved in decision-making and bringing resources to the table. For example, many nonprofits are involved in social-service provisioning. Second, collective public decision-making and problem-solving benefit from greater engagement from nongovernmental actors, as broad-based engagement in governance processes can be more effective at achieving shared, public objectives than governments acting alone (Andree et al., in press). The Gupta et al. and Gold and Harden articles illustrate these points while analyzing the relationships between local governments and food policy councils.

The article by Gupta, Campbell, Sowerwine, Munden-Dixon, Capps, Feenstra, and Van Soelen Kim focuses on the relationship between local food policy councils (FPCs) and local government across 10 councils in California. Mainly through interview analysis, the authors find that the function of an FPC does follow form, at least in the cases they cite. This contributes to a growing

debate about how FPCs should be structured. They find that structural autonomy—described as being organized outside of government, but having a strong relationship with government (membership, funding, etc.)—means that FPCs are better able to express the community agenda and promote inclusive processes, because they retain their independence. With connections to FPCs, local governments also bring extensive political connections, policy experiences, and intentional policy agendas. They find that the relational ties forged between local government staff and FPCs is critical to the work, in the way FPCs work with local government to shape policy agendas or to implement policies already enacted.

The Gold and Harden article dives deep into the collaborative governance processes of the Red River Valley region of Cass County, North Dakota, and Clay County, Minnesota. The authors provide a reflection and historical overview of a governance process that includes local governments from two states, in addition to a network of food system professionals and community members. They detail how governance arrangements both navigated boundaries and built bridges between the public and private, states and community, alternative and conventional, and consumers and producers. An adaptive governance arrangement with leadership aimed at building bridges, networks, and capacity leveraged what each of the parties could bring to catalyze change.

These two articles highlight the importance of adaptive governance arrangement between the public and private sectors over time, the role of co-education between sectors, intentional leadership that keeps people engaged, and the critical role of public agency staff like those in public health and Cooperative Extension to keep the arrangements active and impactful. They also share a word of caution: the formal institutionalization of arrangements within local government can stymie the productive capacity of nongovernmental partners and slow or shut-down policy advancements.

Development and Adoption of Local Government Policies and Plans

As new forms of governance for community food systems emerge, local governments too have

responded by planning, adopting, and implementing food-related policies and plans. Recent surveys illustrate the widespread adoption of food-related policies and plans by local governments in the US (Goddeeris, 2013; Raja & Whittaker, 2018). As noted earlier, a recently published database developed by our Growing Food Connections team contains about 200 local government policies. Further, over a dozen local governments have institutionalized food policy as government program areas (Hatfield, 2012).

A key way in which local governments are strengthening community food systems is by undertaking comprehensive planning linked to food systems. This response by local governments has brought North America a long way from nearly two decades ago when Pothukuchi and Kaufman (2000) claimed that food is “a stranger to the planning field.” The authors in this special issue illustrate the many ways in which such planning and comprehensive engagement by local governments are unfolding.

Two articles tackle fairly new areas: resiliency in community food systems, and food waste management. Biehl, Buzogany, Baja, and Neff present a novel case where a partnership between a city government (Baltimore, Maryland) and a university (Johns Hopkins) advanced the assessment and planning for a more resilient food supply. The case offers insights for how other local governments may go about planning for a more food-secure city during, before, and after disasters. Otten, Diedrich, Getts, and Benson explore the ways in which local government agencies can work with food businesses and anti-hunger agencies to reduce, mitigate, and recover food waste and loss, using Seattle as a case study. Both Biehl and Otten reinforce the value of systemic engagement in the food system.

In addition to tackling new areas such as resilient community food systems, local governments are also innovating by building new alliances to strengthen community food systems. Mui, Khojasteh, Hodgson, and Raja highlight the re-emergence of alliances between the fields of planning and public health to strengthen community food systems. In addition to describing national trends, the authors describe food policy

innovations in urban (Philadelphia, PA) and rural communities (Minnesota) made possible by intersectoral partnerships.

Along with general-purpose governments engaging in community food systems, other forms of local governments are beginning to engage in them as well. School districts, for example, play a crucial role in changing the ways in which children in the U.S. are fed. An article by Gilbert, Schindel, and Robert explores new theoretical frameworks by which school districts engage in community food systems reform. The authors propose *just transitions* as a way to guide the nature of school districts' engagement in community food systems.

Work in community food systems by local governments in the U.S. has often followed trends established by our neighbors to the North. Robert and Mullinix assess 61 formal municipal Official Community Plans (OCPs) in British Columbia and report that these frequently focus on food access and urban agriculture, while issues such as post-production capacity, waste management, and environmental stewardship remain somewhat absent. Reporting on the perspectives of municipal stakeholders in the city of Toronto toward new policies designed to promote urban agriculture and health equity, Mulligan, Archbold, Baker, Elton, and Cole report broad municipal support for urban agriculture, but also a concern about potential risks. Signaling a maturity in the field, Mulligan et al. argue that municipal engagement must go beyond regulatory changes to investments supporting community food systems, an issue that is addressed deeply by the remaining four articles in the issue.

Implementation of Policies and Plans

Local government engagement in community food systems is at a stage where efforts to *implement* policies and plans to strengthen community food systems are well underway. Lessons from across the U.S. and Canada suggest that implementation is a complicated process, with some successes but also many challenges.

Experience from municipalities in British Columbia and Wisconsin illustrate how both traditional and nontraditional municipal tools can be used to implement changes in community food

systems. Lavallée-Picard reflects on the experience of the city of Victoria, British Columbia, where the municipal government has implemented projects to promote urban agriculture following the adoption of a suite of policies. Early experiences point to the need for strong community engagement, public investments, and coordination and communications as essential elements of local government engagement.

Haines evaluates the use of a classic local government tool, zoning, as a means of implementing *regulatory* changes in the food system. The author reports a wide variation in how zoning ordinances across 104 rural and urban communities regulate community food systems, and suggests that opportunities remain to use zoning to strengthen local food systems.

Monitoring and Evaluation of Planning and Policy Finally, Freudenberg, Willingham, and Cohen remind us that monitoring and evaluation of local government policy are critical for evidence-based public policy and management. For some reason, monitoring and evaluation are always at the end of the policy agenda—the topic is even the last on our list—as if it were some afterthought. While more local governments are getting involved in food policy-making and even institutionalizing food policy (Goddeeris, 2013; Hatfield, 2012; Hodgson, 2012), evaluation is lacking (e.g., Chen, Clayton, & Palmer, 2015). A review of the scholarship of agri-food system policy shows that of all policy stages, evaluation receives the least attention from researchers (Clark, Sharp, & Dugan, 2015). It is concerning that we cannot say whether all the efforts of local advocates, nonprofits, and local governments are working, much less whether they are making meaningful change.

Efforts to get food on the policy agenda dominated for decades. So it is refreshing to receive the potential signal from Freudenberg, Willingham, and Cohen that local food policy may be maturing, as they analyze a decade of food policy implementation in New York City (NYC). Their article describes the history of developing metrics to measure the city's progress, as well as an analysis of the strengths and weaknesses in metrics, as guidance for other cities. One important finding is tied

to the scale of metrics: because NYC's metrics are aggregated across the city, neighborhood leaders are unable to compare their community to others. The lack of a comprehensive organizing framework and the focus on implementation instead of outcomes prevent the use of metrics in assessing progress toward broader food policy goals. The authors also reveal the challenges of identifying shared measures across places, measures that represent intangible benefits, and measures that represent process. They raise the question of *who* gets to decide what is measured in the first place, reminding us that what gets measured is a policy in and of itself. Here they are also signaling that inclusion in decision-making is as important to equity as the equity of outcomes.

Key Issues Raised by the Special Issue

Process

The creation of equitable community food systems, however defined by communities, results from complex processes that include, but are not limited to, public policy processes. Exclusion and injustice in planning and policy processes are unlikely to lead to equitable and just food systems. The design of the *process* by which community food systems are made (or unmade) deserve scrutiny and attention by scholars and practitioners alike.

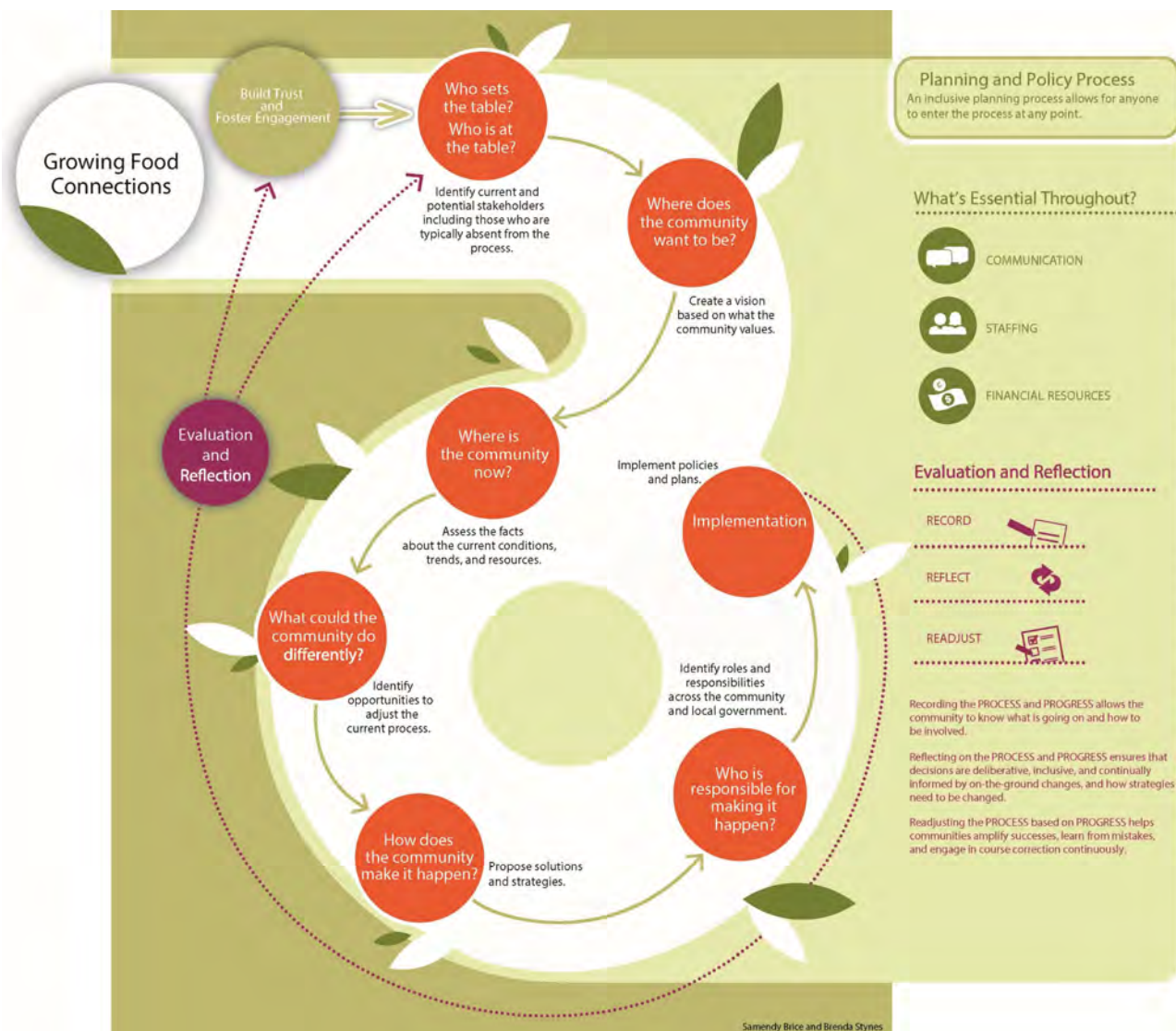
In prior work completed in Growing Food Connections communities, we find that the *design* of the policy-making process sets the stage for whether the resulting policy considers questions of equity (Clark, Freedgood, Irish, Hodgson, & Raja, 2017). In other words, what you intend to plan for (or not) is what you get (or not). A lack of self-reflection by local government staff and decision-makers when designing processes likely reinforces historical inequities in the community. We re-emphasize some of our recommendations from this work: that designers of public engagement processes need to reflect on historical and structural barriers that prevent community members from participating, use practices to foster relationships and trust with the people most likely to be affected by public policies, and commit sufficient resources to ensure active and equitable engagement throughout the process.

In Figure 1 we offer an illustration of a policy and planning process that is attentive to design. Note that the starting point is not the design of the process. We stress that any policy process design must be built on trust between the public sector and community members. Undergoing a process not girded by trust among community members and staff and decision-makers of institutions will not have legitimacy, and more importantly, will not result in inclusive and equitable outcomes.

The first consideration for policy process is *not* who is invited to the policy development table, which continues to be a common starting place for

policy and planning conversations. The first reflection should be, who is who is setting the table and designing the policy process in the first place. The design of the process—the writing of the agenda—sets the parameters for what is on the table (and off the table), including how community problems are framed. The figure emphasizes the related and ongoing practice of self-reflection and the action that results (readjustment) throughout the process. Also required throughout the process are methods and forums for documentation, communication, and deliberation that are supported by adequate staffing and financial resources.

Figure 1. Inclusive Planning and Policy Processes for Strengthening Community Food Systems



The shape of the process below signifies two important facets of policy-making. First, policy-making is not linear. Second, because of the framing of inclusivity and the nonlinearity of the process, people can engage in, or exit and re-enter, the process at any of the points as answers are being developed for the questions (the orange circles). Finally, evaluation and refinement may result in coming back to the process itself, or attending to foundations of relational trust and engagement with the community.

Measurement and Evaluation

Engagement in community food systems planning is no longer a new concern for local governments. Local governments across North America have developed, enacted, and, indeed, implemented policies that are ostensibly designed to strengthen community food systems. Yet there is very little empirical evidence for these efforts making a difference in communities (Chen et al., 2015). For true progress, the next decade has to be one of measuring progress (or failure), uncovering successes, and jettisoning failed, if well-intentioned, local government policies.

Equity

A key reflection from our own prior work as well as work with Growing Food Connections (Raja, Morgan, & Hall, 2017), and the work of some authors in this issue, is the question of *who* drives, and *who* benefits from, local government engagement in community food systems. It is important to address the difference between who is invited, who builds, and who sets the table in the first place. In a way, Freudenberger et al. touch on this. Several other articles point to the importance of inviting those who are most affected by local food systems policies to the table to participate in decision-making. We suggest pushing further so that the most affected determine the food system agenda. In other words, local governments must open the process to give those most affected by policies the time and tools to build the table in the first place.

A lack of resources is often noted as a limitation to addressing equity in local food policy and planning processes (Hodgson, 2012), and is raised

in this special issue. This begs the question regarding whether local governments should aim to do less, but do so more equitably. Further, while the literature provides equity frameworks to apply to the policy process (e.g., Gilbert et al.), a lack of methods and metrics to guide and use to monitor and evaluate policies is a distinct barrier to advancing equity.

Duality of Researcher Roles

Local government engagement in community food systems is often led by leaders who play the dual role of scholars and practitioners. Indeed, in his reflection Jason Reece rightly praises JAFSCD for publishing activist scholarship. This editorial, too, is written by scholars who identify as community-engaged scholars, often participating as practitioners, policy-shapers, and community advocates in their own research projects. This duality of roles has significant benefits; such scholars bring disciplinary rigor as well as a commitment to equity and justice. Yet there remains a danger—including in our own work—of our being *too* close to our work. Reflecting on the articles in this volume, and on our own work, we wonder whether participants in food system policy and planning are able to see trade-offs of local government engagement in community food systems. What might we miss? What checks and balances do we need to put into place to ensure that we retain both deep engagement with communities and the rigor of scholarship beyond standard methodological quality checks (for example, see Porter, 2018)?

The Way Forward: What is the Role of Local Government in Community Food Systems?

There is no question in our minds that local governments must be engaged in food systems. In this vein, other scholars have likened food to a “civil commons,” requiring our democratic institutions to work with citizens to steward the public resource to meet societal goals (Sumner, 2011). The soil-to-soil food infrastructure is part of the civil commons, and not only important for food itself, but for a whole host of other benefits to communities that have been ably detailed elsewhere. In short, LRGs cannot afford to *not* consider community food systems as public

infrastructure. But to be effective they must pay special attention to actively engaging and including in decision-making the people most affected by the plans and policies they create.

Food systems are intricately linked to other systems that make communities work: transportation systems, ecological systems, economic systems, etc. As LRGs deepen their work in community food systems, they run the risk of creating a food system silo where community food systems work is disconnected from other local government work. In its early days, food systems did not necessarily have a clear home in local government agencies. As a result, work was spread across multiple agencies, which likely resulted in efficiencies and innovations. Now, as community food systems activities become a legitimate domain of a *particular* agency or department, we run the risk of slowing innovation.

Inclusive and equitable governance arrangements that focus on the process of stewarding community food systems are the way forward. As discussed earlier, this way forward is not linear (see Figure 1). Stewards must engage in reflexive practice, reflecting and readjusting both on processes used, and on resulting policies, in addition to their own role in governance (Rein & Schön, 1996; Schön, 1993), while continually attending to inclusive and equitable engagement. Stepping back from individual policies, reflection is required to reassess

what we know about the problems in the food system in the first place. Readjustment of individual policies may give way to reimagining what is needed (Schön, 1993). It has been nearly two decades since Pothukuchi and Kaufman's (2000) call for local governments to engage in food system planning and policy making. It is only fitting that the way forward for local governments be about reflecting inward, reaching outward, and perhaps reimagining how our food system, as a civil commons, can best serve all community members.

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Food policy councils and local governments: Creating effective collaboration for food systems change

Special JAFSCD Issue
Local Government in Food Systems Work



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Abstract

Drawing data from comparative case studies of 10 California food policy councils (FPCs), this paper describes the nature of the relationships between local governments and FPCs and examines how these relationships support policy-related activities and food systems change. We focus our comparisons on distinct organizational structures, resource

flows, and policy activities. All but one of the 10 councils is organized as a multisector community collaborative, rather than as an independent non-profit organization or a government advisory body. Each includes local government personnel as members and most depend on government resources for their operations, including meeting

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spaces, facilitation, information, and/or direct funding. All 10 councils feature regular meetings at which information is shared to build awareness, relationships, and trust, all of which can indirectly shape policy agendas and initiatives. This policy relevant work is feasible even for small councils with few resources. FPC leaders can also seize opportunities by considering the stages of the policy process they hope to influence, the types of policy issues they wish to address, the time frame it may take to realize different types of policy goals, and the degree to which they will seek incremental or more fundamental changes. We find that structural autonomy—being organized outside of the government while maintaining strong collaborations with the government—helps food policy councils retain their independence while promoting more inclusive policy making processes that link community members to the government.

Keywords

Food Policy Council, Food Policy, Local Food Systems, Local Government, Collaboration, Collective Impact, Policy Implementation

Introduction

A broad and diverse network of civically engaged groups and individuals are working locally to improve food system outcomes. In a growing number of communities, an important institutional mechanism for bringing these groups together and building relationships with local government is a food policy council (Blay-Palmer, 2009; Coplen & Cuneo, 2015; Sussman & Bassarab, 2017). A food policy council (FPC) consists of representatives and stakeholders from many sectors of the food system who work with city and state governments to promote the social, economic, and environmental health of local and regional food systems (Harper, Shattuck, Holt-Giménez, Alkon, & Lambrick, 2009). Drawing data from comparative case studies of 10 California FPCs, this paper describes the nature of the relationships between local governments and food policy councils and examines how these relationships support policy-related activities and food systems change.

In the mid-1990s, political scientist Kenneth Dahlberg (1994) succinctly characterized the

relationship between local governments and food policy: “Food is not seen to be an issue for municipalities” (p. 1). Two decades later, the reality is dramatically different, driven by growing consumer interest in local food, movements for community food security and food justice, and the spread of systems thinking, which views food production and consumption as being inherently linked (Brinkley, 2013; Morgan, 2013; Siddiki, Carboni, Koski, & Sadiq, 2015; Sonnino, 2009). Supported by professional groups such as the American Planning Association (American Planning Association, 2007), local governments are increasingly engaged in food systems planning and policy, both within communities and across regions (Hodgson, 2012; Pothukuchi, 2009; Pothukuchi & Kaufman, 1999). To enhance community development and the local agrifood economy, city and county governments have developed plans and enacted policies and regulations (Design for Health, 2007; Low et al., 2015; McClintock, Wooten, & Brown, 2012; Neuner, Kelly, & Raja, 2011; Pothukuchi, 2009; Raja, Picard, Baek, & Delgado, 2016). Local ordinances now address urban agriculture, backyard livestock, healthy retail incentives and/or disincentives, regional agricultural land preservation, and food insecurity, among many other issues. Local economic development officials increasingly provide grants, loans, and other incentives to support farmers markets, agri-tourism, aggregation and distribution facilities, or other food system investments.

Previous FPC research has documented their diverse organizational forms, resources, participants, and activities and the high variation across different local contexts (Low et al., 2015). Our research adds to this literature, with a particular focus on describing and analyzing how local government and FPC leaders collaborate to shape food policies and programs in different local contexts. We also highlight the importance of FPC structural autonomy in supporting their ability to navigate their dual relationships with government and community interests. Drawing primarily on interview data from local food policy council participants, we show how the collaborative mechanisms at work in food policy councils are creating relational ties, trust, and community

connections—what is often referred to as social capital (Putnam, 2000). By creating space for collaboration and social capital to develop, food policy councils have multiple impacts on their communities. These impacts include, but go beyond, a direct influence on creating laws, regulations, or ordinances. Our data show that FPCs help inform multiple stages of the policy process, which begins in agenda setting, proceeds to the formulation and legitimation stages, and eventually is implemented with impacts that can be evaluated (Jones, 1984). Much of the work FPCs do has a relatively low profile, such as fostering information sharing conversations that shape policy agendas over time or partnering with local governments to implement policies that are already enacted. Our interviews suggest that these types of policy work create positive community impacts in diverse contexts and are feasible even for councils with relatively limited resources.

Research on the Local Government and Food Policy Council Relationship

A 2017 survey by Johns Hopkins University researchers provides a descriptive overview of the current state of more than 300 active food policy councils in the U.S. and Canada, including important data regarding their relationship with local government (Sussman & Bassarab, 2017). It is common for FPCs to have multiple links to government, including having government employees as members, receiving county, city, state, or federal funding, and/or operating under official government mandates. In this section, we briefly review previous research which has identified two clear trends relevant to understanding FPC-local government relationships. The first is the shift over time in the structural location of most FPCs. The second is the consistent finding that FPCs tend to emphasize programmatic activities as much as—or even more than—direct policy engagement.

Regarding structural location, it has become much more likely that an FPC will take the form of a grassroots coalition, community collaborative, food system alliance or similar structure than be either embedded in government or established as an independent nonprofit organization. The six FPC pioneers in Dahlberg's (1994) study were all

structured as citizen advisory bodies within the local government. Much like a planning commission or a human relations commission, the FPCs in the study had both a formal charge from their local government and access to staff resources. Dahlberg (1994) found that resource availability and FPC policy influence depended on a close connection to the mayor's office, which made them vulnerable to shifting fortunes as elections brought new leadership. Second generation FPC leaders began experimenting with different organizational forms (Chen, Clayton, & Palmer, 2015; Harden, Bain, & Heim, 2015). Schiff's (2008) comparison of 13 FPCs in the U.S. and Canada found that some were embedded in the government, while others functioned as independent nonprofits, grassroots coalitions, or took a hybrid form. The 2017 Johns Hopkins survey (Sussman & Bassarab, 2017) found that the most common form of FPC is a county-based grassroots coalition (33%), followed by being housed in the government (21%), being an independent nonprofit (20%), being housed in another nonprofit (19%), or being embedded in a college, university, or extension office (4%).

Regarding the degree to which FPCs engage in direct policy-related activity, previous research makes it clear that the FPC label is being applied to collaborations that engage in a diverse and wide-ranging set of activities, not all of which involve advising or influencing local government policies (Harper et al., 2009; Schiff, 2008; Sussman & Bassarab, 2017). It is less clear, however, how structural location—being embedded in the government or operating as a nonprofit or community coalition—might interact with other variables to make it more or less likely that an FPC will be successful in shaping local food policies. Many assert that publicly created FPCs tend to focus more on the creation of policy outputs, while nonprofit and grassroots FPCs are more engaged in programmatic activities (Siddiki et al., 2015). Schiff (2008) found that FPCs with government mandates (such as a formal advisory body) focused more on policy work, especially initially, while other FPCs tended to focus on programmatic work initially. Those FPCs only later begin to tackle policy issues, if at all. Other research suggests that the most important factor in creating policy

outcomes is a close relationship with local government officials, rather than the organizational location of the FPC (Chen et al., 2015; Coplen & Cuneo, 2015; DiGulio, 2017). Regardless of structural location, Sherb, Palmer, Frattaroli, and Pollack (2012) found that FPCs are more likely to engage in policy work via problem identification and education, with relatively fewer getting involved in crafting policy proposals or direct advocacy. Broadly applicable conclusions are difficult to come by, as local circumstances vary and what works at one time in an FPC's evolution may not work at another time. A case in point is the rise and eventual dissolution of the Portland Food Policy Council. The dissolution of this FPC has been attributed, in part, to the lack of clarity about the roles of government and nongovernment participants, which undercut effective processes for maintaining adequate resources and access to decision makers (Coplen & Cuneo, 2015).

Building on this literature, our study seeks a deeper understanding of how FPC and local government leaders navigate the tensions and tradeoffs associated with distinct organizational forms, resource needs, strategic priorities, and desired outcomes, as these are shaped within distinct local contexts. By taking a broader, longer-term view of the policy process, we show how the work of many FPCs is policy relevant, even when it does not result in specific new policies in the short run.

Methodology

California has more food policy councils than any other state, which is not surprising given its size, the importance of agriculture to the economy, and the presence of a highly active local food movement (Sussman & Bassarab, 2017). At the time we initiated our research, 26 local food policy councils were listed on the website of the statewide California Food Policy Council (Sussman & Bassarab, 2017). Using a comparative case study research design (Yin, 2009), we collected data to compare 10 of the 26 local FPCs, some of which choose to call themselves by other names (e.g., food system alliance, food council, agriculture and food alliance). Given our initial research objective of exploring whether and how FPCs use research in their work, the 10 cases were purposely selected to

include those that had existing links to UC Cooperative Extension advisor collaborators. The advisors could contribute important insights while providing local connections and background information useful to the statewide research team. As our work progressed, we realized that the data we were collecting could help answer different, equally important questions, including those surrounding FPC relationships with local government.

Given widely varying FPC structures, goals, and activities (Sussman & Bassarab, 2017) and the tremendous diversity of local contexts and settings across California, putting together a representative sample of California FPCs would be difficult. Nevertheless, our sample—which includes FPCs in Kern, Los Angeles, Marin, Mendocino, Napa, Plumas-Sierra, Sacramento, San Mateo, Sonoma, and Yolo—reflects significant geographic and demographic diversity (see Table 1). For example, the local FPCs vary in scope, with eight FPCs organized in a single county, one in two counties (Plumas-Sierra), and one in a city (Los Angeles). The 10 FPCs include diverse geographic locations, from small, rural counties to very large urban areas, and many mixed locales in between. All 10 FPCs were established during the past decade, in two cases building on earlier efforts that had gone dormant. As we will demonstrate, they also vary significantly according to key distinctions from the literature. That is, they vary in the relative emphasis put on policy versus programs, in organizational structure, and in the nature of their connection to local government.

Key methods used to develop the 10 case studies included semistructured interviews with relevant FPC leaders and stakeholders (Hammer & Wildavsky, 1993), participant-observation at FPC meetings, focus groups, and document analysis. We conducted over 60 interviews, five to six for each of the 10 councils. This allowed us to gain a richer depth and breadth of perspectives than in previous FPC case studies (see Appendix for interview guide). Interviews covered FPC information sources and use of research, council structure and/or membership, resources, programmatic or policy priorities, and notable achievements. Background information on the interviewee and the history of the food policy council was also gathered

Table 1. Basic Comparisons of California FPCs in Sample (by descending size of population)

FPC	Year Established	Scope	2015 Population (California Department of Finance estimates)	2014 Total Value of Agricultural Production (US\$1,000; no timber; CDFA)	Locale	FPC Organizational Form	Types of Local Government Personnel Engaged
Los Angeles	2011 relaunch (1990s original)	City	4,031,000	\$230,068	Highly urban	Multisector collective impact initiative	Elected officials, agency heads and staff
Sacramento	2014	County	1,481,803	\$495,403	Mostly urban	Community collaborative	Mid- and frontline agency staff
Kern	2013	County	880,387	\$7,552,327	Mostly rural with one large urban area and large scale agriculture	Community collaborative	Mid- and frontline agency staff
San Mateo	2006	County	759,155	\$152,153	Mostly urban and suburban	Community collaborative	Mid- and frontline agency staff
Sonoma	2009	County	499,352	\$902,858	Mixed urban/ suburban with some more rural areas	Community collaborative	Mid- and frontline agency staff
Marin	2012 relaunch (1998 original)	County	261,798	\$100,953	Mixed urban and suburban with some more rural areas	Community collaborative	Elected officials, mid-and frontline agency staff
Yolo	2013	County	211,813	\$801,205	A few cities surrounded by agricultural areas	Community collaborative	Elected officials, mid-and front-line agency staff
Napa	2011	County	140,898	\$720,833	Mixed urban and suburban with some more rural areas	Formal government advisory board	Agriculture commissioner
Mendocino	2010	County	88,163	\$174,200	Rural with some small cities	Community collaborative	Mid- and frontline agency staff
Plumas-Sierra	2007	Two counties	23,069	\$67,347 (combined)	Rural with some small cities	Community collaborative	Mid- and frontline agency staff

from interviews and documents. Focus groups were held at one regional FPC gathering and one statewide meeting of the California Food Policy Council.

The interviews were recorded, transcribed, and coded by a member of the research team using the NVivo (version 11) software coding program. Following procedures outlined in Miles and Huberman (1994), we used both preset and emergent codes. The former coincided with specific interview guide questions and the latter proved to be important when multiple respondents mentioned the same topic or theme. Content analysis of the transcribed and coded interviews and other data was used to analyze emergent, cross-cutting themes and key principles (Krippendorff & Bock, 2009). These ideas were then cross-checked for validity and refined by comparing them to memos generated by the lead researchers for each case study, and through a series of iterative discussions among the seven members of the research team.

Descriptive Findings

In this section, we present basic descriptive findings that provide important background and context for the comparative findings that we discuss in the next section. We focus on three topics introduced in previous literature: (1) structural form and location vis-à-vis local government; (2) membership and resource connections to local government; (3) policy areas in which the FPCs are working.

Structural Form and Location

Compared to the latest data on organizational form from the Johns Hopkins survey, our sample is heavily weighted toward FPCs that operate as multisector coalitions or collaboratives. That is, they are neither embedded in government nor established as independent nonprofit organizations (although some councils operate under an affiliation with a nonprofit fiscal sponsor). This is true in nine of 10 cases. Napa was an outlier because it served as an advisory body in the county agriculture commissioner's office. To some degree, the collaborative form of FPC organization is rendering the old questions about "what is the best FPC location" irrelevant. A well-functioning cross-

sector network can take advantage of "insider" connections (primarily via agency staff participation but also in some cases elected officials or high-level public agency leaders) while remaining "outside" governmental restrictions (such as prescribed meeting processes or attempts by agency and/or elected officials to alter the FPC agenda). But the network form poses other tradeoffs, particularly those driven by community size. In large communities, the number of players that have to be organized into a collaborative, and the corresponding need for staff with sophisticated networking and convening skills, is heightened, but so is the possibility of doing "big things" together. For example, supported by a nonprofit fiscal sponsor and by close connections to the mayor's office, the Los Angeles FPC is convening hundreds of organizations and over 1,000 individuals into a "collective impact" initiative, a term used to describe deliberate efforts to build multisector alliances that work to change targeted indicators of community well-being (Flood, Minkler, Hennessey Lavery, Estrada, & Falbe, 2015; Kania & Kramer, 2011). By contrast, in smaller settings it can be easier to get key stakeholders to the table, but more difficult to do "big things" due to staff and resource limitations. For example, the Plumas-Sierra council includes just a half dozen or so members from the adjoining rural counties, constituting what one interviewee calls a "loose-knit tribe." The dramatic demographic contrasts between Los Angeles and Plumas-Sierra (see Table 1) illustrate the widely varying community contexts in which FPCs operate.

Membership and Resource Connections to Local Government

All 10 FPCs have local government employees among their membership. Typically these are mid-level and/or front-line (service delivery) staff from various public agencies who attend FPC meetings and events as part of their existing job duties. Local government personnel often are critical to an FPC's ability to function, especially in community settings where there are few nonprofits or community-based organizations with the capacity and infrastructure to support collaborative work. Their contributions range from serving as catalysts

for setting agendas, to offering support resources such as meeting space or facilitation, to providing connections to other government resources. The most frequently represented agencies in our sample include Cooperative Extension, public health, environmental health, and the County Agricultural Commissioner; however, this can vary significantly across councils and over time, depending on whether a good match exists between the strategic priorities of the FPC and those of the public agencies. In only a few cases, members of the county Board of Supervisors, the City Council, or their staff were regular attendees. In Los Angeles, the FPC was originally closely tied to the mayor's office and got a significant boost in legitimacy from this connection. They built on that start to become one of the only FPCs in our sample to engage higher-level public officials, including the heads of the county's large government agencies (see table one).

In a few cases, government staff played key roles in facilitating or convening the FPC; in others, leadership came from nonprofit organizations or community activists. Notably, the social location of these leaders varied in our sample: a county department head, a highly-networked group of food activists, and a well-connected "insider" with strong ties to local government leaders and agencies, etc. The particular starting point mattered less than the ability of these leaders to (1) strengthen the credibility of the FPC as a trusted resource for food policy work with various local government officials, (2) ensure that the agendas of the FPCs focused on policy engagement rather than on programs alone, and (3) sustain an organizational structure that weds strong local government connections with meaningful community engagement. The policy successes mentioned by our respondents were built on these foundations put in place by the leaders. Our findings echo the trenchant early observation by Dahlberg (1994) that having skilled leaders who can make connections and ensure that "the right things happen at the right time" (p.10) is perhaps the single most important building block for the success of food policy councils.

While we did not collect comprehensive data on funding, at least five of the 10 FPCs reported

having received funding from their local government. In the case of the Napa FPC, this funding is a recurring part of the budget which the county Board of Supervisors provides to the Agriculture Commissioner's office. In three counties, Mendocino, San Mateo, and Sonoma, county funding to the Health Department is channeled to support FPC activities, including staff support and, in the latter two cases, paying for facilitation services provided by the Ag Innovations consultant group. In Marin, funding from the Board of Supervisors is provided through the county Cooperative Extension office. If one includes the time which government staff participants spend on FPC meetings and activities that are supported by their government position, it is clear that local government funds directly or indirectly support all 10 FPCs.

Policy Areas in which the Councils are Working

Respondents from all 10 FPCs could point to some aspect of public policy that they influenced, either directly or indirectly. They offered a variety of evidence, including legislative victories. They also mentioned cases where the FPC played a convening role that brought together policy allies or initiated discussions which, over time, shaped the food policy agenda of the local government. One of the most common scenarios reported was that FPCs sought to influence the agricultural element of the County General Plan, but many other policy topics were mentioned. Illustrative examples of policy achievements mentioned by respondents are provided in Table 2.

Taking advantage of their affiliation with the California Food Policy Council (or their geographic proximity to the capital, in the case of Sacramento), some local FPCs also have assisted in passing or implementing state policies, such as urban agriculture legislation and the Nutrition Incentive Matching Grant Program. In a few cases, individual members of local FPCs take on policy work that may have been identified in the FPC setting without necessarily doing it as a representative of the FPC.

Expanding access to healthy food is a frequently mentioned policy priority among the FPCs we studied, and many interviewees view addressing the needs of marginalized populations,

Table 2. Selected Examples of Policy Achievements Cited by FPC Respondents

Policy Achievement	Local FPCs
Inserting food and agriculture language into county general plans	Marin, Mendocino, Plumas-Sierra, Yolo, San Mateo
Food Day Resolution	Los Angeles, Marin
"Approved source" language adopted to facilitate sales of local produce	Mendocino, Napa
Urban agriculture and land use ordinance	Mendocino, Sacramento, Napa
City will oversee renting public and/or private land for community gardens and farming	Napa
Bee-keeping ordinance	Napa, San Mateo
Food systems workers minimum wage increase	Sacramento
Backyard livestock ordinances	Napa, Sacramento
Inserted language into county crop report	San Mateo
Farm ombudsman created	Yolo
Right-to-farm ordinance	Yolo
Food Action Plan	Sonoma
Urban agriculture goals inserted into city of Los Angeles Sustainability Plan	Los Angeles
Good Food Purchasing Policy	Los Angeles
Supported passage of state AB 1321 (Nutrition Incentive Bill)	Kern

particularly around food insecurity, as a key motivation for the work that they do. We found that issues surrounding farmworkers and others food system laborers are less frequently a focus; however, at least one FPC was part of a local effort to raise the minimum wage. We continue to explore these concerns and outline our conclusion in the following sections.

Comparative Findings

This section draws on our comparative analysis of the data to probe more deeply into the nature of how and why these FPCs are engaging in policy work. We note (1) the degree to which they prioritize policy work; (2) their roles at different stages of the policy process; and (3) different approaches to creating intentional, long-term strategies to achieve food systems change via policy collaborations with local government.

Degree to which FPCs Prioritize Policy-related Activities

We found broad variation in the *degree* to which the FPCs in our sample engage directly in policy

related activities. At one end of the spectrum, some FPCs go out of their way to avoid policy which they view as inherently divisive and counterproductive to their goal of bringing diverse stakeholders together. At the other end, some FPCs see policy change as central to their broader objective of changing the food system. Those FPCs make policy work a high priority. In middle of the spectrum are FPCs who may emphasize policy as specific opportunities arise while spending the majority of their time initiating community projects or programs. Los Angeles, Napa, and Sacramento are three examples where a policy focus tended to be more intentional and sustained, as indicated by the ability of respondents to articulate policy priorities, activities, and outcomes.

Collaborations with Local Government at Different Stages of the Policy Process

"Policy" is sometimes equated with the formal processes of passing new laws or regulations, yet the policy process begins much earlier in agenda setting and continues much later in implementation and evaluation (Jones, 1984). Our respondents

spoke to policy activities at multiple stages of the policy process, beginning with the early conversations that set the stage for policy priorities to emerge. As noted earlier, local government personnel participate in regular FPC meetings as part of their existing responsibilities, sharing information from their own work and learning from other FPC participants. This mutual education function is one of the key roles FPCs play. The knowledge, trust, and social capital built in FPC settings indirectly influences policy agendas by altering the perspectives of key decision-makers, identifying potential policy allies, or bringing to light previously hidden issues.

An example illustrating this type of indirect policy work can be seen in the Yolo Food and Ag Alliance. Yolo FPC meetings feature participant updates in a round-robin style. Interviewees suggest that this way of informally sharing information is quite helpful. It educates them about what is happening, introduces them to new ideas, people, and projects, initiates unexpected connections, and builds the foundation for emerging partnerships and collaborative activity. Sometimes information sharing helps with problem identification. For example, discussions about cannabis led the FPC to stage a larger public forum on the topic, which in turn began to generate ideas for solutions or alternative strategies. These discussions are fluid and often occur across multiple contexts in which the FPC members and their allies might be working. They can germinate quickly in some cases or more slowly in others, since getting the attention of policy-makers is often difficult (Stone, Orr, & Worgs, 2006). Having meetings and associated opportunities to raise issues publicly elevates the potential for eventual policy attention and action. One respondent summed up the Yolo FPC meetings as being “an intentional forum for accidental collaboration.” Indeed, information sharing and mutual education—which can often lead to serendipitous collaborations—is one of the most common functions and features across all 10 of our cases, building the social capital connections that inform and support more direct policy activity.

In another example, a San Mateo respondent explained that the county’s progress on the issue of regulatory streaming of farm ponds stemmed, in

part, from FPC discussions and connections. Because of the relationships built in the FPC and the information being shared, the county public health officer became a supporter of actions that someone in their position might typically have resisted. As the respondent put it, “That’s insane. Like, that’s so esoteric, right? It’s because of this network that he understands that regulatory streamlining is essential to water supply, is essential to ag viability, is essential to local food, and is part of public health.”

Some local government collaborations reported by our FPC respondents focused on how existing policies are implemented in a community. In other cases, public agencies have projects that can benefit from the ability of FPCs to solicit community input or provide community education. In some cases, FPCs are trying to implement small-scale projects and can benefit from access to local government relationships or resources. Sometimes these mutually beneficial activities rise to the level of a semiformal partnership for a limited period of time. More often, they evolve informally as needs arise or opportunities present themselves. For example, the Plumas-Sierra Food Council and the public health department teamed up to increase the rate of eligible residents who take advantage of Supplemental Nutrition Assistance Program Education (SNAP-Ed) benefits, calling upon FPC members and their organizations to help with community education and outreach. In another example related to Plumas-Sierra, farmer concerns over restrictive government permitting practices were aired at the FPC. This prompted a government representative to go back to his home agency and seek appropriate changes. Another key “win” in this rural area was getting the food bank supply trucks to come to the community twice a week rather than just once. Another small win involved encouraging a local community college to offer its first-ever course in sustainable agriculture. These types of changes can often fall under the radar of what is considered policy work, but in fact they often represent the kinds of tangible policy engagement that are feasible even for councils with relatively limited resources. Typically, they involve working in tandem with government employees who are either FPC members or working partners

of those members.

Another example of FPCs helping their local government implement policy is the General Plan campaign initiative of the Sacramento FPC. California Senate Bill 1000 took effect in 2017 and strengthens how general plans in all California jurisdictions address environmental justice. The council has established a monthly meeting with the staff of the Sacramento County Planning Division to advise on SB1000 compliance in their general plan update and is in the process of trying to set up a similar advisory relationship with the city of Sacramento. While the council primarily will advise on issues of health and food, the diversity among its membership gives it the expertise to inform other issue areas and to help assist with the required community meetings in each planning area.

Intentional, Longer-Term Strategies to Achieve Food Systems Change

A few respondents were able to articulate longer-term policy engagement strategies in which FPCs align their policy priorities with those of local government officials and agency staff, or vice versa. Where priorities already overlap, and the changes sought are more incremental in nature, alignment is more easily achieved in the short-run. By contrast, when deeper or more fundamental food system changes are pursued—including efforts to better include marginalized populations in policy processes—it can often take longer to see results. This is because patient coalition building and community organizing by FPCs gradually shifts or alters the priorities of local government officials. The Sacramento, Napa, and Los Angeles case studies show contrasting ways in which this can be done.

Sacramento

The Sacramento council was originally structured with an executive board, a steering committee, and four working groups. These working groups were organized around topics of interest that were identified during early meetings: Local Procurement Policy, School Food Environment, Environmental Sustainability, and Community Food Access. There was a strong desire on the executive board for all initiatives to be fully community-led; however,

some groups struggled with the broad mandate and with insufficient funding and staff support. As a result, the council has been restructuring itself around “campaigns.” The goal was to create a wider range of ways for community members to be involved in specific actions without needing to make a longer-term commitment or to join a subject area working group. The restructuring keeps in place the open, community-led structure of the council. It also represents one way in which the council is making an intentional effort to be more inclusive of a broader set of community participants.

Sacramento’s current campaigns were developed through a strategic planning process and member survey, and each supports a long term policy goal of the council. For example, one campaign is focused on ensuring that the Sacramento City Unified School District builds a central kitchen with deep community engagement. Another campaign is focused on elevating food as a priority element in the Sacramento city and county general plans. These campaigns serve multiple purposes: providing a vehicle for residents to get involved and learn how policy affects their life and/or work, maintaining council activity and momentum, building relationships, and making progress toward community-identified goals. The shift to campaigns helps the council maintain its focus on long-term policy objectives. It is also a strategic decision to structure the council in such a way that it can hold space for community leadership and mobilization. At the same time, the clearly focused goals of the campaigns have made it easier for government staff to justify attending council meetings since they can point to a clear connection to their agency mission.

Agencies and officials engaged with the Sacramento FPC include the county Nutrition Education Obesity Prevention Program, the California Department of Conservation, the Metropolitan Air Quality Management District, several school districts, and the offices of a local city council member and state senator. For these government staff, the council becomes a source of expertise around particular issues, a partner in community engagement, or an ally on a particular issue or priority. In turn, these government employees can provide

insight to the council on how to navigate the bureaucracy or how to connect with key government personnel or processes. For example, on the Central Kitchen Campaign, the council is working with the Sacramento City Unified School District's superintendent, school board, and staff. After securing the school district's agreement to build the central kitchen, the campaign is now focused on ensuring the facilities are built with community engagement and that there are opportunities for education, training, and connections with local farms. Overall, the inclusive campaign structure and the intentional policy commitments of Sacramento FPC leadership have facilitated a lengthy list of policy-related achievements.

Napa

The Napa case illustrates how operating as a formal advisory board to the local county government can facilitate strategic alignment but also bring challenges. The council, known as the Napa Local Food Advisory Council, originated in 2010. The former Napa agricultural commissioner proposed the creation of the FPC. Nearing retirement, he wanted to take meaningful action to address both food insecurity and lack of agricultural diversity in the county. Using his political capital, he facilitated a visioning process with community members representing different sectors and interests. He framed local food production as an endeavor that could augment, rather than replace, the dominant wine industry. The council—which included representatives from agriculture, health and nutrition, environmental health, and planning, as well as chefs and restaurant owners—was charged with making recommendations to the agricultural commissioner and the county board of supervisors. The commissioner funded the council's baseline activities and provided staff time and supplies to run meetings out of the department's budget, while securing additional funding through the board of supervisors for larger projects.

Initially, the council focused on conducting land inventories for farming opportunities and evaluating local regulations to promote the sale of locally grown and processed foods in Napa. Its agenda shifted, however, when the founding agricultural commissioner retired and a new

commissioner took office. After that change, the council's primary policy and project activities are more aligned with the department's traditional mission—one that emphasizes interpreting and enforcing agricultural regulations. So, while the council remains structurally aligned with the agricultural commissioner's office, and can point to policy successes (e.g., a bee-keeping ordinance), some members feel a growing gap between their original objectives of food system change and their current activities. In addition, because the council is an official government body, it must follow governmental protocols that—despite their intention—can sometimes discourage inclusive community participation. These include open meeting laws, strict agendas, and codified voting policies. The council also cannot receive certain kinds of external funding. At the same time, the council can count on levels of staff support and resources that many FPCs that are not embedded in government struggle to obtain.

Los Angeles

The Los Angeles case showcases an ambitious attempt to facilitate strategic policy alignment on a large scale and over a long period of time. While in many respects Los Angeles is an outlier in our sample, given its large size and the significant resources available to support its work, the case still holds broader lessons for food policy councils interested in crafting more deliberate and intentional approaches to achieving policy change. Adjusted for scale, many of these approaches might be feasible in other localities.

The Los Angeles food policy council defines itself as the backbone organization of a *collective impact initiative* (Flood et al., 2015; Kania & Kramer, 2011), with the goal of “providing overall strategic direction, facilitating dialogue between partners, managing data collection and analysis, handling communications, coordinating community outreach, and mobilizing funding” (Hanleybrown, Kania, & Kramer, 2012, p. 6). The key structure is composed of a leadership council of 40 representatives from different sectors of the food system. The leadership council is drawn from a broader base of food system representatives that includes 1,000 individuals and over 300 public, private,

nonprofit, and academic organizations. The collective impact model shifts the focus from changing specific policies or programs to articulating broad-scale community changes. The task then becomes aligning policy and programmatic activities across a wide range of organizations to achieve a collective impact.

The council has fostered civic engagement in food policy work by providing a trusted venue for a two-way flow of information among elected officials, government agencies, and diverse stakeholders. At the center are a core group of paid staff, including an executive director and a leadership board that includes food system leaders from the public, private, and nonprofit sectors. Decentralized working groups engage communities and community-based organizations in the process of setting policy and project priorities, bringing their proposals to the leadership board for final decisions. Finally, the council's networking activities serve as the fluid interface with the public in the form of town halls and public events. Upwards of 60 organizations and individuals attend various public events to learn from and inform council priorities. This multidimensional governance structure has proven highly effective in keeping both government and community stakeholders at the table by providing all parties with meaningful opportunities to align interests and achieve food systems change.

For example, community food security advocates used council connections to partner with the Los Angeles Community Redevelopment Agency on a successful corner market conversion program. This program ultimately developed into the highly acclaimed Healthy Neighborhood Market Network. Another bottom-up example involves street food vending. Through stakeholder meetings, the council discovered strong community love of and interest in promoting street food vending—often referred to as Angelino cuisine—but, at the time, street food vendors were illegal. Leveraging council connections with the Department of Public Health, an FPC working group (now reconstituted as the “LA Street Vendor Campaign”) began to develop a legal permit system for sidewalk vending, including requirements that vendors near schools provide healthy food. The FPC's food waste working group

strategically invited key decision-makers from the Bureau of Sanitation to their meeting; as a result, the working group was subsequently invited to develop the food donation component of the new waste recycling program. Finally, one of the hallmark successes of the Los Angeles FPC, the Good Food Purchasing Policy, grew out of a multi-stakeholder working group that brought together labor, environmentalists, big food buyers, farmers, distributors, and processors. Its goal was to develop a good food procurement policy that improves the local and regional food system by implementing standards in five key categories: (1) local economies; (2) environmental sustainability; (3) valued workforce; (4) animal welfare; and (5) nutrition. The policy was eventually endorsed by the FPC leadership board, the mayor's office, and the city council. Because of broad local government endorsement, and the fact that the deputy director of the Los Angeles Unified School District sat on the council, the district adopted the procurement policy in 2012.

Throughout its work, the Los Angeles FPC has confronted the tension between bringing key decision-makers to the table while maintaining the trust of community-based organizations representing more marginalized communities. This was particularly true in its early days when the FPC had strong ties to the mayor's office and was viewed by some as promoting an insider agenda. Recent efforts to implement the collective impact approach, and deliberate efforts to engage the issues of marginalized communities, have helped build trust and secure a more inclusive set of collaborations.

Discussion: The Benefits of Structural Autonomy

Our comparative case study analysis deepens the understanding of how effective relationships between food policy councils and local government can be initiated, structured, and sustained. As discussed in our literature review, a major question raised in previous studies is whether FPCs are better off embedding themselves within the local government or operating outside of the government. Without definitely answering this question, our cases nevertheless make a strong case for the

importance of organizing the FPC to maximize its structural autonomy. In this way, the FPC controls both its policy agenda and the processes by which it can work. Contrary to some earlier findings (DiGulio, 2017), we argue that the politics of location *do* matter. Our findings suggest that when a council is housed within a government agency, as in Napa's agricultural commissioner's office, there is greater pressure to align with the mission of that entity defined by the current leadership. This restricts the ability of the FPC to respond to a broader base of community concerns. This concern is lessened, but only slightly, if the council is under the mantle of a part of the government whose responsibilities are to all constituents and programs. This was the case, initially, when the FPC in Los Angeles was part of the mayor's office. But even that arrangement alienated some community constituencies, who later came on board when the FPC established itself as an independent collaborative. Councils housed *outside* of the government, like the Sacramento FPC, can engage in strategic temporary alliances or partnerships with specific agencies that align with their particular campaign goals at the time without needing to comply with or adhere to the mission of any particular government agency over the long-term. Positive working relationships with government entities, therefore, do not necessarily need to be formalized and/or institutionalized to lead to successful policy outcomes or to build trust and legitimacy. However, in the case of the Los Angeles FPC, originating as a political project of the mayor's office did provide the council a high degree of legitimacy and political cache among food system leaders from the business, nonprofit, and government sectors. The council leveraged this legitimacy to build a powerful leadership board and achieve a high number of policy successes.

FPCs organized as grassroots collaboratives are well positioned to ensure that an inclusive and broad range of community voices are contributing to policy discourse, formation, and evaluation. The relatively informal settings and procedures of the councils we studied are more accessible and inviting to community participants than are formal government processes and procedures. Consistent with the earlier work of Siddike et al. (2015), we find

that the degree to which the council is internally organized to foster inclusive processes also influences how effectively it is able to engage with local government and policy. For example, the working group structure adopted by the Los Angeles FPC has been able to bring together key food system decision-makers from the public, private, and non-profit sectors and to hold a space for a two-way flow of information between community stakeholders and local government. In the case of Sacramento, the specificity of the FPC's campaign-oriented goals and objectives—along with a fluid membership structure that allows participation without having to be involved in all decisions and actions of the council—make it easier for government employees or activists focused on particular issues to participate. In addition, the decentralized, or horizontal, structure of the Sacramento council also intentionally creates the opportunity for authentic and inclusive public engagement in defining campaign priorities and fosters active engagement in campaigns.

At the same time, many FPCs benefit from having leaders who bring to the work extensive political connections, relevant policy experience, and intentional policy agendas. The best policy outcomes seem to reflect a prudent blend of inclusive community-based processes and the strategic use of insider connections.

Conclusion

While there is no single, ideal model for a local government-FPC relationship, our in-depth case comparisons demonstrate approaches that can assist local governments and food policy councils to work more collaboratively and effectively to advance equitable local food system policies and programs in their communities. Deploying these approaches in any particular local context requires intentional leadership than can assess organizational resources, identify potential allies, enlist community participation, and seek immediate and long-term opportunities for policy alignment. FPCs can seize opportunities by considering the stages of the policy process they hope to influence, the types of policy issues they wish to engage, the time frame it may take to realize different types of policy goals, and the degree to which they will seek incremental

or more fundamental changes. The particular strategies or approaches that councils pursue often involve combining these elements in creative ways that are suited to the opportunities and constraints of their particular circumstances, including resource availability.

For their part, local governments can take a number of steps to engage effectively with food policy councils. These can include (1) participating in FPCs by dedicating staff to attend and participate in FPC meetings and events, or providing other forms of in-kind support (such as meeting spaces); (2) partnering with FPCs to help educate the public on available government resources or to gather advice on the best strategies for implementing public policies; (3) embracing FPC policy proposals that advance local economic development, food security, anti-hunger, or related goals; (4) engaging with FPCs as sounding boards for developing new policy ideas and proposals and as incubators of new civic leaders; or (5) helping develop and launch FPCs in communities that do not have one.

Both FPCs and local governments can benefit from a greater emphasis on equity and inclusion, both in who is at the table in local planning and policy processes and in the centrality of equity issues on the policy agenda. On the one hand, the

fact that most FPCs focus on issues of food access is putting equity issues on the front burner of their policy discussions. On the other, many FPCs still have relatively limited representation from marginalized groups among their regular participants, and local governments still tend to be most responsive to more powerful local interests. Unless they are intentional about inclusive processes and change agendas, FPCs and local governments risk simply reproducing some of the same inequalities that they might otherwise ameliorate.

Given our relatively small sample, it is not clear how generalizable these findings may be. We hope other researchers can test our ideas in a more systematic way, and we look forward to a continuing conversation with practitioners as they seek food system change and effective relationships with local governments.

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Appendix. Food Policy Council Interview Protocol

Thank you for agreeing to talk with us. Before we begin, is it OK with you if we record this interview? [Let them know about how we will handle the confidentiality of the data.]

About you

1. What positions do you hold in your home organization (or in the broader community)?
2. About how long have you been involved with the FPC and why?
3. What unique perspective does your organization bring to the table?
4. What are you hoping your FPC can accomplish in the long term? What would success look like?

Background on the FPC

5. What are some of the priority issues your food policy council currently focuses on? Have these changed much over time?
 - a. Probe: specifically what policy issues does your council address (by understanding the issues, analyzing them, exploring options, or acting on them in some way)?
6. Is there anything unique about this community that you feel is important to understanding how your FPC works? (e.g., particular challenges, historical legacies, environmental or social conditions, etc.)
 - a. Probe, only if not already known: How is the FPC organized? Is it a non-profit, government associated or other?

Mapping exercise: Relationships, Information Sources, Use of Systematic Data

7. We are interested in where your FPC might get policy relevant information (particularly from research or other systematically collected data). It could be from academics or other sources. Help us get a picture by drawing a map of the organizations and people who provide information or knowledge to the FPC, and talk about how it's shared with the council members.
8. Are there any noteworthy examples of how this flow of knowledge and information changed your thinking/approach to your work with the FPC? If yes, please tell us the story.
9. You've talked about current information flows. Are there kinds of information or sources you feel are missing from your food policy council?
10. Are there examples of how your FPC has partnered with a research organization to answer specific policy questions, evaluate policy impact, or provide other policy relevant information? How has this gone? Have any particular policy successes resulted?
11. Probes: (if not already mentioned):
 - a. What about policy related partnerships or information sharing with other FPCs or the state FPC?
 - b. What ties are there to UCCE, UC, or other researchers/research institutions? How have these come about and what value have they brought?

continued

Lessons learned and future suggestions

12. Have you learned any lessons you might share about working with researchers or research institutions?
13. Do you have specific ideas or ways you would like to more effectively engage UCCE and/or other research institutions in food policy work?
14. If you had access to researchers to research and collect data on topics that would be helpful to the work of the FPC, what would you have them do? What would be your 'wish list'?
15. Is there anything else you think we should know?

Navigating borders: The evolution of the Cass Clay Food Partners

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Abstract

The Cass Clay Food Partners is an integrated food network serving Cass County, North Dakota, and Clay County, Minnesota, through the combined work of a food policy council, action network, and steering committee. In this paper, we describe the evolution of the network from project-based work to policy development to a partnership that integrates both programs and policy for greater impact. We also highlight the many types of boundaries the network has navigated in order to attain success in advancing alternative food systems for the Red River Valley community. These boundaries include

political borders such as the state line between North Dakota and Minnesota, as well as philosophical divisions between stakeholders and decision-makers. Lastly, we highlight the pitfalls faced and lessons learned by the network during this process.

Keywords

Food Policy Council, Food Network, Policy Blueprints, Food System Planning, Food Access

Dedication

Gina Nolte, our friend and colleague, passed away after a courageous battle with cancer while we were writing this paper. Gina was a founding member of the Cass Clay Food Systems Initiative who used her boundless energy as a successful and effective proponent for public health and systems changes. Gina will be sorely missed in our small public health community. This paper is dedicated to Gina, as it could not have been written without her leadership.

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Introduction

Like many communities, the Red River Valley region of Cass County, North Dakota, and Clay County, Minnesota, is on a path to intentionally create a healthier and vibrant food system. The journey down this path is being led, in part, by a network of food system professionals and community members currently known as Cass Clay Food Partners (CCFP). The network first formed in 2010 out of a recognition that, despite being widely cited as an agricultural mecca, the Red River Valley has substantial room for improvement when it comes to systemic challenges such as food insecurity, diet-related chronic disease, and lack of equitable access to healthy, culturally appropriate, and sustainably sourced food (Fargo-Moorhead Metropolitan Council of Governments, 2013). This region is often recognized by its boundaries, including its namesake, the Red River that forms the border between the two states. The persistence of political, social, and economic boundaries complicate food systems change, but there can be great success when bridges are built across these divides. In this essay, we seek to unpack those boundaries as we tell the story of the CCFP.

As two core members of the CCFP and public health nutrition scholars, we are sharing our perspective in order to help other food networks and food policy councils build the bridges necessary to move alternative food systems from idea to reality. We have found this is best achieved through strengthening connections between community leaders, local elected officials, food system and urban planning professionals, and the public. In this essay, we reflect on the unique organizational evolution of the CCFP from initiative to commission to partnership, highlighting the role that the place-based network has played in building leadership capacity among food system stakeholders and in supporting the implementation of a formal food systems plan and associated policy blueprints. We propose that the evolution of the CCFP demonstrates how a comprehensive food network (which includes a food policy council) can effectively navigate a variety of boundaries in order to advance systemic change at the local, regional, and state level.

The political boundary between Cass County,

North Dakota, and Clay County, Minnesota, creates an underlying tension between the cultural support for alternative food systems and the economic support for the industrial and conventional commodity-based food system in the heart of the Red River Valley. We draw on our experiences as members of the CCFP Steering Committee, as well as objective interviews and surveys conducted with members of the network, to describe the tension. Building on the literature related to food networks and local food policy, we describe the evolution of CCFP and highlight key lessons learned along the way. Lastly, we explain why we think making changes to the food system is inhibited by the prevailing tensions around navigating boundaries.

Food Policy Councils and the Democratic Process

Colasanti, Wright, and Reau (2009) suggest a democratic process in food systems can be achieved through a *leaderful* framework to catalyze community change. They define a leaderful framework as the facilitation of a process that is conducted through an unbiased, minimally influential manner and focused on “co-discovery” where knowledge becomes the province of all involved, not just the experts. Another aspect of this process includes team leadership, which creates and implements strategic action plans that then incorporate mutual respect around varying value systems (e.g., organic vs. conventional agriculture). This approach is nonprescriptive, which is especially important in cases like the Red River Valley where value systems conflict. Community change is derived through deliberate decision-making built on trust and transparency. In sum, diverse, regional collaboration promotes a functional local food system through policy alignment at all levels of government (Wegener, Seasons, & Raine, 2013).

Food policy councils can promote local food systems through the notion of civic agriculture (Andreatta, Rhyne, & Dery, 2008; Lyson, 2004). For example, food policy councils can advocate for access to community supported agriculture operations (CSAs) by low-income and food-insecure households, and foster social networks between farmers, volunteers, low-income households, and other community members. Direct contact

between farmers and consumers may enhance self-reliance among low-income participants by building food literacy and forging community connections.

In the context of local government, food systems work takes a “back seat” to other planning issues, such as housing, transportation, and the environment (Pothukuchi & Kaufman, 1999), further exacerbating the barrier between citizens and farmers. Because of the relegation of food systems to a lesser position in municipal planning, issues such as the loss of farmland around cities and lack of food access in neighborhoods go unnoticed until a food-justice crisis point is reached (Walker, Keane, & Burke, 2010). Incorporating food and farming principles into municipal planning often serves to focus decision-makers on systemic changes around food insecurity and limited access to healthy foods for specific populations (Clark, Freedgood, Irish, Hodgson, & Raja, 2017; Horst, 2017). Sonnino, Marsden, and Moragues-Faus (2016) recommend a place-based approach to solving food insecurity because it “offers the conceptual advantage of building far more complexity and diversity into generalized and aggregated food security debates: it is a stage for more reflexive food governance” (p. 487). Food policy networks can affect change by unifying fragmented approaches and creating networks that pressure various sectors to work together to solve multifactorial problems like food insecurity with complementary solutions (Sadler, Arku, & Gilliland, 2015).

Expanding access to healthy food within the community improves health behaviors as well as addresses issues of food insecurity (Sonnino et al., 2016; Walker et al., 2010). Consensus-making and citizen conferences with policymakers are increasingly common methods for engaging the community around food systems changes and increasing access to healthy food for all citizens (Ankeny, 2016). However, little consensus exists on the role of the public’s participation in food policy creation (Ankeny, 2016; Pothukuchi & Kaufman, 1999; Schiff, 2008). Some argue that the push for food policy councils to focus on locally based ordinances is an attempt to move the responsibility of food planning from the state (or federal)

government to often fiscally insolvent local municipalities (Sadler et al., 2015). Another perspective says that when people are engaged through local food policy councils in a reasoned, collective sense of good through a deliberative, democratic process, they can take back local control over food systems from the corporate-entrenched, big-food power structure (Ankeny, 2016). Accordingly, the CCFP’s vision is to use a deliberative, democratic process to build a local food system that is safe, nutritious, affordable, and culturally based for all members of the community.

Birth of a Local Food Network

Bridges have played a prominent role in the development of the Red River Valley and also provide an apt metaphor for understanding the evolution of the Cass Clay Food Partners. The CCFP is a food network that has experienced multiple transformations to fulfill an evolving array of functions related to social connectedness, civic engagement in the food system, and community-driven change. The trajectory of this network offers some lessons to be shared in the context of a racially fragmented urban-rural interface where alternative food systems are beginning to blossom, but the commodity food system is very much ingrained. The network began in 2010 as the Cass Clay Food Systems Initiative (hereafter the Initiative) and is thriving today as the newly restructured CCFP. The Initiative was launched in 2010 by public health and Extension professionals in Clay County, Minnesota, and Cass County, North Dakota.

The Initiative emerged in the context of two major state-level efforts in Minnesota related to increasing access to healthy food: the Statewide Health Improvement Partnership (SHIP) and the development of the Minnesota Food Charter (Minnesota Food Charter, n.d.-b). The SHIP program began in 2008 with state funding administered by the Department of Health to address chronic disease prevention through community-based activities related to healthy eating, active living, and smoking cessation. The SHIP program has provided financial and other support to local health departments and emphasizes strategies that are evidence-based and that meet identified community needs. The Minnesota Food Charter (MFC)

is a roadmap for food systems change that was launched in 2014 after an extensive public input process. Strategies in the MFC include explicit support for equitable local food system planning and for food policy councils at all levels of government. Both the SHIP program and the MFC have provided state-level support at critical times in the development of CCFP despite the lack of parallel programs in North Dakota. This difference in funding and organizational support between the two states is one of several factors that complicate efforts to work across this political border.

The Initiative was launched through a local foods summit with over 100 participants and agricultural commissioners from both states. Through facilitated group activities, the summit identified five overarching topics of interest to participants, which then became the five task forces that composed the Initiative's early structure. Through the decentralized work of the task forces as well as an overarching steering committee, the Initiative effectively sponsored and branded several projects, mostly related to community gardens, home gardening, and networking events connecting growers and institutional food buyers.

During 2013 interviews with founding members of the Initiative, responses pointed to this project-based work as important early successes. One member described how it was important to engage in projects that "make a difference right away, so that we have some immediate success," especially since other members were "not ready for the bigger picture stuff" such as policy research, education, and advocacy. Over time, however, the energy behind the task forces began to fade; even after they were consolidated from five to three topic areas, it was difficult to sustain the energy needed to maintain existing programs or to create new ones. Network leaders began to recognize that in order to achieve a broader vision of transforming food access through policy and other systemic changes, the network needed to evolve into a more formalized food policy council. A council would then have greater opportunity for direct influence on the democratic process by strengthening bridges between food systems professionals and policy-makers. In order to get there, the network took what would prove to be a pivotal step on the

journey: the development of the Metropolitan Food Systems Plan (Fargo-Moorhead Metropolitan Council of Governments, 2013).

Metropolitan Food Systems Plan

Initiative leaders increasingly saw local and county planning efforts as an essential entry point into the realm of food policy. Core members of the Initiative drafted language and recommendations related to healthy food access and local food systems. These recommendations were then adopted in the Fargo Comprehensive Plan, which was approved in May 2012. After this initial milestone, Initiative leaders approached the Fargo-Moorhead Metropolitan Council of Governments (MetroCOG), a quasigovernmental planning agency mainly tasked with transportation planning, and received official approval from the board to begin work on a local foods assessment report. At the end of 2013, the Metropolitan Food Systems Plan was finalized.

The planning document provided data and recommendations on the following key issues related to local food and healthy food access:

- Food insecurity, accessing local food shelves, SNAP participation, opportunities to increase local food consumption;
- Food access and emerging food deserts;
- Growth in the interest of local food;
- Market analysis and research regarding the local food system;
- Reducing barriers for institutions that want to incorporate local foods;
- Fostering cooperation and building a local food distribution network; and
- Recognition of the local food system by local governments for improved land use, zoning regulations, and community planning that supports access to healthy and local food.

The Metropolitan Food System Plan (2013) also included a critical recommendation to form an advisory commission tasked with consulting with local and elected county officials about food access and related issues. In early 2014, the leaders from the Initiative presented the plan to the four municipal and two county jurisdictions and

received their approval. Throughout 2014, the leaders of the Initiative met regularly to deliberate on the next steps needed in order for the advisory commission to materialize and eventually obtained a Joint Powers Agreement between the city of Fargo and Clay County establishing the Cass Clay Food Systems Advisory Commission, which later became the Cass Clay Food Commission (hereafter Commission). At the end of 2014, they approached the six jurisdictions again to present the Joint Powers Agreement and request the appointment of one representative to serve a two-year term on the Commission. Both the MFC and the SHIP program were shown as examples to demonstrate what state-level support for and momentum around addressing food systems through local policy efforts looked like.

Formation of the Commission

The Commission is the first food policy council in the state of North Dakota and one of only three in Minnesota. As the first food policy council in Minnesota outside of the Twin Cities metro area, the Commission is an important symbol for the advancement of food policy work from urban to rural Minnesota. The goal of the Commission is to affect all levels of the community's food system to assure that residents of Cass and Clay counties have access to safe, nutritious, and affordable foods. Commission membership includes six city council members or county commissioners (one from each jurisdiction represented by the Commission) and five at-large members who were selected by the steering committee and voted for approval by the membership. At-large members represent various sectors of the local food system.

The first two years of work with the Commission led to a great deal of education, leadership development of Commission members, and increased connectivity between community members, key stakeholders, and elected officials. Ten policy blueprints were approved, published online, and broadly disseminated to planning departments in the two states (City of Fargo, n.d.). Blueprint topics were determined through a community engagement process, a survey of the commissioners, and with the expertise of the steering committee. To date, only one new policy has been

enacted based on the recommendations in the blueprint: the adoption of a chicken ordinance in Fargo. Some of the factors contributing to the successful adoption of the chicken policy include significant public interest in the issue, increased pressure over time on the city of Fargo to take action, and the deliberate steps taken by network leaders to cultivate the buy-in of Fargo City Council members. A consultant assisted in this process by helping to develop a communications strategy for the short-term campaign, as well as helping to create a new vision and structure for the network.

After two years, we used a survey instrument to gauge commissioners' knowledge, interest, and readiness to present the blueprints focused on urban agriculture to their respective jurisdictions. In other words, we wondered if elected officials were ready to cross over from community education to intentional policy change. We developed and administered a brief retrospective pre/post questionnaire at one of the commission meetings. Two of the steering committee members also conducted follow-up one-on-one interviews with all of the non-at-large commissioners ($n=6$). Survey results from the 9 commissioners present at the meeting indicated that (1) knowledge about urban agriculture went from no knowledge or slightly knowledgeable to knowledgeable, (2) their ranking of the importance of urban agriculture changed from slightly important to important or very important, and (3) their readiness to present the blueprints to jurisdictions was evenly distributed between not ready to ready. The most frequently cited blueprints that commissioners believed would resonate with their jurisdictions were related to community gardens, farmers markets, and cottage food laws. Commissioners steered away from the more controversial and innovative blueprints, such as municipal composting, backyard season extension, and backyard beekeeping.

As elucidated by these interviews, commissioners believed that (1) the blueprints were very valuable and should be shared with jurisdictions, (2) the education was critical and should continue, (3) the community should move from planning and education to action and implementation—driven by active community members and not

commissioners—and (4) youth and minority groups must be engaged in the process.

In order to enhance community engagement as requested by the commissioners' feedback, the steering committee implemented a strategic communication process. The intent was to encourage community members to bring food policy—related issues to their jurisdictions so that commissioners were not acting alone when introducing the policy blueprints. In other words, more effort was needed to build bridges between the community and the Commission before any new policy changes, much like how the Fargo backyard chicken ordinance was brought forward by citizens and ultimately was passed by the Fargo City Council with advisory support from the Commission leaders within the steering committee. This decision was reinforced through meetings with food systems leaders (including the pioneer of the Minnesota Food Charter) from the Twin Cities Metro with more experience organizing food policy work.

Strategic Communications Planning for Cass Clay Food Partners

During the time the Metropolitan Food System Plan was being written, the level of engagement between the network and the public was fairly high. Members of the community had multiple opportunities to provide input in the plan's development, to attend network-related events, and to join task forces. But starting in 2014, the network leaders devoted most of their time toward the launch of the Commission, relationship-building with Commission members, the design of bimonthly Commission meetings, and the development of policy blueprints. The project-based work of the Initiative consequently disappeared, and as a result, the network was less connected with the community.

At the same time the Initiative disappeared, new grassroots energy was fueling food systems change through the creation of social entrepreneurial endeavors such as the Red River Farmers Market, the Ugly Food of the North network that was addressing food waste issues, and the Little Free Gardens initiative. These projects included many of the same key players; in particular, the Commission's coordinator played a vital role in weaving together the projects and people involved

in advancing community food systems change and discovering the potential collective impact of these interconnections. Concurrently, the Commission members were hearing from elected officials and city planners that in order to advance any policy, they would need community members applying pressure to local policy makers to take action on the issue identified in the policy blueprints. The concept of a new umbrella structure for the network—Cass Clay Food Partners (CCFP)—began to take root. This new structure would bridge the policy work of the Commission with the grassroots organizing happening throughout the community.

A subcommittee met with a consultant for nine months in late 2016 and 2017 to formulate CCFP's updated vision: an overarching network structure including the Commission, the steering committee (comprising core network leaders from the original founding organizations), and a new component: the Cass Clay Food Action Network. This process enabled CCFP to develop strategic language and tactics to engage a broad swathe of the community and to appeal to the cultural and political nuances of each jurisdiction. The purpose of the Action Network is to revive some of the grassroots engagement and progressive networking of the Initiative by creating an avenue for organizations and individuals in the community to regularly come together to discuss opportunities for collaboration. On the other side of the equation, language about economic development, innovation, and entrepreneurship appeal to the values of political and economic leaders in more conservative communities like West Fargo, ND. Strategic communication language was developed (see Figure 1). Perhaps the biggest challenge facing the members of the strategic communication subcommittee was determining how to intentionally integrate essential core concepts like equity, inclusivity, and diversity without triggering the polarization that increasingly accompanies these terms.

When it came time to implement the new plan, the issues of equity, diversity, and inclusion proved a persistent challenge. Three main approaches were taken in order to enhance youth and minority engagement in the CCFP (as the commissioners recommended in their interviews). First, the Cass Clay Food Partners Action Network was devel-

Figure 1. Strategic Communications Language for Cass Clay Food Partners

Tagline	Building a strong, healthy, and vibrant food system.
Mission	To improve all levels of our community food system to assure that residents have access to safe, nutritious, affordable, and culturally-based foods.
Vision	All members of the community have access to safe, nutritious, affordable and culturally-based food.
Values:	<ol style="list-style-type: none"> 1. We believe in an inclusive, integrated, and equitable food system. 2. We believe in a food system that is economically and ecologically resilient. 3. We believe in a food system where all cultures are respected. 4. We believe in a food system that supports and enhances quality of life for all citizens. 5. We believe in a food systems that fosters successful entrepreneurship and sustainable innovation.
Goals	<ol style="list-style-type: none"> 1. To create an inclusive, well-connected food system. 2. To provide equitable access to safe, nutritious, affordable, and culturally appropriate food. 3. To create opportunities to achieve a healthy lifestyle and reduce the risk of chronic diseases. 4. To promote self-sufficiency through food-skills education and production opportunities. 5. To create a framework and structure that allow for shared leadership where all interested citizens can come together to achieve our goals.
Statement of Approach	<p>We approach the accomplishment of our stated goals and values by:</p> <ul style="list-style-type: none"> • Encouraging shared leadership throughout the Partners • Engaging the citizens and key stakeholders of Cass and Clay counties to take action • Fostering teamwork and shared responsibility • Catalyzing systemic changes through food related policy and environmental approaches
Selected Key Messages	<ul style="list-style-type: none"> • Having easy, consistent access to healthy, affordable, and culturally based food can help people achieve a healthy lifestyle and prevent chronic diseases. • Creating opportunities for people to grow and produce their own food allows people to become self-sufficient and live in resilient communities. • Cass Clay Food Partners seeks to engage food system stakeholders and citizens to work together to develop a food system that is inclusive, well connected, and economically vibrant.

oped to serve as the conduit between grassroots organizations, the Commission, and the steering committee. The initial activity of the Action Network was First Friday, a monthly event that highlights food systems ideas and programs. The kick-off First Friday event featured Growing Together, a food justice group that partners with immigrants and refugees. Second, the steering committee actively sought out the participation of an immigrant community member to serve as an at-large commissioner who was excited to join, rather than falling back on someone from the immigrant community who is always asked to lead. Third, an updated version of the Metropolitan Food System Plan included stronger language that prioritized inclusivity of minority and youth groups.

Despite these efforts, the current structure and culture of government is oriented toward the white dominant culture and creates an institutional barrier to progressive ideas of inclusivity. Our network continues to examine how certain structures (meeting times and locations, percentage of professionals vs. lay people serving on the steering committee) reinforce our distance from minority groups and youth. Recent local elections have seen a surge in minorities running for positions on city councils, school boards, park boards, and as mayors. While we wait for the political system to change through the democratic process, prioritizing inclusivity in all facets of the organization's strategy is necessary to enfranchise underrepresented groups.

The CCFP vision and structure represent an

integrated approach that weaves together the grassroots work of the previous Initiative, the policy work of the Commission, and the leadership of the steering committee, while also opening the door for more community involvement. The new look of the network was well received by Commission members and the community. There is great interest in the launch of the Action Network, with over 120 people attending the kickoff First Friday event, including municipal planners, local elected officials, and congressional staff from both states. Time will tell if the new structure of the network will generate greater support for local food system programs and policy.

Moving Forward

Though the latest iteration of the CCFP is new, there are many lessons to share from the evolution of this network since 2010 and our efforts to cross boundaries that have inhibited food systems work in the past. Inevitable tensions exist when working within a network, including divergent values and different preferences for processes, networking, or action (Schiff, 2008). Additional challenges occur when the work is disconnected (Sadler et al., 2015); for example, the project-based work of autonomous task forces of the Initiative diminished without an overarching strategy or vision to advance the work. In contrast to the disparate approach of the task forces, the formation of the Commission was a unifying approach, a place where the steering committee members could pool their energy and resources into advancing policy efforts by advising and partnering with local government entities, without spreading themselves too thin trying to maintain projects and consistent community engagement.

The irony of this shift was that the network was ultimately unable to advance policy work very far past the education and leadership development phases and was limited in building more public support and engagement. In fact, city and county planning staff indicated that organized efforts to set policy agendas are less influential than policy-makers simply hearing from their constituents about an issue. The local government officials serving on the Commission have also indicated that they are uncertain as to where their

constituents stand on food policy issues, pointing to the need for greater community engagement and grassroots advocacy efforts in tandem with the advisory and research-based role of the steering committee. Once an issue is on their radar as something that the community cares about, then policy-makers need to know about the research and examples from other communities (Wegener et al., 2013). The formation of the CCFP is an attempt to bridge grassroots networking and project-based work with governmental policy efforts in a mutually reinforcing way.

Although food networks often focus on local issues and bridging grassroots efforts, they could readily expand to influencing state or federal policy (Sadler et al., 2015). Council effectiveness is defined as “synergy, or the power to combine resources and perspectives to create new approaches to complex problems” (Calancie, Allen, Weiner, Wen Ng, Ward, & Ammerman, 2017, p. 2). The CCFP chose to focus its resources on local issues because of its late entry into food system planning work as compared to other areas of the country. Nonetheless, as members of the CCFP, we have connections to state and national partners. We believe these connections bridge local policy-makers with broader efforts and simultaneously tailor the focus to a local political context, as recommended by Clayton, Frattaroli, Palmer, and Pollack (2015). The interplay between local governmental efforts and state-level influence was integral in the formation of the Commission and in lending credibility to the policy blueprints, which have been promoted through the Minnesota Food Charter Network and helped inform the development of the Food Access Planning Guide (Minnesota Food Charter, n.d.-a).

Before forming the CCFP, multiple organizational models were examined to determine the best fit for the local context. One such example, the Puget Sound Regional Council, also relied on a regional, metropolitan planning council, promoted best practices, distributed toolkits, and provided technical assistance to multiple jurisdictions. Nonetheless, the Puget Sound Regional Council has been less successful at promoting its guiding principles of equity and justice (Horst, 2017). Like the Puget Sound experience, the CCFP can look


ahead to improving food security for vulnerable residents. However, we recognize that the focus will need to shift to employing mechanisms for soliciting feedback from diverse citizens and stakeholder types (Buchan, Cloutier, Freidman, & Ostry, 2015). Formats for receiving input could include diverse facilitators or “animators” who provide feedback and background information on key policy issues by drawing people into comfortable, informal settings like the CCFP Action Network (Ankeny, 2016, p. 16).

Having multiple governmental jurisdictions represented in the Cass Clay Food Commission creates tensions between competing interests, such as key policy differences between metropolitan and rural jurisdictions. Another tension exists around the expectation that grassroots changes must be accompanied by a business case emphasizing economic viability without government funding. In a conservative political climate such as ours, changes that include government spending or the creation of government jobs (even if those jobs are meant to enhance innovation and benefit the common good and/or vulnerable populations) are often rejected. On the other hand, including multiple government jurisdictions with diverse stakeholders can also have the beneficial effect of bringing people together to learn about economically viable approaches.

Other local governmental jurisdictions that face similar limitations caused by a conservative political climate should develop a multifaceted approach of long-term planning and methodical strategies. We recommend that they consider starting with small, highly visible projects to raise community awareness while consistently using multiple forms of media to spread awareness. Make sure local policymakers know about the successes so they are open to becoming engaged in the creation of a food policy council—with the assurance that the council is advisory only. Once the food policy council is created, focus on educating the members. After the food policy council members are educated and aware of various policy options, mobilize the community to support and encourage the policy-makers. In our community, policy-makers rely on their constituents to drive change because they may not be innovative or brave about

advancing new ideas, or are slowed by government inertia. Finally, be sure to include specific objectives around inclusivity and strategic communication. Disrupting entrenched power systems through diverse perspectives is a slow, trust-building process. Resist the temptation to tokenize existing leaders from minority groups and instead invest in building new relationships through one-on-one interactions and attending events in underserved neighborhoods.

Conclusion

We recognize that organizational, governmental, and individual self-interests are essential to hold networks together. Citizens, government agencies, and elected officials must see what they have to gain from being at the table in order to stay engaged in a network. The CCFP has demonstrated the value and challenges of shared leadership between local government agencies, nonprofit organizations, educators, and citizens by setting aside individual and organizational goals in order to stay focused on advancing the collective work. The inclusion of local government agencies including county commissions, city councils, and regional councils of governments is critical to the work of any food network and should be bolstered through increased feedback mechanisms between government and diverse community members. A “leaderful” framework that involves key actors such as farmers, food processors, underrepresented groups, community and educational groups, and state and federal agencies has also proven to be a powerful way to integrate food system issues into the social and physical fabric of communities. Moving forward, the CCFP will continue to serve as a model integrated food network that addresses the limited access to affordable, healthy, local food for residents who not too long ago lacked ready access to local food other than row crops like corn, soy, and sugar beets. 

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Planning for a resilient urban food system: A case study from Baltimore City, Maryland

Special JAFSCD Issue

Local Government in Food Systems Work



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Abstract

Many natural and non-natural hazards threaten food security, especially in urban areas where growing populations place extra demands on the food supply. Ensuring stable food security before, during, and after disasters requires resilient food

systems that can withstand and recover from disruptions. However, few U.S. cities have considered food systems in disaster preparedness or resilience planning. This reflective case study from the participant-observer perspective examines

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the process and outcomes of a city-university collaboration to assess and begin to improve the resilience of Baltimore City's food system. An academic center and municipal department of planning partnered to assess and plan for short- and long-term food system resilience. An Emergency Food Working Group convened for three meetings over three months, resulting in the creation of an emergency food access protocol for acute event response. A broader *Baltimore Food System Resilience Advisory Report* was then developed based on 36 key-informant interviews with food system stakeholders, literature reviews, and geographic information system (GIS) mapping. That report included an assessment of the Baltimore City food system's vulnerability to hazards, the extent of stakeholder preparedness for food supply disruptions, and identified opportunities for enhancing long-term food system resilience. It presented policy recommendations for Baltimore and a framework for conceptualizing food system vulnerabilities. Policy recommendations and lessons learned from this planning process can serve as an example for other cities interested in enhancing the resilience of their food system or broadening the scope of their resilience planning.

Keywords

Food System, Resilience, Urban Planning, Climate Change Adaptation, Food Systems Planning, Food Security, Emergency Food Assistance, Food Policy, Case Studies, Northeastern States

Introduction

Background

Climate change is causing unprecedented shifts in natural systems and threatens global food security (Intergovernmental Panel on Climate Change, 2014). Reduced agricultural productivity, crop damage, disrupted supply chains, and food price spikes are expected to occur more frequently in the coming years (Hatfield et al., 2014). Non-natural hazards such as civil unrest or cyberterrorism also can disrupt food systems. In urban areas, food system disruptions could substantially affect large populations already struggling to access food. Feeding cities despite such challenges requires

planning for stable systems that support food security before, during, and after crises. Urban food systems need to become more resilient. This reflective essay presents a participant-observer case study of the authors' collaborative efforts to assess and plan for improved *resilience* in the food system of one United States city.

Resilience is the capacity to absorb, adapt, and transform in response to a disruption (Béné, Headey, Haddad, & von Grebmer, 2016). The concept has been applied in diverse fields such as psychology, engineering, and ecology (Fletcher & Sarkar, 2013; Francis & Bekera, 2014; Holling, 1973). A resilient *food system* provides a reliable source of nutritious, safe, accessible food despite disturbances (Candy, Biggs, Larsen, & Turner, 2015). Most of the initial research on food resilience focused on agricultural resilience (Barthel, Parker, & Ernstson, 2015; James & Friel, 2015; Koochafkan, Altieri, & Holt, 2012). Some also focused on supporting food security as one component of disaster recovery or community resilience (Clay, Papas, Gill, & Abramson, 2018; Links et al., 2018). Other research focused on more holistically operationalizing food system resilience (Seekell et al., 2017; Tendall et al., 2015; Worstell & Green, 2017).

There has been relatively little research focused on resilience in food systems supporting urban food security. We reviewed city, county, and regional food system planning documents from 2001 to 2017 and found a small but increasing reference over time to resilience as a planning goal (Biehl, Buzogany, Huang, & Chodur, 2017). (See, for example, Barron et al., 2010; New York City Economic Development Corporation & New York City Mayor's Office of Recovery & Resiliency, 2016; Zeuli & Nijhuis, 2017; Zeuli, Nijhuis, & Murphy, 2015.) To our knowledge, no urban food system resilience planning processes are documented in the academic literature.

In this paper, we describe one attempt to improve urban food supply resilience in ways that enhance residents' short- and long-term food security. This reflective case study shares the context, motivation, process, and lessons learned throughout a food resilience planning project in Baltimore City, Maryland. We conceptualize Baltimore City's

food system as the people, places, and processes involved in ensuring urban food access, availability, and acceptability. We considered ways to improve the preparedness, response, recovery, and adaptability of stakeholders across the system, from farms to processors and distributors, food pantries and stores, and communities. Recognizing that the urban food supply depends on local, regional, national, and global systems, our planning considered not only urban and peri-urban food production, but also food supplied through national and global systems. This reflects the current balance of the urban population's diet and the limitations of urban agriculture as a major food source (Santo, Palmer, & Kim, 2016). That said, urban planners and policy-makers have influence primarily at the local level. The strategies developed from our efforts consequently focused primarily on supporting resilience in regional food distribution, retailers, and food assistance organizations (such as food pantries). These components currently play a larger role in supporting consistent food security within city limits than do urban farms, seasonal farmers markets, and prepared food sources such as public markets and restaurants.

Baltimore in Context

Located within the Northeast megalopolis, Baltimore City, Maryland, is the 29th largest U.S. city. The population is around 620,000, of whom 64% are African American, 30% are white, and 4% are Hispanic or Latino (U.S. Census Bureau, 2010). In Baltimore, structural racism is tied to historical policies and planning that led to disenfranchised communities and inequitable access to resources such as healthy food (Bilal, 2016; Misiaszek, Buzogany, & Freishtat, 2018; Power, 1983). Among Baltimore residents, African Americans disproportionately experience food insecurity, live in healthy food priority areas (formerly called "food deserts"), and have chronic diet-related diseases. Twenty-four percent of city residents are food insecure and 23.5% live in healthy food priority areas. This means they do not have easy access to healthy, affordable food (Feeding America, 2014; Misiaszek et al., 2018). Twenty-four percent live below the federal poverty line and 25% receive Supplemental Nutrition Assistance

Program (SNAP) benefits (Feeding America, 2014; U.S. Census Bureau, 2015). As in other urban areas in the U.S. (Companion, 2010), because of high poverty, food pantries and other food assistance programs such as after-school meals play a large role in supporting food security in Baltimore.

For many Baltimore residents, food insecurity is a problem even under everyday circumstances. A disaster could worsen it in the short and long term. Since 2010, severe weather has affected Baltimore with increased intensity (Baja & Granberg, 2018; City of Baltimore, 2013). As climate change continues to influence the weather, such events will likely increase in frequency and magnitude in the future. Thus, so will their impacts on Baltimore residents, businesses, infrastructure, and systems.

Baltimore City has a progressive food policy agenda aimed at developing strategies that improve food security and residents' health. It was among the first U.S. cities to designate a city-funded food policy director, a position responsible for leading an initiative based in the Baltimore Department of Planning's Office of Sustainability. Since 2010, the Baltimore Food Policy Initiative (BFPI) has led efforts to improve food access across the city. It has expanded its capacity by hiring two additional full-time staff members. For nearly a decade, the Office of Sustainability and BFPI have collaborated with the Center for a Livable Future (CLF), an interdisciplinary academic center based within the Department of Environmental Health and Engineering at the Johns Hopkins University Bloomberg School of Public Health. The CLF performs research, policy analysis, education, and other activities guided by the perspective that diet, food production, the environment, and public health are interwoven elements of a complex system. Under this collaboration, the CLF and Office of Sustainability have co-released several reports that map Baltimore's food, including a metric assessing food healthfulness within stores (Behrens Buczynski, Freishtat, & Buzogany, 2015; Haering & Franco, 2010; Misiaszek et al., 2018). The report findings are used to establish policies and initiatives aimed at increasing healthy food access in the city.

Recognizing the threat that climate change poses to food security, the Office of Sustainability

emphasizes integrating the food system into proactive planning for climate-related hazards. Concurrently, the CLF has expanded its research portfolio to understand and support food system resilience through a public health lens. Lessons learned from this collaboration provide insight for local governments working to incorporate food systems into resilience planning.

Case Study Methods

The reflective participant-observer case study method used in our research involved an iterative process. We first reviewed documents, notes, and emails shared between collaborators and external partners; we then synthesized that information as well as our event recollection into a narrative and timeline of the planning process (Figure 1). Last, we discussed and shared perceptions of the planning process and distilled experiences into key challenges, successes, and lessons learned from university and municipal planning perspectives. Although the lead author is a university researcher, the narrative was jointly constructed, edited, and reviewed multiple times by both university and city collaborators.

Given that our direct experiences inform this paper, some objectivity may be compromised; however, participant observation provides a rich perspective from which to conduct research. To minimize bias, recollections of events were triangulated with date-stamped documents, emails, and news reports. Non-authors from both institutions who were involved in or observed the planning process reviewed the manuscript and provided feedback.

Planning for Urban Food System Resilience

Project Origins

Including a food system perspective in the city's disaster preparedness and resilience planning began in 2013. This was the year in which Baltimore became the first city in the U.S. to incorporate food into its all-hazard mitigation plan (Figure 1). Mitigation plans describe risks from and vulnerabilities to natural disasters and design long-term strategies for protecting people and property (Federal Emergency Management Agency, 2017).

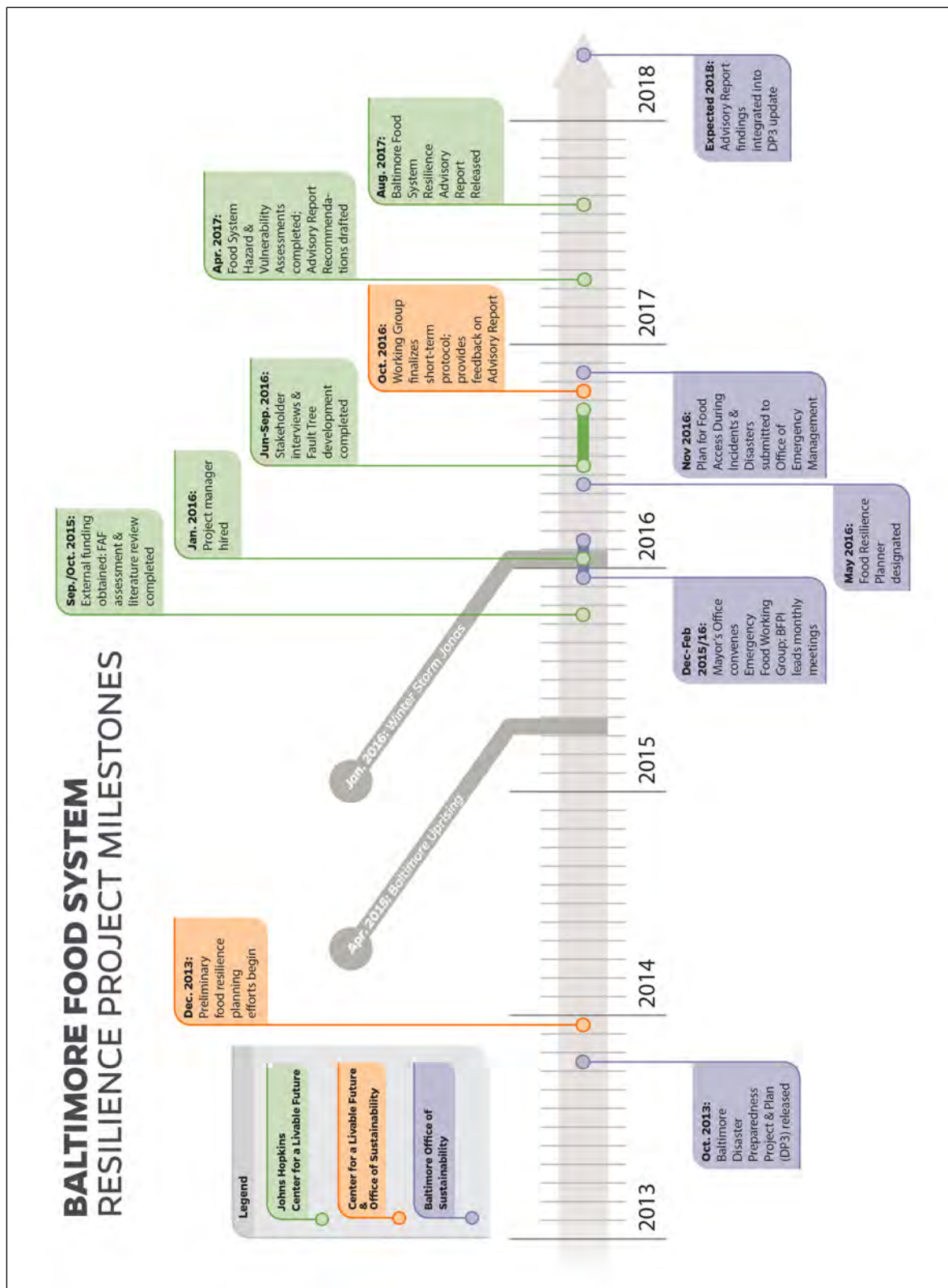
Local governments must develop such plans in order to be eligible for federal mitigation planning funding. The Office of Sustainability developed its version, the *Disaster Preparedness Project and Plan* (DP3), using a unique approach that integrates climate adaptation with hazard mitigation efforts.

An extensive public outreach and engagement process informed an assessment of vulnerable people, places, and resources in the city and led to several components typically not addressed in mitigation planning, including food. DP3 public outreach included over 35 input sessions in the communities that are most vulnerable to natural hazards and that have the highest levels of food insecurity. One component shared one-on-one assistance with residents to develop emergency plans, build emergency kits, and identify assets and shortcomings in their neighborhoods, including in relation to food and water access. These efforts to further engage with residents in vulnerable neighborhoods about food and emergency preparedness continued after the DP3's release.

During DP3 development, the Office of Sustainability climate resilience planner reached out to Johns Hopkins University to utilize the CLF's food systems expertise. CLF representatives provided input on the plan's "Public Services" section as it related to food. They also began work with the Office of Sustainability to identify funds for implementing the DP3 strategy to "Increase Baltimore's Food Security" and "develop a long-term plan for protecting the resilienc[e] of the regional food system" (City of Baltimore, 2013, p. 224). The climate resilience planner also reached out to BFPI for their food policy expertise. Thus, a new collaboration resulted between the CLF, the Office of Sustainability climate resilience planner, and BFPI to create a food resilience plan.

Early on, the climate resilience planner led planning efforts, with research support from the CLF and two Johns Hopkins University students. A student team from a course led by CLF faculty and mentored by the climate resilience planner reached out to other cities to understand how past crises affected their food systems. Initial planning and research focused on local food production, including assessing urban agriculture and soil quality. This approach aligns with other early urban

Figure 1. Key Milestones in Baltimore City's Food System Resilience Planning, 2013–2018



food system resilience work, which focused on food production (Barthel et al., 2015; James & Friel, 2015). As noted above, however, because of the limits of urban agriculture, the project evolved to emphasize post-farm gate supply chain actors supporting food access and availability for city residents—particularly those who most consistently support food security. These include food assistance organizations, distributors, and retailers critical to the system. Recognizing the need for more sustained financial and human resources to take this approach and support more robust research and planning, the CLF and Office of Sustainability jointly applied for funding.

Short-Term Food Resilience Planning

The Baltimore Uprising. The April 2015 Baltimore Uprising highlighted the ways in which a disruption can harm food security in Baltimore. It also highlighted the need to better coordinate city agencies and food suppliers. Following the death of Freddie Gray from injuries sustained in police custody, many citizens of Baltimore participated in public demonstrations. Peaceful protests occurred along with civil unrest, including property destruction, arson, and looting. According to the Baltimore Development Corporation, at least 107 food-selling retailers (corner stores, convenience stores, grocery stores, pharmacies, and discount stores) sustained damage to or lost inventory or property (K. Dawson, personal communication, April 13, 2017). Approximately 26% of those stores were located in neighborhoods with already limited access to healthy food. A weeklong night-time curfew also limited food deliveries to stores. Public schools closed for a day, leaving many students without their one regular food source. Many organizations and individuals donated food to Baltimore communities after the unrest; however, local food assistance organizations lacked communication and coordination, creating inefficient donation distribution to residents in need (Maryland Food Bank staff member, personal communication, April 2015).

Emergency response efforts. The Uprising and its impact on the food system motivated the city government to include food in short-term emergency prepared-

ness protocols. Traditionally, emergency food providers distribute food with little intervention by city government. The Uprising provided an opportunity to learn where municipal agencies could assist with communication, coordination, and collaboration. As a short-term measure, the Office of Sustainability formed an Emergency Food Working Group (herein, the “Working Group”) in December 2015. The Working Group included 13 municipal agencies, seven emergency food nonprofits, three state and federal agencies, and the CLF (Figure 2). Members met three times in the winter of 2015–2016 to provide input on the city government’s role in supporting private and nonprofit food entities during emergencies. Using this input, the Office of Sustainability drafted a Plan for Food Access During Incidents and Disasters and shared it with the Working Group in fall 2016. It was then incorporated into the city’s Emergency Operations Protocol (EOP) as an appendix to the Mass Care & Sheltering Emergency Support Function (ESF #6) and was submitted to the Mayor’s Office of Emergency Management.

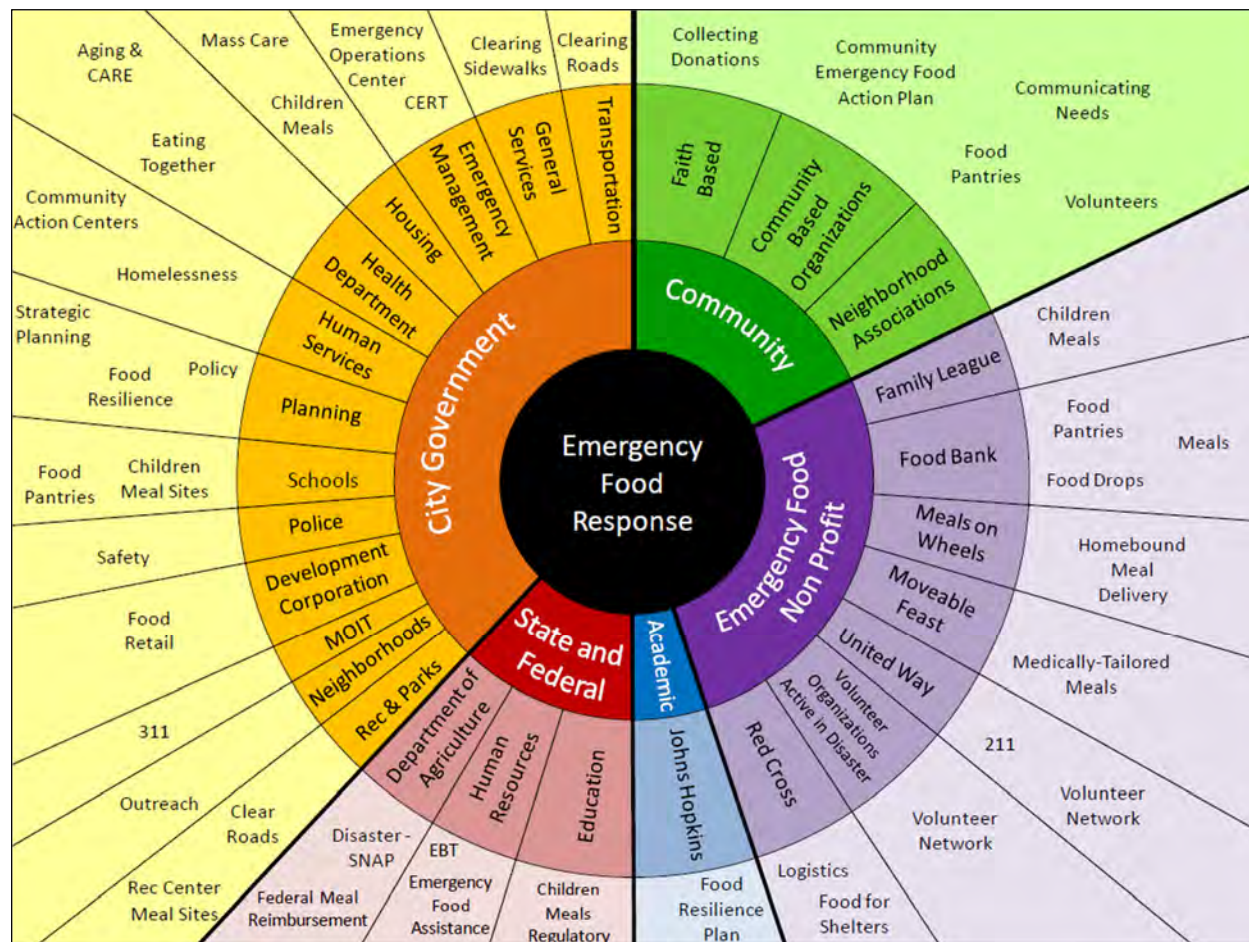
Recognizing the need to incorporate food systems into resilience planning and vice versa, the Office of Sustainability redesignated a food access planner as a “food resilience planner.” Along with continuing food resilience planning and implementation, this position now sits in the Emergency Operations Center (EOC) during emergencies and liaises between the EOC and food-providing organizations. Although at the time of writing the Office of Sustainability was awaiting administrative approval for the updated EOP, adding food to the protocol, even informally, resulted in more inclusion and support of food system stakeholders during recent events. This was demonstrated when a 2016 blizzard blanketed Baltimore in two and a half feet (0.76 m) of snow, closing schools for 10 days. With a food liaison in the city’s EOC and initial protocols in place, Working Group organizations more effectively coordinated with each other to provide emergency meals to children and seniors.

Long-term Planning: The Baltimore Food System Resilience Advisory Report

Although the short-term *Plan for Food Access During Incidents and Disasters* provided needed coordination

Figure 2. Baltimore's Short-term Plan for Food Access During Incidents and Disasters

Representatives of government, academia, community, and nonprofit sectors provided input on Baltimore's short-term Plan for Food Access during incidents and disasters. The second ring shows organizations who provided input in the Plan for Food Access. The outer section depicts organizations' responsibilities during and after a crisis.



to support food *access* immediately after acute events, the project team recognized a need to support *long-term resilience* of the food system supplying the city. The CLF led the research and drafting of this resilience assessment, which assessed threats, vulnerabilities, preparedness, and adaptive capabilities across the urban food supply chain. The assessment became the *Baltimore Food System Resilience Advisory Report* (herein, *Advisory Report*). The *Advisory Report* goes beyond the short-term *Plan for Food Access* to assess food availability and acceptability. The report also recognizes that the food supplying the city is produced at various geographic scales. The report additionally includes vulnerabilities to *non-natural hazards* such as

electricity failures, unrest, and terrorism.

In the summer following the Uprising, the CLF obtained funding through two Johns Hopkins University initiatives focused either exclusively or in part on improving urban health. They also hired two student research assistants to work on the project. A CLF staff person began serving part-time as a project manager and led research and writing tasks. The project manager and city planners met approximately every month throughout the following year to provide feedback on research progress and to discuss next steps. Although the CLF led report research and writing, the Office of Sustainability guided report development to assure that the findings and recommendations were

framed in a way that the city's urban planners could interpret and use for formal plan development. They also provided input and feedback throughout report development and edited multiple drafts.

Although the initial project goal was to develop a formal "plan" and adopt policies for food resilience in Baltimore, the project goal transitioned into an "advisory report" partway through. It became clear that the research team lacked the capacity to perform the full community-engaged process needed to establish a city plan, and that such engagement was not the university's role. Nevertheless, the report did involve some community input, including in-depth community interviews. The interviews sought input from individuals with broad perspectives and engagement. These individuals generally came from neighborhood associations or were church leaders; however, they did not necessarily live in the communities they represented or experience food insecurity themselves. Therefore, we decided further community engagement was needed before the Office of Sustainability and its community partners could adopt and implement the strategies recommended in the report.

The CLF published the *Advisory Report* in August 2017 (Biehl et al., 2017), and it became a critical resource the Office of Sustainability could use to develop formal planning materials. The Office of Sustainability plans to lead the next phase, which consists of soliciting community input on recommendations and implementing the strategies identified in the report. Those recommendations will be incorporated into policy strategies laid out in the next DP3 update and in other, future planning documents.

The Advisory Report Research Approach

To withstand and recover from disturbances, food systems must be redundant, flexible, and able to adapt long-term to food security threats (Tendall et al., 2015). *Advisory Report* research considered these factors of resilience while following the risk assessment framework utilized in the DP3. The *Advisory Report* assesses the current state of and potential threats to the food system supporting Baltimore's

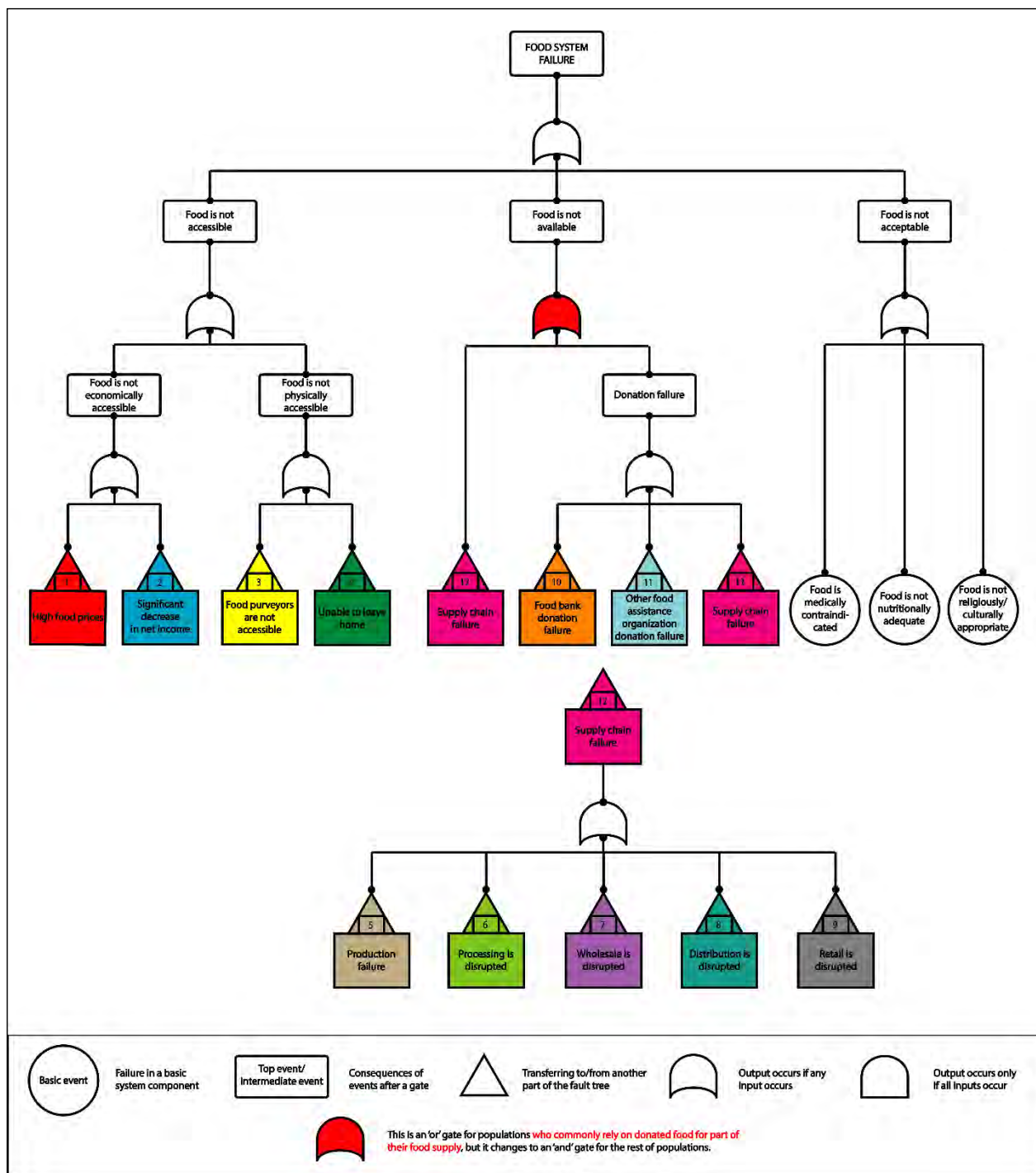
food supply; identifies characteristics of food system components and actors that make it more vulnerable to those threats; assesses preparedness among food system actors across the food supply chain; and identifies strategies for reducing vulnerabilities and supporting resilience. To produce the *Advisory Report*, the CLF research team reviewed planning and academic literature, interviewed stakeholders in Baltimore's food system, and combined data on the local and regional food system with hazard data to map out vulnerable components of the food system.

Literature review. We reviewed other jurisdictions' food system plans and emergency preparedness documents and analyzed them for any inclusion and/or assessment of resilience (Biehl et al., 2017, Appendix A). This review, although not exhaustive, enabled us to selectively capture the progression of food resilience planning from the early 2000s to the present. It also allowed us to learn from other cities.

Fault tree analysis—A conceptual framework. To provide a new tool for understanding how disruptive events can impact the urban food supply (and consequently food security), the CLF developed a food system fault tree analysis framework (Figure 3) with colleagues in the Johns Hopkins Whiting School of Engineering. Fault tree analysis (FTA) is a valuable tool for planners seeking to conceptualize the range and cascade of threats that could affect a city's food system. When populated with data, it can model hazard and intervention impacts. To develop the tree, we defined a system "failure" as a substantial citywide increase in food insecurity. We used a top-down approach to map out three key components of food security: food accessibility, availability, and acceptability. We identified intermediate events that could lead to these three endpoints (e.g., decreased food availability due to a supply chain failure, due to blocked delivery routes, or due to a basic event such as a snowstorm). Fault trees exist on a continuum; a qualitative determination must define the extent and distribution of loss in access, availability, or acceptability that constitutes food security "failure." Although the fault

Figure 3. Framework for Conceptualizing Food System Vulnerabilities

Events that lead to inadequate access, availability, or acceptability of food theoretically contribute to increased food insecurity and a food system failure.



Source: Chodur, Zhao, Biehl, Mitraini-Reiser, & Neff, 2018.

tree itself does not measure resilience, it can illustrate system vulnerabilities and risk. Comparing system functioning over time can also help planners understand system resilience and the complexity of food systems.

Stakeholder interviews. CLF researchers performed qualitative interviews with 36 community, non-profit, business, and government stakeholders who supply, distribute, eat, or improve access to food in Baltimore. The team sought input from CLF and Office of Sustainability networks to identify local and regional actors who had first-hand knowledge of or experience with food system disruptions. The interviews included rich context on how different organizations and individuals experience and prepare for adverse events. Interviews also provided an opportunity for community, nonprofit, and private sector input on planning efforts.

Geospatial mapping. We created maps identifying neighborhoods and people within city limits who may be most vulnerable to physical hazards like flooding. The CLF had previously developed a Maryland food system map (Johns Hopkins Center for a Livable Future, 2017). We combined data from that map with hazard maps used in the DP3. We identified expected hazard locations in relation to food facilities (stores, warehouses, markets, farms, food pantries, etc.), vulnerable groups (children, older adults, people with disabilities, residents of food deserts), and food distribution routes.

Freight Analysis Framework. Recognizing that a stable food supply relies on multiple systems as well as infrastructure, we sought to understand how food flows into the city. Student researchers compiled U.S. Department of Transportation Federal Highway Administration data from the 2007 Commodity Flow Survey (the most recent data available at that time). With this data, they performed a Freight Analysis Framework (FAF) assessment of the types, value, quantity, and transport mode of foods entering and leaving the Baltimore City Metropolitan Statistical Area (U.S. Department of Transportation Federal Highway Administration, 2017).

Stakeholder engagement. Much of the engagement during the development of the *Advisory Report* occurred through BFPI's network. BFPI organizes and staffs the Baltimore Food Policy Action Coalition (Food PAC). This coalition links more than 60 members representing nonprofits, institutions, farms, businesses, and residents engaged with the city's food system. Researchers sought input on the *Advisory Report* from Food PAC members midway through the project. Participating members helped brainstorm potential hazard impacts and suggested policies or strategies supporting food access and availability during those events. A similar presentation toward the end of the report development shared initial findings and sought the Emergency Food Working Group's input. These meetings informed the report with insights from food system practitioners beyond those interviewed. They also highlighted issues the researchers might not have otherwise considered, such as how changing food assistance benefit policies would affect food access for low-income populations after a disaster. The Office of Sustainability also used its annual town hall event to provide hands-on activities, information booths, and opportunities for community member engagement with CLF researchers on food-related concerns before, during, and after disturbances.

Discussion

Food system resilience is a nascent field for urban planners and researchers alike. All collaborators faced a steep learning curve. By learning from interviews, drawing on our diverse backgrounds, and leveraging resources, we were able to develop a report that sets the stage for a strong effort to increase food system resilience in Baltimore. Further, by working with engineering colleagues focused on disaster resilience, we contributed a novel framework for understanding and addressing resilience and framed chronic food security challenges from a fresh viewpoint. A number of factors contributed to our challenges and successes throughout the planning process. Although our project findings are specific to Baltimore, we share those factors as well as some key lessons learned throughout the process to inform other food system resilience work.

Factors Contributing to Success

Collaboration. Universities are well positioned to support food system planning efforts and have many resources that can enrich municipal efforts (Whittaker, Clark, SanGiovanni, & Raja, 2017). Likewise, working with local governments and community leaders provides a pragmatic avenue for research, keeps researchers grounded in their own communities, and connects students with practical experiences. The pre-existing collaboration between the CLF and the Office of Sustainability advanced our ability to work together and helped to establish mutual trust among everyone involved. The informal relationships developed through formal collaboration fostered an understanding of each other's strengths and limitations. This enabled collaborators to efficiently divide tasks. This relationship also enabled the quick translation of research findings into policies and actions; however, the government collaborators would not have had the capacity or resources to conduct this type of robust work on their own.

Data. Past collaborative projects, such as creating typology and collecting data to characterize local food environments, provided access to extensive datasets that the team repurposed and applied through a resilience lens. Such data enabled us to see, for example, that there are very few food processing facilities and distribution centers located in the city. This led to a recommendation to evaluate processing capacity in the metropolitan area and "expand opportunities for local and regional food aggregation and distribution" (Biehl et al., 2017, p. 123). The readily available data also saved time and enabled *Advisory Report* authors to describe the location of and risk to vulnerable and food-insecure populations. These data will provide richer information on food systems to include in the DP3 update and will continue to guide the city's food resilience policy and planning.

Organizational and student support. Organizational support and person-power from the Office of Sustainability and the CLF also advanced the work. As described above, the Uprising prompted the

local government to devote staff time for food resilience planning and may have provided added relevancy for the CLF to seek funding for follow-up activities. Foundation funds enabled the CLF to contribute staff and research assistant time, with some in-kind support. Additional in-kind support came from students, who used this project for practicums and classwork.

Challenges

Community engagement. We aimed for an equitable planning process by purposefully seeking out community leaders for interviews and periodically seeking input from local organizations. Unfortunately, resource and role limitations prevented us from performing the extent of community engagement needed to inform a full and more equitable city plan. However, the concepts behind food system resilience are not well known to the public, and the relevant data had not previously been parsed in this way. Thus, we determined that an overview report could provide the introduction and foundation for engaging with community members and other partners. Including more community members in follow-up planning and policy development could achieve a more equitable approach to planning for food system resilience. Doing so may also uncover new angles on the type of research needed to clarify how best to protect the city's food system and promote food security in the face of a crisis.

Data limitations. Although the FAF assessment provided some data on the type, origin, and distribution of food entering the city, it did not yield robust results. Limitations included double-counting flows of some food types, a low response rate among businesses surveyed, and the inability to quantify temporal variations in food flow. Getting a more accurate picture requires extensive interviews with food retailers, but this would have constituted a more time-intensive research process than was feasible in our circumstances. Continued work on this topic in Baltimore and elsewhere would benefit from such an in-depth supply chain investigation to complement publicly available commodity flow data.

Conceptualizing urban food system resilience. The “food system resilience” concept is complicated. By definition, it is not feasible to measure resilience prior to an event, and the field has not yet coalesced around established indicators to measure food system resilience. We chose to define food system resilience in terms of how to maintain adequate food supply and access in a city over time with the goal of supporting residents’ food security. Because we aimed to inform urban planning policies, however, we limited the scope of in-depth interviews to those who would provide recommendations most relevant to food system actors within Baltimore City. In Baltimore, a city in a colder climate with high poverty rates, we were particularly interested in how to support retail stores and food pantries rather than less commonly frequented, seasonal sources such as farmers markets and community gardens. Although *Advisory Report* work included some urban food producers and considered food system components and actors outside city limits (such as regional producers and distribution hubs), further analysis should look more in-depth at those and other components to get a truly systemwide resilience assessment.

Discussing an abstract state of a complex system can also be challenging. Many conversations with food system stakeholders focused on “emergency preparedness” rather than resilience. Community meetings and engagement opportunities to help identify and interpret what food system resilience means in everyday life would enhance this work. Researchers and policymakers also need clearer language to describe this concept.

Key Lessons Learned

Recognize ongoing food insecurity. Many people live with chronic food insecurity. While disasters can further exacerbate conditions for them, and can increase inequities, resilience planning should never lose sight of this ongoing trauma. Many recommendations in the *Advisory Report* focus on lowering existing barriers to food access in already food-insecure communities, even during nondisaster times. They also emphasize that reducing ongoing food insecurity can also strengthen resilience. Seeking input from and including a diverse group of community

stakeholders throughout the planning process can help to ensure that solutions take into account the concerns and ideas of those who are most impacted by food insecurity and other crises.

Integrate food systems into other planning efforts. Cities will inevitably experience some emergency that threatens the food supply. That said, not all cities or universities have specific staff or initiatives working on food resilience, nor do they have the resources and established relationships from which we benefitted. Fortunately, there are many ways that food system resilience can be folded into other municipal plans. All municipalities are required to have all-hazards mitigation plans to be eligible for federal predisaster mitigation funding. Planners can add food resilience into such plans, as well as into sustainability plans, comprehensive plans, climate action plans, and urban agriculture plans. Such work offers opportunities to consider food in relation to other systems and infrastructure, community needs assessments, and health impact assessments. Additional opportunities for integrating food resilience into city projects include green infrastructure projects, in which cities can use lots for growing local food—and emergency management initiatives, in which food can be integrated into short-, medium-, and long-term planning, response, and recovery procedures. The work in Baltimore demonstrates one way to integrate food and resilience planning through both short-term and long-term strategies.


Consider the whole food system. Some research on food system resilience, including our early work, focuses primarily on local food production; however, we argue for a broader conceptualization. Resilience depends on having diverse food sources. In most cities, including Baltimore, local food production and processing are not sufficient to supply adequate food. Developing local and regional food production and the supply chains to support it is one way for planners to support food system resilience (Day-Farnsworth & Morales, 2011). That said, urban food security depends on an extensive and complex array of processes occurring at many scales and geographies. After the Baltimore Uprising, the importance of understanding and

supporting food supply chains and access to diverse food sources became even more apparent. Ultimately, the strategies recommended in the *Advisory Report* and the *Plan for Food Access* support people, places, and infrastructure across the food system supplying Baltimore.

Apply fault tree analysis. This project involved the first known application of FTA to food systems. Office of Sustainability collaborators found it useful for categorizing and communicating potential threats to the city's food supply. The framework can help users visualize which food system components contribute to accessible, available, healthy, and safe food. FTA can also help categorize potential vulnerabilities. We see the fault tree as an entryway to developing a framework for another municipality to assess and minimize vulnerabilities in their food system. As the tool develops, it may provide measurable indicators and enable the modeling of intervention impacts.

Conclusions

Baltimore was one of the first U.S. cities to plan for a more resilient food system supporting its population. This work was strengthened by a long-standing collaboration between an academic center and a municipal planning department. This collaboration and resulting strategies serve as a model to

inform how other cities can pursue food system resilience planning in ways that consider a food system's complexity. Although hazards, vulnerabilities, and food system components vary from city to city, the basic methods and framework used to assess Baltimore's food system can be adapted and applied to other jurisdictions. As demonstrated in Baltimore, taking proactive action to address and anticipate a food system's weak points can provide immediate benefits to urban populations while also reducing potential impacts from future events that threaten global and local food supplies. As climate change, population growth, and urbanization pose new challenges for urban areas around the world, adopting proactive and comprehensive strategies for improving food system resilience can help to ensure that everyone has healthy food to eat now and in the future. 

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Commercial and anti-hunger sector views on local government strategies for helping to manage food waste

Special JAFSCD Issue
Local Government in Food Systems Work



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Abstract

In the United States, 40% of all food intended for human consumption is lost or wasted. This has economic, environmental, and social consequences and equity concerns that justify the involvement of local governments. In addition, local governments

are well positioned to support the systems-level innovations and systems- and equity-oriented approaches necessary for bringing together various sectors to tackle food waste issues. However, little is known about how food-generating businesses and anti-hunger agencies think local governments and public agencies could work with them to address food waste through source reduction (i.e.,

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Statement on Previous Reporting of Data

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prevention) and feeding hungry people. These are the top two methods for waste reduction as outlined in U.S. Environmental Protection Agency (EPA)'s Food Recovery Hierarchy. Using qualitative interviews, this study presents the key challenges and facilitators of multiple Seattle-based anti-hunger agencies ($n=8$) and food-generating businesses ($n=12$) to addressing food waste prevention, recovery, and composting. This study also addresses how anti-hunger agencies and food-generating businesses interrelate within and between the two sectors. Interviewees also provided sector views on the potential roles of local government in this space. Strategies recommended for local governments included:

- (1) committing resources that enable a systems approach. This can be accomplished by dedicating a staff or office to food waste issues, designating funding that is specific to food waste, incorporating equity and inclusivity, and serving as a convener of stakeholders;
- (2) helping to standardize metrics and normalize waste audits. These practices are essential for understanding and scaling work within and between sectors, for measuring progress toward goals or fluctuations in the system, and for identifying priorities; and
- (3) supporting the optimal operation of the emergency food system by helping improve infrastructure and efficiency.

Keywords

Food Waste, Food Recovery, Food Composting, Source Reduction, Food Waste Prevention, Food Waste Diversion, Food Waste Policy, Local Governments, Anti-Hunger, Qualitative

Introduction and Background

In the United States, it is estimated that 30 to 40% of food intended for human consumption goes uneaten (Buzby, Wells, & Hyman, 2014; Hall, Guo, Dore, & Chow, 2009). This has economic (e.g., wasted money and labor), environmental (e.g., increased greenhouse gas emissions, wasted natural resources), social (e.g., missed opportunities to feed food insecure people), and equity (e.g., inequitable

distribution of and access to recovered food) impacts that are predicted to worsen as the population increases in size (Gunders, 2012; NRDC, 2017). At the local government level, staff are exploring what roles they can play to reduce these negative consequences. In 2015, the City of Seattle and Seattle Public Utilities (hereafter, "the City") worked with a research team at the University of Washington's Center for Public Health Nutrition (UW CPHN) to explore challenges and opportunities for food waste prevention and recovery among food-generating businesses and anti-hunger organizations. The purpose of this research was to inform the City of how they might foster food waste efforts and goals in this part of the food system (Otten, Diedrich, Getts, & Benson, 2016).

The Economic, Environmental, and Social Impacts of Wasted Food

It is estimated that Americans spend US\$166–218 billion each year growing, harvesting, processing, distributing, and disposing of food that is never eaten (Buzby & Hyman, 2012; ReFED, 2016). This equates to a loss of 1,250 calories per day per person and costs each household an average of US\$1,800 per year (Buzby & Hyman, 2012; NRDC, 2017; ReFED, 2016). While most food waste is likely inedible by the time it reaches the garbage, food is the number one contributor to landfills, with 95% of food waste ending up in the garbage rather than compost, producing negative impacts on the environment. (U.S. EPA, 2015c). In landfills, the decomposition of food produces methane, a greenhouse gas 25 times more harmful to the climate than carbon dioxide (U.S. EPA, 2015b). Uneaten food also represents wasted land, soil, nutrients, water, energy, labor, and missed opportunities to feed hungry people (NRDC, 2017). By food type, seafood has the highest rate of waste, followed by fresh produce. The Washington State Department of Ecology estimates that 8% of wasted food is edible at the time of disposal (NRDC, 2017; State of Washington, 2018).

Currently, 13% of U.S. households are food-insecure, and the Emergency Food Assistance Program spends nearly US\$700 million annually to provide food to low-income people (Coleman-

Jensen, Rabbitt, Gregory, & Singh, 2016; USDA, 2016). It is projected that recovering one-third of uneaten food would be enough to feed all 42 million Americans considered food-insecure, although distribution would need to be considered in terms of equitable access (NRDC, 2017). These problems will be exacerbated by predicted population growth and increased food demand, assuming current waste levels (NRDC, 2017). However, national efforts to reduce food waste, such as those in the United Kingdom (UK), have been successful. Between 2007 and 2012, the UK population grew 4.5%; yet total food demand stayed constant and food waste declined by 1.4 million tons—a 17.5% reduction (Questad & Murphy, 2014). A 2017 study of nearly 1,200 companies across 17 countries showed that businesses implementing food waste reduction efforts had an average 14-fold financial return on investment (Hanson & Mitchell, 2017). These and other successes have instigated

governmental interest in and efforts to tackle the problem of food waste.

Governmental Efforts at Food Waste Prevention and Recovery

In 2015, the U.S. Environmental Protection Agency (EPA) and U.S. Department of Agriculture set national targets to cut food waste 50% by 2030 (NRDC, 2017). That same year, the EPA released its Food Recovery Hierarchy, which ranks recovery efforts from the most to least preferred methods (U.S. EPA, 2015a). The hierarchy named source reduction as the highest priority, followed by food recovery, feeding animals, repurposing for industrial uses, composting, and landfilling. See Figure 1 for the EPA Food Recovery Hierarchy.

In tandem, food waste related legislation has increased and includes a number of federal bills on food recovery and date labeling that have been introduced in Congress, several state-level com-

posting bills, and a few state-level tax incentives for food donations (NRDC, 2017). States and local public agencies have also increasingly begun to develop and incubate systems, environment, and education programs and activities focused on food waste (Benson, Daniell & Otten, 2017). However, little is known about the capacity for and the ways in which stakeholders work together within local systems and with public agencies on food waste prevention and diversion. In 2016, the City of Seattle sought to assess the work done to date by food-generating businesses and anti-hunger agencies to better understand the successes and challenges of the current system.

Figure 1. U.S. Environmental Protection Agency Food Recovery Hierarchy



Source: <https://www.epa.gov/sustainable-management-food/food-recovery-hierarchy>

Food Waste Efforts by the City of Seattle

Since the late 1990s, Seattle Public Utilities (SPU) has been involved in commercial food waste prevention and recovery efforts via infrastructure and research grants. These efforts have included purchasing refrigerated trucks and equipment for food preparation and storage, linking anti-hunger agencies and food generating businesses, providing education about food liability, handling, and safety laws, piloting food waste prevention protocols, funding technology, and starting compost collection projects (Musick, 2010; SPU, 2012; 2014). These infrastructure grants were projected to divert 23,000 tons of edible food from waste streams for 2010–2020. In one research pilot, SPU shared with two large-scale commercial food operations the cost of working with LeanPath, a company that helps food-service businesses reduce food waste through a computerized tracking system that provides frequent feedback to employees and managers. Over a period of approximately 14 months, the university and hospital reduced food waste by 18% and 31% respectively (Ernsdorff, 2009). In another project, SPU worked with 17 food banks to start compost collection programs and, in the first two years, diverted an estimated 540 tons of surplus food from the landfill. At the same time, the City of Seattle, through its Food Action Plan and Climate Action Plan, has highlighted the prevention, recovery, and composting of food waste as several of its top goals (City of Seattle, 2012; 2013). With the support of these action plans, in 2015 the City passed and enforced a law that prohibited residences and businesses from placing compostable food and compostable food packaging in the garbage (City of Seattle, 2015).

The Current Study

The above efforts are examples of investments made by governments and national agencies to engage in food waste prevention and diversion. Despite the efforts of SPU, a 2012 SPU study found that food and compostable food packaging still constitute about 30% of commercial waste; in particular, 53% of restaurant waste by weight was food, and 9% of waste by weight was compostable or food-soiled items (SPU, 2012). In addition, in a

2014 progress report of the anti-hunger sector, SPU found that anti-hunger agencies reported increased demand for food, a need for more donations, and aging equipment (SPU, 2014). Thus, City partners were interested in advancing their efforts more systematically by engaging stakeholders across multiple sectors. To achieve this, they asked the UW Center for Public Health Nutrition to interview participants from the anti-hunger and commercial sectors using a more system-oriented perspective, and to interview other public agencies to find out what they were doing on this topic. The analysis of public agency interviews is published elsewhere (Benson et al., 2017). The purpose of this analysis is to present the findings and recommendations from interviews with multiple anti-hunger agencies and food-generating businesses about (1) their food waste prevention and recovery strategies, their barriers and facilitators to food waste prevention and recovery, and to gain a better understanding of how prevention and recovery strategies interrelate, and (2) their views on the potential role of local government in this space.

Methods

This study used semistructured qualitative interviews with participants from 20 anti-hunger agencies and food-generating businesses. The University of Washington Institutional Review Board approved the study.

Participants and Procedure

From April through October 2015, the UW CPHN contacted potential interviewees via phone or email with a study invitation and description. The study sample was generated with the help of two public agency employees at the City of Seattle with knowledge pertaining to food waste. The anti-hunger agencies identified were Seattle-based or national organizations with a Seattle chapter (i.e., food banks, meal program providers, and anti-hunger distributors) and the food-generating businesses identified were Seattle-based or national chains with Seattle-based locations (i.e., grocery stores, restaurants, and large institutions, such as hospitals and universities). The anti-hunger agencies were selected based on achieving diversity in size, geographic area of the City, and clientele (e.g., age

ranges, racial and ethnic backgrounds, and type, such as serving a primarily HIV/AIDS population).

Semistructured Interviews

The research team constructed two semistructured interview guides (i.e., one for anti-hunger agencies and one for food-generating businesses) (Brinkmann, 2013). Each guide contained a series of 23 to 25 open-ended questions to investigate each sector's challenges and successes pertaining to food waste prevention and recovery and to explore the ways in which public agencies could assist these organizations in improving prevention and recovery efforts. The interview guides were refined based on peer review by city agency collaborators and by the Seattle Public Utilities' Survey Review Panel. The anti-hunger interview guide focused on topics such as program scale, characteristics of current donors and donations, facilitators and barriers to food recovery and distribution, areas for improvement, and public agency roles. The food-generating business interview guide focused on topics such as characteristics of food donation and waste (e.g., amount, cause, types, pathways, targets); food waste prevention and donation strategies and challenges; areas for improvement; and public agency roles.

Data Analysis

Using best practices in qualitative analysis, interviews were analyzed using a refined codebook and Dedoose software (Dedoose, 2016; Guest & MacQueen, 2008; MacQueen, McLellan, Kay, & Milstein, 1998; Miles, Huberman & Saldana, 2014). The research team discussed the preliminary findings to understand how they were related and their broader significance within the data. They also worked with City partners to develop recommendations to inform City activities. Key findings are described in the results section below and presented with illustrative quotes.

Results

Eight anti-hunger agencies and twelve food-generating businesses participated in the interviews. The anti-hunger agencies (i.e., food banks, meal and/or grocery delivery organizations, a hunger

relief agency, a food distributor, and a coalition of food programs) varied in size, geographic location, and clientele (e.g., clients were of varying ages and racial/ethnic backgrounds). The businesses included five grocery stores (i.e., one organic store and co-op, one large national chain, one small local chain, one discount grocery store, and one wholesale grocer) and seven institutions or restaurants (i.e., one chef-owned fine-dining restaurant, one casual sit-down restaurant chain, one hospital-based cafeteria, one large catering service, two large food service operations designed to serve employees or college students, and one prepared food wholesale distributor). Both sectors had locations in the City of Seattle or its metropolitan area.

This section summarizes major findings. In the first two sections, we use interviewees' qualitative descriptions to briefly describe how the anti-hunger and commercial sectors generate and recover wasted food. Next, we illustrate the lack of standardized metrics and goals within and between anti-hunger organizations and food-generating businesses. Without standardized metrics, there is no clear picture as to how much wasted food is generated and recovered by these sectors. Then, we provide each sector's challenges and facilitators to food waste prevention, food recovery, and composting—three of the EPA Food Waste Recovery Hierarchy categories from most to least preferred (U.S. EPA, 2015a). Finally, we present each sector's suggestions for public agency roles in the system.

Food Waste Generation: Key System Characteristics

Generally, anti-hunger agencies receive edible food donations and try to use as much as possible to serve their clients. Food waste is most commonly generated either when they receive expired food, near-expired food, or a greater volume of food than they are able to use. Interviewees universally reported diverting this to compost or garbage.

Grocery stores generate excess food for many reasons. Cosmetic imperfections such as bruises on produce, expiration, and food spoilage were the most commonly cited reasons for grocery store food waste. Other reasons were food recalls, buyer pulls, damaged goods due to dropped items or ripped bags, and food returns from customers, the

latter of which prevents re-use of food for human consumption. The majority of grocery store interviewees said they preferred to donate lightly bruised or nearly expired produce to food banks, but will also give lower quality food to farmers for animal feed or compost if inedible. Several interviewees mentioned using the EPA Food Recovery Hierarchy in making their diversion decisions. One interviewee described, “In order of choice, our preference is it goes to the food banks first... There are some farmers that pick up some feed stock of lettuce trimmings and that kind of thing at each of the stores and then feed them to the pigs and chickens. And then after that it goes into compost. None of it should be going into landfill.”

Restaurants and institutions generally divide their food waste into pre-consumer and post-consumer food waste. Pre-consumer food waste is typically generated due to over-production, food trimmings, and spoilage. Many restaurants and institutions prepare and serve more food than customers will eat due to the unpredictability of food service (e.g., the inability to predict exact customer counts or consumer eating preferences at a catered event) and the potential for profit losses if they run out of food. For example, one restaurant interviewee said, “We’re always going to slightly overstock. It’s part of the strategy because the minute your shelf runs out of food, that’s lost opportunity in sales.” Many interviewees indicated that overproduction is particularly problematic in the catering component of their business; this is often due to lower than expected event turnouts. In addition, these businesses state that trim waste is inevitable, even when their staff are trained in techniques to reduce trim. Food spoilage due to poor inventory management, while rare, was another reason for food waste. All restaurants and institutions interviewed said they donate their pre-consumer edible food waste (such as excess meals prepared) and compost their inedible food waste. One interviewee that sold packaged, prepared foods to retail outlets bought back their unsold food and donated it or sold it at a discount to outlet stores.

Post-consumer food waste generated by restaurants and institutions was food left on customer plates or customer-exposed caterer trays.

Patrons are often served large portions or take more food than they can eat (e.g., at catered events or buffets). Ideally, patrons or employees dispose of this food waste in the compost bin, but many interviewees said consumers and employees incorrectly sort food waste into the garbage.

Food Waste Recovery: Key System Characteristics

While the majority of grocery stores interviewed set up their donation programs independently, most restaurants and institutions use connector organizations, such as Food Lifeline or Food Donation Connection, to help them set up their donation system. Grocery store interviewees said they set up their donation program by calling the local food bank or visiting them in person and that they preferred to work with local entities to ensure they were supporting their community. One interviewee explained this, “I went over and asked to talk to the director. We made introductions and did a follow-up meeting to brainstorm.” Restaurant and institution interviewees used Food Lifeline or another larger organization to help them set up their donation programs. These connector organizations also helped to provide them with pans, bags, and tags to make food donation easier. One interviewee described this process, “We don’t donate directly to Food Lifeline. Food Lifeline puts us in touch with the organizations that can use it, and we donate directly to those organizations.” Another interviewee described the process with a different organization, “Yes, we work through a national company called the Food Donation Connection. They connect us with local [anti-hunger organizations]. Yes, and then those partners come to our restaurants one to three times a week—ideally, three times a week—and pick up any excess food.”

Metrics and Goals

Standardized metrics allow local governments to describe the current food waste situation, track progress, and garner support for programs (Benson et al., 2017). Although almost all interviewees involved in food donations reported measuring food wasted and/or donations to some degree, there was a lack of standardized metrics within and between the two sectors.

In terms of food waste, anti-hunger agencies typically did not report composting metrics or amounts but mentioned in the interview that they put large volumes of expired food in the compost. One mentioned that garbage and compost removal of expired foods cost them thousands of dollars a month. Food-generating businesses varied in the ways they reported food waste, often listing pounds, tons, or dollar amounts. Some businesses tracked the food waste they generated before and after it reached the consumer, while others only tracked one of these metrics. Businesses generally reported that it was challenging to track food waste that went into the compost, but a few tracked the number of used compost containers, whether full or not, that were used; this was because the composting collection company that many of them used reported their usage in this way. No businesses tracked the amount of food waste that went into the garbage.

Anti-hunger agencies varied in how they reported the food donations they received and the number of clients they served. For example, anti-hunger agencies reported food donations in pounds or tons over varying time periods, such as a month or year, or converted donated amounts into a monetary value, which also varied in the scale presented, such as by pound or meal. Similarly, anti-hunger agencies often reported the number of clients served over a period, such as an hour or a year, or they would report the number of meals served or pounds of food and/or food bags provided.

Despite all food-generating businesses in this sample engaging in food donations to at least one anti-hunger agency, only five reported that they tracked the food they donated. The tracking systems varied and interviewees reported donations in pounds of food, in percent of food donated, and in receipts from the food bank. One business mentioned using their own inventory system to loosely track the donations, but explained that not all unsold, unused inventory was donated. See Figure 2 for quotes illustrating the wide variation in metrics for both sectors.

None of the anti-hunger agencies interviewed set goals or targets around food waste reduction. However, one agency implemented a logistics

improvement program to get more clients in the door and, thus, more food out the door. With the help of a specialist, they made small changes such as rearranging their storage and pick-up areas to decrease wait time for clients and increased the number of clients from 50–60 to 120–140 over an hour.

Three businesses reported the presence of official food waste prevention targets and three businesses reported being in the process of creating targets. Targets varied in outcome, such as the volume of food or amount of individual food ingredient, and by the level of responsibility, such as by department or food prep station. Most businesses mentioned that these targets were set or being set at the corporate level. Two businesses without targets reported that they felt they did not need targets or that there was no corporate support for setting such goals. As one interviewee without a target stated, “At this time, no. If you’re doing cook to flow, if you’re producing the order, if you’re not doing a lot of waste, then you will make your targets basically. I mean, that’s just a standard business practice as opposed to being specific to waste.”

Food Waste Prevention: Challenges and Facilitators

Challenges

Consumer perceptions and expectations contribute to food waste by grocery stores. All five grocery store interviewees said that dealing with consumer expectations around perfect produce stocked in abundance motivated them to cull edible produce. As a result, almost none of the grocery stores sold blemished, bruised, or slightly damaged goods, even at a discount, except one discount store. Related, consumers are often unwilling to buy the last product on the shelf, thus grocers feel they must overstock. An interviewee explained, “Well, I think that everybody probably does that trick where they put stuff underneath the apples so that it looks bigger than it is. But then there is a problem with only putting a few of an item out there—people won’t buy it if there are only a few left. We tend to go for the abundance and we find that we move more product by actually putting out an abundant display.” Interviewees from grocery

Figure 2. Sectors Varied in How They Reported Food Recovery Metrics and Goals

Businesses varied in the ways they reported food waste, often listing pounds, tons, or dollar amounts:

- *"We average between 300–800 lbs. of food scraps [across all our stores]."*
- *"We basically use two metrics. One is food waste over the amount that we spend on food. We're also looking at food waste over seated headcount."*
- *"It's 5% at the most in terms of fresh food that could be wasted. It's a very small percentage of our total purchases."*
- *"We track everything in retail dollars and not tonnage, so let's say I do 7,000 dollars-worth"*
- *"A total of 187 tons [of food waste] a month for all the stores."*
- *"We in Seattle compost the kitchen prep scraps, which is about 300 gallons per week per restaurant."*
- *"We have a waste management portal that we put our waste in every day... it's going to be production waste...everything that's leftover from the end of the events, and then any dry storage or storage waste for that day."*
- *"We have the recycling department that keeps track of all the compost and garbage. They don't sort the garbage, and so the food waste that goes into there we don't keep track of. Again, that should be very minimal. The compost we do about 225 per month on average. But I think it's notable to say that that also includes paper products, compostable containers, and that kind of stuff. Not just food."*

Anti-hunger agencies reported donated food in pounds or tons over different periods of time. Others used dollars or meal conversions to report their donations:

- *"900,000 pounds of food that was recovered or donated"*
- *"775,000 pounds per year"*
- *"We expect to distribute 32 million pounds of food this year. Of the 32 million, 70% is donated."*
- *"We're procuring about 40,000 pounds a month."*
- *"Last year we brought in about 17.3 million pounds."*
- *"I think last year it was 212 tons"*
- *"Last year we estimated that we used US\$1.9M worth of rescued food in the organization."*
- *"We assign a monetary value to it. That changes from year to year. We assign that value based on the Feeding America's evaluation, which currently is US\$1.72 I think per pound."*
- *"We use a meal conversion."*
- *"We conservatively estimate at US\$2.99 a pound."*
- *"We are required to report that poundage in a variety of different categories, and so that would be meat, dairy, fresh fruits and vegetables, bread, and then dry goods, dry canned goods."*

Anti-hunger agencies reported the scale they served in terms of people per hour or over a period of time. Others used bags, pounds, or meals to report their scale:

- *"120–140 people through in an hour"*
- *"18,000–19,000 people a month just last year"*
- *"We range from serving a couple hundred families a month to thousands"*
- *"Between 1,000–1,100 families a week"*
- *"5,600 this past year"*
- *"We do 40,000 grocery bags a year and we do 162,000 meals"*
- *"We serve approximately 500,000 meals a year"*
- *"We put together 1,800 meals a day"*

Businesses reported food donations in a variety of ways:

- *"We are tracking the number of pounds of food that is being donated from the stores, as well as in getting help from the food bank to be able to identify how many families that helps based on that need."*
- *"For the food bank, 30% of our food is donated."*
- *"I get receipts for donations every time I donate. They should be sending them. I have kind of a thing of what they're tracking, because their tracking seems to be different from what we're tracking."*
- *"No, that's hard to capture food waste, I mean, every item you pull off the shelf for whatever reason is what we call salvaged or shrink. You take it out of the inventory. We know what's been taken out of the inventory, but we don't necessarily know what's been given away."*

stores also mentioned misperceptions and a lack of understanding and consistency around product dates (e.g., use-by, sell-by, best-by) caused them to pull perishable products close to their sell-by date even though they are often safe to eat. Once these products were culled or pulled for product dates, interviewees said that making it easy for employees to direct the food waste to the compost rather than the garbage was often challenging due their staff's competing work priorities; it also required the addition of staff training.

The most frequently cited barriers to food waste prevention and diversion of pre-consumer waste for restaurants and institutions were staff turnover, low staff motivation, and competing priorities for staff. Interviewees discussed the challenges of investing in ongoing employee training due to high turnover rates, and a few mentioned that these barriers were present even when tracking technologies and processes, such as LeanPath, were instituted. Restaurants and institutions also found the unpredictability of customer demand to be a challenge to preventing food waste or to estimating how much excess food would need to be diverted so that advance plans could be made.

Restaurants and institutions often felt that reducing portion sizes would only have a minimal effect on the compost stream and were unwilling to decrease portion sizes without accompanying patron demand because these portions are what their customers expect. This was depicted by an interviewee, "We would be very concerned if [food waste] as zero because then you'd feel like you're not feeding enough people." When asked if they would verbally cue customers to take their leftovers home in a to-go box, a few restaurants and institutions said they would not even though they provided such boxes on request; they cited food safety and container costs as reasons.

Facilitators

Grocery store interviewees reported that they have developed strategies to reduce the amount of food waste entering various diversion streams. First, with enhanced technologies they have tightened inventory management, improved food waste tracking to identify and diminish trouble spots, and developed creative in-house solutions to use food

before it expires. For example, one interviewee talked about an in-house solution, "We have internal procedures that keep departments talking to each other; for example, if we have an excess of boneless chicken breast in the meat department and we're not going to sell through, we pull the chicken well before the sell-by date and transfer it to the deli and use it in the deli. It's that kind of monitoring internally that really keeps food waste at a low, low, level."

Similar to grocery stores, restaurants and institutions use tight inventory management and often have teams or programs that help them forecast their needs to reduce pre-consumer waste. They also provide employee-training programs that teach food-prepping techniques or use technologies, such as LeanPath, to help manage food waste. Several institutions and restaurants mentioned smaller, more frequent orders and/or small batch cooking as a way to reduce food waste. One had created an employee bonus system to keep food waste in check.

For post-consumer waste, restaurants and institutions commonly used visual or verbal educational cues to help customers sort their food waste into the compost or be more cognizant about the amount of food they serve themselves. Two restaurants and institutions decreased the plates and/or portion sizes to reduce post-consumer waste. Another hired employees to specifically sort food waste.

Food Recovery: Challenges and Facilitators

Challenges

All anti-hunger agencies emphasized the need for more donors and food donations, particularly healthy food such as produce and protein, to keep up with demand that has increased over the past few years. As one anti-hunger agency interviewee stated, "When the economy tanked, the crowd started growing...2014 was the starkest of those years when we had a 32% increase in demand." Half of the agencies reported that food donations have decreased over the past five years. Agencies stated that they have relationships with traditional donors, such as grocery stores and restaurants, and thus have begun to seek non-traditional donors

(e.g., farmers, drug stores, schools) to increase their donation streams. Interviewees stated that, more recently, they are striving to make healthier foods available to their clients and, thus, have to compete with other anti-hunger agencies for healthier donations. One interviewee reflected on the increased demand for healthier food, “On a day when we’re going to do 1,000–1,500 people, you can see the diabetes, you can see the obesity, and you can see the heart disease. I mean, you can see it just walking, the people who really need good food. We’re really pushing nutrition as part of our mission.” All but one anti-hunger agency reported that the most common food donations are produce, protein, bread, and shelf-stable products. Despite these regular donations, agencies report they still have to purchase between 5% and 40% of these types of food to fill nutritional gaps. One interviewee estimated that the additional purchase of these healthier food items cost them about US\$140,000 per year.

In addition to an inadequate supply of healthy food donations, the three main challenges that prevented anti-hunger agencies from obtaining more food were inadequate storage space, particularly for perishable items; the pick-up, delivery, and sorting of donations; and tension in the food distribution system between the efficiencies gained by systematizing the relationship between the donor and the anti-hunger agency and the need for more tailored donation relationships in order to meet client needs. Food storage, particularly for foods that require refrigeration, was an issue for almost every anti-hunger agency. As stated above, healthier food items, such as produce, protein, and dairy donations, are desired items. However, these items must be kept at the proper temperatures to maintain safety and quality, and several anti-hunger agencies lack adequate cold storage to meet demand. These storage issues made inventory management challenging for anti-hunger agencies. As one interviewee described,

I think that the second biggest challenge to space is the inventory management. It’s our responsibility to make sure that every single person has an opportunity to receive our highest quality items. We can make educated

guesses, but we don’t know what the demand for an item will be, or what that demand for our service will be on any given day. It does happen on occasion where we get produce items that we limit, and then find out that we have more than enough. We could have given out all of it, and so then it sits in the warehouse, and it goes bad or something like that in a very short period of time. That happens on occasion as well and contributes to some of our waste.

The majority of anti-hunger agencies are not open during evening and weekend hours when the majority of food donations become available. Food donation pick-ups often require staff time and transportation, two resources that are typically in short supply for anti-hunger agencies who rely largely on volunteers with variable schedules. Because of this, anti-hunger agencies prefer donors that can deliver or that donate on a consistent schedule. If too many donations of nearly expired food arrive at once because of fluctuations in donations, there is limited staff and volunteer time to sort donations, or there is limited storage space, anti-hunger agencies report being unable to use them. These foods eventually have to be sorted and, once expired, retired to the compost. Anti-hunger agencies note that the associated compost fees can be expensive, often reaching a couple hundred dollars a month. As one interviewee described, “[Donors] want to donate the product when it’s too late, and it’s unusable and costing us a fortune in compost bills...I mean, if it’s at that point, then they should toss it and they should pay their own garbage bill.”

Finally, as large anti-hunger food distributors have entered the food recovery system to systematize the relationship between donors and anti-hunger agencies for efficiency gains, smaller anti-hunger agencies report lost relationships with important donors. While the smaller agencies affirmed that the large distributors do play beneficial roles by systemizing distribution and attracting new donors, they reported there were still tensions. These tensions included getting less of certain types of foods they were previously receiving, thus causing them to have to forge new donor

relationships; receiving more food than they could use but being unable to redistribute it to other anti-hunger agencies because of contractual reasons; and having to sign contracts with large distributors that often require them to accept more unhealthy food than they would like as part of a “package” with healthy food. An interviewee explained how this worked:

[The food distributor] didn’t always manage the grocery rescue program. Prior to that, it definitely was an individual agency and a relationship with a grocery store...then [food distributor] developed contract relationships with national grocery chains. [They] came in and said that okay, now you’re going to sign the contract with us...and so the relationship was taken out of the hands of the food bank and the grocery store and went to [food distributor].

Another interviewee described the inability to forge relationships with donors of healthy food and to redistribute excess food,

...because they are this large organization it’s a monopoly where organizations like [ours] can’t go in and say that we’ll come in and pick up after farmers market every Saturday and every Sunday, and then we’ll redistribute that food to 26 other organizations on Monday. What we have to do is go and get that food and then try to use it within our organization. That continues to be the major hurdle...to come over to become the umbrella for the other organizations so that we can redistribute.

Businesses cited many challenges with food donation. For grocery stores, challenges included food safety concerns and unreliable donation pick-ups. In order to donate perishable items that are safe to eat, grocery stores must donate them prior to expiration, find on-site storage for the items until they are picked up, and in some cases deal with internal and/or corporate business policies that regulate what can be donated. One grocery store described how they donate items to the food

bank before they expire, “The primary push is going to be the expiration or sell-by dates. Take milk as an example—we pull it off the shelf three or four days before its sell-by date so that when it goes to the food banks, it’s still got several days of life on it.” Scheduling donation pick-ups with anti-hunger agencies can also be challenging since volunteer staffing often contributes to inconsistent scheduling. If pick-ups are missed or problems arise, employees at the stores must take time to work around this problem or these food donations have to be composted. One interviewee described this:

The challenges would be refrigerated product. You start to worry about health and safety when it comes to refrigerated product. You then have another spot where product is going to be stored for food banks. That would be one challenge. Another challenge would be that sometimes because food banks [are] often run with volunteers, sometimes they don’t show up. And so then the product ends up being picked up at the end of the day and put into the compost.

For restaurants and institutions, the most frequently mentioned challenges to food donation included where to store items awaiting pick-up and unreliable or inconvenient pick-up schedules. Other challenges noted were the time burden of training staff on how to donate food and a lack of resources addressing how to donate food. Since restaurants and institutions often have more inconsistent food donations, anti-hunger agency pick-ups are scheduled less frequently, or they are scheduled as soon as can be arranged once food is available. This makes food storage prior to pick-up a challenge. Due to restaurant and institution operating hours, they often needed to work with food banks that were flexible and could pick-up donations in a specific time window that was favorable to the business. One interviewee described,

Yes, I mean, the logistics is the tough part because we have to have someone who can pick up. We don’t have facilities or the ability to load it all up, and to get it and transport it

to them. It has to be food that's usable for that organization, and it has to be the right time window for them to be able to pick up and recover the food. I mean, we are operating a business and so we have business needs that supersede a lot of this stuff.

The time and training involved in the donation process was another challenge. For example, food banks often require prepared foods be put in specific pans or bags; this puts the burden of packaging on the businesses. Finally, a lack of resources about food donation for businesses was brought up as a barrier to donation. Notably, food safety did not come up as a challenge for restaurants and institutions, with all interviewees stating they were protected under the Good Samaritan Law or had established internal business policies that protected them (Bill Emerson Good Samaritan Food Donation Act, 42 U.S.C. § 1791).

Importantly, many food-generating businesses have recently begun to improve their food waste prevention strategies, and this has resulted in a reduction in food donations. One business interviewee reflected on this,

With people becoming more aware of over-producing and food waste, what is that next step going to be 3, 4, or 5 years from now? When there isn't a lot of donated product? How are these food banks going to get this? I think it's wonderful that we're all talking about it and that it's the right thing to do, but then we also need to think about okay, what is that going to look like five years from now?

Facilitators

Anti-hunger agencies gave examples of a number of facilitators they use to overcome food recovery system barriers, including forming farm-to-food bank relationships and implementing logistics improvement programs. More than half of the anti-hunger agencies received donations from farmers markets or local farms to increase the amount of healthy foods they can provide to their clients. To amplify this farm-to-food-bank relationship, one anti-hunger agency has partnered with a neighborhood farmers market to provide clients with

monetary vouchers that can be used at a local farmers market. One anti-hunger agency embarked on logistics improvement to streamline standardized activities and processes, such as flow for clients and pick-ups, and to improve food inventory. The benefits of this program are described by the interviewee,

Over the course of the last year, we conducted dozens and dozens of experiments and made small changes here and there that eventually added up to pretty dramatically reducing our guest wait time by about 60%, and [it] is allowing us to get 120–140 people through in an hour, whereas before we were lucky to get 50–60 through in an hour. We are able to do that without any reduction in quality or quantity of food that we were giving away.

Interviews with businesses produced a very different set of facilitators. The majority of businesses said the primary reason they donated food was to ensure it is being put to good use and to support their local community. As one business interviewee illustrated,

Yes, I think that on a pure capitalistic level, you know, we'd be paying more money in trash if we threw away our food. Really, it's like part of our mission...I think that it's part of a sustainable model to serve good food to the entire community...I'm really glad that we do it and I love taking credit for it, but at the end of the day it just makes sense. I like to think that I'm a good guy, but really it's just because it makes sense.

Only one business mentioned receiving tax write-offs as an incentive for food donation.

Several businesses discussed the need for a streamlined system that makes it easy for businesses to donate: "I think if there was a resource that was readily available that said, 'Here's how you do it and this is the pickup date,' and just something that answered commonly asked questions like 'can I donate frozen products?' We don't know. Do they have a freezer?" Moreover, because many businesses were not aware of the federal tax

incentives for food donation, they felt that more businesses would be interested in donating if this were known. As one interviewee said,

Now, I think that there was talk of a tax code where you got like 150% of what you donated, the value of what you donated for food to alleviate hunger in these types of programs. If that were the case, I would

imagine that rather than doing it sporadically and incidentally, more grocery stores would do it as a focus, because now they've got a huge incentive to do it.

Finally, businesses thought the idea of a central drop-off point to take donations might be attractive. As described by one interviewee, "I'd love to just have one place where you can just drop

Table 1. Summary of the Barriers and Facilitators of Food-Generating Businesses to Food Waste Prevention and Recovery

Food Waste Prevention	
<i>Barriers</i>	<i>Facilitators</i>
<i>Grocery Stores</i>	
<ul style="list-style-type: none"> • Customer expectations of food quality and abundance. • Misconceptions about sell-by and/or use-by dates. 	<ul style="list-style-type: none"> • Tighter inventory management. • Better communication and tracking across departments.
<i>Restaurants and Institutions</i>	
<ul style="list-style-type: none"> • High staff turnover rates. • Low staff motivation. • Competing priorities for staff time and attention. • Unpredictability of consumer purchases. • Customer expectations regarding large portion sizes. 	<ul style="list-style-type: none"> • Tighter inventory management and better forecasting systems, often via waste audits or technology. • Offering high-quality employee trainings. • Small-batch cooking or reducing portion sizes. • Visual and/or verbal cues to customers about food portion sizes and/or proper composting.
Food Waste Recovery	
<i>Barriers</i>	<i>Facilitators</i>
<i>Grocery Stores</i>	
<ul style="list-style-type: none"> • Concerns about donating unsafe food (e.g., donating prior to product expiration, ability to store perishable items properly until picked up). • Unpredictability of donation pick-ups. • Improved food waste prevention resulting in fewer food donations. 	<ul style="list-style-type: none"> • Mission and values of putting food to good use and supporting the community. • Financial incentives.
<i>Restaurants and Institutions</i>	
<ul style="list-style-type: none"> • Inadequate holding space for foods prior to pick-up. • Unpredictability and inconvenience of donation pick-ups. • Staff training needed to make donation happen. • Lack of resources on how and where to donate food. • Improved food waste prevention resulting in less food donations. 	<ul style="list-style-type: none"> • Mission and values of putting food to good use and supporting the community. • Financial incentives.

everything off... You just drop off all the food there and it just goes from there to wherever." See Table 1 for a summary of the challenges and facilitators to food waste prevention and recovery for food-generating businesses.

Composting: Challenges and Facilitators

Challenges

As noted above, anti-hunger agencies reported the cost burden of composting and expressed that funds spent on composting fees could be put to better use. One interviewee reflected, "Ultimately if we as food banks just become dumping grounds for compost, it really kind of prevents us from being better at what we're trying to do, which is to feed hungry families in our community."

Businesses reported that time, cost, and confusion were barriers associated with composting. Some businesses reported that consumers generated a large portion of their food waste. Interviewees noted that customers seem to be confused about what is compostable and surmised that this was due to a variety of factors: it is time-consuming to sort food waste and packaging, it is confusing given the level of detail needed to sort properly, and customers from diverse backgrounds and cultures may not be familiar with Seattle's requirements for sorting waste. Several of the interviewees that were part of national chains also described how the variability in composting policies across the U.S. contributes to the confusion and prevents chains from creating national employee training on the topic. One interviewee described, "We do have units that are segregated by trash, recycle, and compost. It is virtually impossible to monitor the public and make certain that they've truly separating their waste as they should."

Facilitators

Anti-hunger organizations did not mention any facilitators for composting but had ideas for public agency roles in this area, as described in the next section. Businesses used employee training to overcome composting barriers and visual or verbal cues to help consumers sort properly. A few interviewees reported using WISErg technology to overcome the cost barriers of composting. The WISErg

is a bio-tech system (i.e., a tank-like system that is located on-site) that converts food waste into a nutrient-rich liquid that is refined into high-grade fertilizer that stores can sell back to consumers. One interviewee thought the WISErg technology should be explored to help anti-hunger agencies. That interviewee explained, "...if that solution is truly a better solution than just sending it to Cedar Grove compost, then maybe the financial resources to enable a handful of large food banks to be able to use that system would ultimately be better, right?"

Local Government and Public Agency Roles within the Food Recovery System

Anti-hunger agencies had specific ideas for how local government and public agencies could support them to help address challenges in the system. These included outreach, policy approaches, grant funding, and drawing attention to the changing needs of the food-insecure. All anti-hunger agencies requested that the City help increase food donation via public outreach or policy approaches. Suggested strategies included implementing donor education about how and what to donate and Good Samaritan Laws; establishing stronger and better-defined regulations for the commercial sector to donate food; and utilizing City partnerships to create connections with non-traditional donors such as schools. Anti-hunger agencies also felt that grant funding from the City for infrastructure costs or negotiating reduced rates for some of the hidden costs of the system, such as compost bills and transportation fees (e.g., driver wages, fuel, and vehicle insurance), would allow them to put their focus on providing healthy food to clients. One interviewee suggested, "Reduced garbage and compost bills...I mean, it's thousands of dollars a month for garbage. So if they could work a deal to give a discounted rate or something to food banks and meal programs, that would be helpful." Finally, one anti-hunger agency felt that public agencies could help with future planning by tracking the changing demographics of food insecurity and helping to support disadvantaged populations as they move away from traditional geographic locations. The interviewee described this, saying,

You have all of these disenfranchised populations that are being spread farther and farther out of the core that have no food resources. There is going to be a problem if they don't get the food resources...Everybody thinks that everybody who doesn't have anything to eat only lives in Pioneer Square. You have a glut of food in Pioneer Square and no food in Georgetown, or no food in West Seattle and no food in Lake City.

The businesses interviewed had two common responses for how public agencies could help them prevent and divert wasted food. For food waste prevention, they suggested helping businesses learn how to measure their food waste through waste audits or technology. For food recovery, they suggested the creation of a donation resource that explained to businesses 'how' and 'what' to donate. They also recommended establishing a food diversion roundtable where Seattle businesses could come together and share best practices.

Two related recommendations emerged as cross-sector considerations. First, both sectors discussed the tension between food waste prevention and recovery efforts. That is, as food waste prevention efforts (i.e., the preferred action on the EPA's Food Recovery Hierarchy) succeed, there will be less wasted food to divert to the food recovery stream. Interviewees emphasized that public agencies should think ahead several decades from now on how they might help to feed food-insecure people if local efforts to reduce food waste are successful. Second, both sectors thought that financial incentives for businesses to donate food might ensure a more consistent source of food donation, even as the volume of food waste hopefully decreases over time. Interviewees had suggestions to help achieve this, such as incentivizing businesses to donate a percentage of all their food well before expiration or creating a program that informs businesses of current anti-hunger sector needs and then incentivizes businesses to donate these particular in-demand foods. One interviewee described donor incentives,

Incentivizing donating food versus putting it in the waste stream...if you make that...

beneficial enough to private businesses to do it. I guess that some of that is like education too. I imagine that there are probably a lot of small businesses that don't realize the benefits from a variety of ways: tax write-offs, utility savings potentially, the disposal fees and kind of all that stuff. There might be a lot of donors that don't realize the benefits of donating.

Discussion

Solving the multifaceted issues related to food waste prevention and diversion will be challenging. The UW CPHN worked closely with the City in analyzing the findings and developing a set of major recommendations that the City felt they could successfully implement. While these recommendations were developed for the City of Seattle, the first three recommendations could be beneficial for any local government (Otten et al., 2016). First, a systems approach must be taken to identify cross-sector problems and integrate solutions. This approach should incorporate equity goals or ways to enhance inclusion and equity for marginalized groups or communities. EPA's Food Recovery Hierarchy should be applied to approach and prioritize food waste problems and solutions. To date, most local governments do not have a centralized agency or position dedicated to food waste issues (Benson et al., 2017). Thus, a staff person or possibly an office should be dedicated to food waste to help coordinate and strengthen efforts and apply an equity lens. Similarly, without a centralized agency, position, or program, there is typically no dedicated funding for coordinating food waste reduction within the local government or addressing infrastructure problems that hinder the inclusion of marginalized groups. Local governments should consider exploring cross-department intersections to generate funding or staff collaboration. Another potential avenue for funds could be using composting-ordinance-generated fines to fund programs or education. Finally, local governments could help generate systems-oriented approaches by convening a wide variety of stakeholders through a venue, such as a roundtable or forum, to discuss comprehensive approaches and best practices. These types of forums might also

help support the critical challenges that emerged from this study that are difficult for local governments to tackle but important for them to lead on and monitor. One example of such a challenge is the act of grappling with the increase and growth of food insecurity beyond local government service borders or the reduction in food donations experienced by anti-hunger agencies due to improvements in businesses's food waste prevention efforts. The inclusion of anti-hunger agency clients as stakeholders would also enhance equity for the marginalized communities that are identified in the EPA food recovery hierarchy. By tracking these challenges closely with stakeholders, local governments might be in a position to work across sectors to generate new and creative solutions.

Second, developing standardized and consistent metrics is essential for understanding and scaling work within and between sectors, for measuring progress toward goals or fluctuations in the system, and for identifying priorities. While standardized metrics are under development by several national entities, local governments could help to review and recommend which ones sectors should use (Food Loss & Waste Protocol, 2017; High Level Panel of Experts [HLPE], 2014). In addition, local governments should support the collection of qualitative data to contextualize the quantitative data while the system is still in its nascent stage.

Third, the emergency food system needs local government support to help it function optimally. Infrastructure costs, such as the costs of refrigerated trucks or storage and the costs of composting expired food, are barriers to food recovery. In addition, integration is needed within anti-hunger agencies and between sectors, such as tools and technologies to increase connectivity and help deliver particular types and quantities of food on-demand as well as a means for considering inclusivity and equitability in distributing recovered foods. Local governments should explore ways to fund infrastructure costs or reduce or waive composting fees. Local governments should also explore for pre-existing tools or technologies or partner with other organizations to develop tools and technologies to improve integration within and between system stakeholders, such as technology

that tracks food bank inventory with QR codes or an app that connects donors with anti-hunger agencies. In order to help support increased donations of nutritious foods, the City should evaluate the possibility for scaling up some of the innovative solutions discussed by interviewees, such as increasing the number and size of farms dedicated to serving food banks. For example, the South King County Food Coalition worked with King County government to convert a former golf course into a farm that provides fresh produce to food banks in south King County, Washington (Elk Run Farm, 2017).

Fourth, food waste assessments piloted by businesses in partnership with SPU indicate that there may be misconceptions between the amount and types of waste that businesses think they are generating and what is really generated. The City should pilot another phase of this work with both a larger number and a wider variety of commercial businesses to better understand the current state of wasted food. Local governments should also consider how to adapt food waste assessments for different types of businesses and to support businesses conducting food waste audits. One way to achieve this might be to collect best practices and highlight successes via case studies that can be shared.

Finally, business interviewees underscored that they act in response to perceptions about consumer desires, such as overstocking produce displays for visual effects, culling even lightly blemished produce, and serving large portions. This can result in food waste that may be unnecessary. Research on consumer attitudes and expectations is needed to understand which food waste prevention strategies can be successfully implemented.


Limitations

This study was limited by small sample size and geographic location and thus may not be generalizable to other anti-hunger agencies and food-generating businesses, especially outside of the geographic region. Some types of food-generating businesses were represented by only one business, and thus their responses may not be reflective of the type as a whole. Nearly half of the businesses contacted for this study did not respond to the

study invitation; only businesses that were participating in food recovery responded, and thus selection bias may be present in the findings.

Conclusion

The first-ever U.S. food waste reduction goals were set in 2015 to reduce the serious economic, environmental, and social consequences of excess food loss and waste. Local governments are well positioned to support these goals through local-level innovations and by taking a system-and equity-oriented approach in bringing together various sectors to reduce food prevention and recovery related issues. This study presents the key challenges and facilitators identified by anti-hunger agencies and food-generating businesses in addressing food waste prevention, recovery, and composting, and how they interrelate. Study

findings also provide insights into how these sectors think local governments could best be involved. While local governments may be limited by funding or staffing constraints, they can use this information to develop creative cross-sector approaches that incorporate equity and inclusivity principles to solve food waste problems. Additional research is needed to better quantify the problems identified here, to hypothesize potential solutions, and to document, test, and compare the effectiveness of different approaches. 

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Rejoining the planning and public health fields: Leveraging comprehensive plans to strengthen food systems in an urban versus rural jurisdiction

Special JAFSCD Issue

Local Government in Food Systems Work



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Abstract

The growth of health disparities in the United States, particularly those associated with diet-related diseases, has motivated a reconvergence of

the public health and planning disciplines to address this shared challenge. However, the dynamics and mechanisms through which public health and planning agencies can systematically address food-related issues have yet to be fully understood. This study analyzes how partnership between public health professionals and planners in local, regional, and metropolitan (LRM) governments can strengthen community food systems through a more integrated and holistic approach to health. Using a national survey of

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planning practitioners, we identify which formal local government plans are more likely to address food-related issues, as a way to offer insights on where engagement with public health agencies could be leveraged. Our analysis is further complemented by conducting semistructured interviews with LRM governments in two communities that are known for their innovative plans and policies, to explore how this cross-disciplinary relationship unfolds on the ground. Findings reveal that comprehensive plans are most likely to address the food system, while stand-alone food systems plans are the least common formal plan to be adopted by LRM governments. Stakeholder interviews highlight how the planning–public health partnership can leverage local assets and strengthen the food system in urban versus rural jurisdictions, by formalizing cross-collaboration, identifying shared objectives, and building capacity.

Keywords

Food Systems Planning, Planning for Public Health, Public Health Department, Formal Plans, Food Policy, Government

Introduction and Literature Review

Food- and Nutrition-related Health Disparities in the U.S.

Barriers to healthy food consumption underlie many conditions that contribute to suboptimal public health in communities across the U.S. In 2010, four of the top five leading risks factors associated with disease burden in the U.S. were food- and nutrition-related, including dietary risks (i.e., diets low in fruit and vegetables and high in trans fats and processed meats); high body mass index; high blood pressure, and high fasting blood-sugar level (U.S. Burden of Disease Collaborators, 2013). As a consequence, chronic conditions such as heart disease, diabetes, cancer, and arthritis—all of which are influenced by food and nutrition behavior—affect an estimated 50% of U.S. adults who present at least one chronic condition and 25% who present multiple chronic conditions (Ward, Schiller, & Goodman, 2014). Children and adolescents are not immune to these public health

concerns. One in three suffers from overweight or obesity (Ogden, Carroll, Kit, & Flegal, 2014), predisposing them to even greater risk of chronic diseases not just later in life but also in childhood and adolescence. What was once referred to as “adult-onset diabetes,” or Type 2 diabetes, affects a growing number of young people today, and it has been found to be more difficult to treat among young patients than adults, which bodes very poorly for the future health of Americans (Rosenbloom, Joe, Young, & Winter, 1999). Furthermore, compared to White and wealthier populations, minority and low-income groups must overcome more obstacles to healthy eating and experience a disproportionate burden in chronic diseases (Kirkpatrick, Dodd, Reedy, & Krebs-Smith, 2012; Sijtsma et al., 2012). Taken together, these factors underscore the importance of food not only from a health perspective but also from the perspective of equity and community development.

The Built Environment as a Unifying Issue for Public Health and Planning

In the face of the growing obesity epidemic, concern about the built environment and its impact on population health has emerged as a unifying issue for the public health and planning fields (Jackson, Dannenberg, & Frumkin, 2013). Collaboration between public health and planning professionals, however, is anything but new (Peterson, 1979). With shared challenges since the late 19th century, this cross-disciplinary partnership has demonstrated some of its greatest strengths by uniting efforts to eliminate public health hazards during the sanitary movement (Sloane, 2006), exchanging knowledge to inform urban renewal demolition and housing policy (Lopez, 2009), and, more recently, harnessing greater attention toward issues related to disparities in food access and health (Caspi, Sorensen, Subramanian, & Kawachi, 2012). This reunion was in part inspired by a paradigm shift in public health practice in the early 2000s, drawing from the social ecological model and social determinants of health, which considered the multifaceted exchanges between the individual and different levels of the surrounding environment, including the interpersonal, organizational, community, and policy levels (Stokols, 1996;

Whitehead & Dahlgren, 1991). As a result, researchers and practitioners across both disciplines banded together to focus on the ways through which the built environment can facilitate or hinder physical activity. Referring to all human-made structures and surroundings that influence residents' daily behaviors (Botchwey, Falkenstein, Levin, Fisher, & Trowbridge, 2015), the built environment has been shown to affect physical activity through features such as the mixed use of land, connectivity of street networks, presence of sidewalks and bike lanes, and availability of desirable destinations (Epstein, Raja, Gold, Paluch, Pak, & Roemmich, 2006; Frank, Andresen, & Schmid, 2004; Frank, Sallis, Conway, Chapman, Saelens, & Bachman, 2006; Koohsari, Sugiyama, Lamb, Villanueva, & Owen, 2014; Owen, Humpel, Leslie, Bauman, & Sallis, 2004; Roemmich, Epstein, Raja, & Yin, 2007; Roemmich, Epstein, Raja, Yin, Robinson, & Winiewicz, 2006). Given that these mechanisms between the built environment and physical activity operate within more traditional realms of urban planning (e.g., zoning and transportation), strategies and policies related to modifying the built environment and physical activity have received considerable attention from scholars (Giles-Corti et al., 2016). However, as the obesity epidemic persisted in conjunction with growing critiques that focusing on energy expenditure was insufficient to address diet-related diseases (Luke & Cooper, 2013), researchers and practitioners in the public health field began to move toward gaining a more holistic understanding of the systemic factors influencing food-related outcomes. On a parallel path, planning scholars were arguing that planning plays a role in food-related outcomes through interventions in the food system. In particular, a now-classic article by Pothukuchi and Kaufman (2000) drew planners' attention to the food system.

Public health and planning interests converged as scholars began investigating the relationships between obesity, diet, and characteristics of the food environment, including the geographic location, spread, and density of food stores selling healthy and unhealthy foods in different neighborhoods, and physical and economic access to those stores (Bridle-Fitzpatrick, 2015; Dubowitz et al.,

2015; Epstein et al., 2012; Jennings et al., 2011; Pothukuchi, 2009; Raja et al., 2010; Rummo et al., 2015; Sloane, 2006). This body of work has motivated a range of programs and policies to improve the availability and accessibility of healthy food. At the national level, revisions to the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in 2009 mandated WIC-authorized stores to stock a larger variety of healthy items, including low-fat milk, whole-wheat cereals, whole grains, and fruit (Cobb et al., 2015). Other strategies have aimed to modify dietary behaviors by generating greater awareness of the need for a well-balanced diet through nutrition education in schools and after-school programs; food-labeling strategies; anti-obesity and anti-sugar-sweetened beverages campaigns; and the U.S. Department of Agriculture's MyPlate initiative (Sacks, Veerman, Moodie, & Swinburn, 2011; Story, Kaphingst, Robinson-O'Brien, & Glanz, 2008; Tabrizi, Segovia-Siapco, Burkholder, & Sabate, 2014; Thorndike, Riis, Sonnenberg, & Levy, 2014). Still, these efforts have been met with limited success in supporting a lasting healthy diet and successful curbing of diet-related chronic diseases (Ogden et al., 2016). Poor food environments and the obesity epidemic continue to affect a significant portion of the U.S. population, pointing out the need to better understand the underlying problems in the food system that make it extremely challenging to create and sustain healthy food environments in communities.

From the Individual to a Systems Approach to Nutrition, Food, and Public Health

The joint focus on food access and health has progressed and unfolded differently within the fields of public health and planning. Public health scholars have been challenged for their focus on individual-level health determinants and the outcomes of some components of a failed food system, such as the lack of access to nutritious and affordable food (Hodgson, 2012). For planners, however, the issues surrounding food access have been far broader in scope, intersecting with other functional systems of communities, including land use, transportation, open space, and community and economic development (Raja, Born, &

Kozlowski Russell, 2008). To address the shortcomings of food systems, pioneers of food systems planning emerging from both the public health and planning disciplines increasingly have called for a more systematic approach (Pothukuchi & Kaufman, 2000). In 2010, leaders from nursing, nutrition, planning, and public health joined forces to create a shared statement focused on “system-wide food policy change” (Hodgson, 2012). This shared statement includes a set of values, visions, and principles that has guided the respective disciplines in their efforts to encourage a healthy, sustainable food system.¹ While this early document was more focused on defining visionary goals, the continued collaboration between the American Planning Association (APA) and American Public Health Association (APHA) has produced more detailed guidelines and actionable plans to implement and plan for healthy communities. Of recent efforts is a joint call for action, culminating in the Plan4Health project that aims to bring together APA and APHA members, use their complementary expertise, build capacity, and provide guidelines and tools to create a healthier and more equitable community.²

Public Health Departments in Planning for Healthy and Sustainable Food Systems

LRM governments use a wide range of policy tools to evaluate current conditions, set goals, and implement strategies and actions to guide communities toward an envisioned future (Hodgson, 2012). Key tools used by planning departments include a variety of formal plans to assess and address challenges in areas ranging from housing and economic development to land use and transportation. These plans vary based on their scope, scale, urgency, and legal authority. For example, comprehensive plans, sometimes called general plans, which are characterized by their holistic and integrated approach covering entire communities, are the most prevalent type that sometimes bear legal authority to fulfill a long-term vision by state-enabling legislation. Particular problems or subjects are addressed through functional plans, including open space

plans, community health plans, housing plans, and more recently food systems plans (Raja & Whitaker, 2018). Subarea plans focus on a particular subarea within a local jurisdiction, such as a corridor or neighborhood. Last but not least, planners can adopt strategic plans to address urgent or high-priority problems such as those focusing on sustainability and climate change issues (Hodgson, 2012).

The aforementioned plans can have a direct or indirect and lasting influence on the health and well-being of communities. They can inform local government budgetary decisions, regulations, and ordinances. Nevertheless, until recently issues of food and public health have been largely absent from these official plans. In the past decades, planners have argued that issues related to food production, preparation, processing, distribution, consumption, and waste management intersect in a wide range of ways with other major, if not conventional, planning realms, such as land use planning (e.g., urban food production, farm preservation) (Connell et al., 2013), environmental planning (e.g., climate change and food production) (Rosenzweig, Iglesias, Yang, Epstein, & Chivian, 2001), transportation (e.g., access to food outlets) (Clifton, 2004), and community and economic development (e.g., job and income generation) (Vitiello & Wolf-Powers, 2014). As such, this “puzzling omission” (American Planning Association, 2007) of food from the formal planning education and practice (Morgan, 2009; Pothukuchi & Kaufman, 2000) has diminished in recent years, with a modest growth of municipalities’ involvement in addressing food-related issues. For example, a 2008 survey of APA members ($n=192$) demonstrated that a significant percentage of respondents were involved in land-use planning (20%), comprehensive planning (14%), and community development (14%). However, only 2.5% of planners worked primarily in the area of community and regional food planning (Raja et al., 2008). A subsequent survey of APA members ($n=888$) focused on comprehensive or sustainability plans revealed that just over 10% of local

¹ See <http://planning.org/nationalcenters/health/foodprinciples.htm>

² See <https://www.planning.org/nationalcenters/health/calltoaction/>

governments in the U.S. ($n=80$) had a comprehensive plan or sustainability plan ($n=20$) that explicitly addressed one of the food system components (Hodgson, 2012).

While these recent findings shed light on the gradual growth of food-related plans and policies, there remains a great need to further understand how the field can fully integrate planning for food and health. In particular, the way food systems is treated across the spectrum of formal plans—in addition to comprehensive and sustainability plans—is not yet known. Furthermore, given the close ties between food and health, scholars and practitioners from both fields of planning and public health have been revisiting the roles that both professions can play in promoting healthy communities. Specifically, public health departments are given responsibility for creating and maintaining conditions to support healthy communities, yet the ways in which they engage in food systems planning is understudied. To fill these gaps in knowledge, this study aims to (1) examine the extent to which food systems is addressed in a range of formal plans adopted by LRM governments; (2) assess how formal plans address food systems (i.e., do plans undermine or strengthen food systems); and (3) investigate how public health agencies engage in food systems planning.

Research Design and Methods

The paper draws on the data from the Growing Food Connections (GFC) project, a federally funded, national initiative focused on local government capacity in food systems planning (<https://growingfoodconnections.org>). From 2012 to 2017, the GFC team—composed of the core research team, a national advisory committee with representation from diverse disciplines and regions, and the American Planning Association—engaged in a policy action research initiative to enhance food security among consumers while ensuring sustainable and economically competitive agriculture among struggling farmers in vulnerable communities across the U.S. (Raja, Whittaker, Hall, Hodgson, & Leccese, 2018).

The team employed a sequential research design. First, the team conducted a national survey

of planning practitioners in 2014. This was followed by in-depth interviews in two types of selected communities: places where local governments had adopted plans and policies to strengthen the food system, or what we termed *communities of innovation* (COIs), and places that showed an opportunity for policy change, or what we termed *communities of opportunity* (COOs). Finally, we conducted capacity-building work in COOs and, subsequently, additional interviews (Raja et al., 2018).

This paper relies on a subset of data from the GFC project, specifically the 2014 national survey data and the qualitative interviews from COIs. Contender COIs were identified following a national scan that included a review of grey literature, review of prior survey data, and referrals from national experts, as well as the GFC national advisory committee. Through the national scan, the team identified 299 local governments across the U.S. that were developing and implementing a range of innovative plans, public programs, regulations, laws, financial investments, and other policies to alleviate food insecurity and bolster agricultural viability among small and medium-sized farmers. The GFC team narrowed down these 299 communities to 22 COIs where LRM governments played a significant role in implementing innovative policies that strengthen the food system. Finally, the team conducted exploratory telephone interviews that resulted in 2 candidate COIs being dropped and thus ended up with a final sample of 20 COIs. A more detailed description of the GFC project may be found in previously published work (Clark, Freedgood, Irish, Hodgson, & Raja, 2017; Raja et al., 2018).

This paper provides (1) a descriptive analysis of formal plans adopted by LRM governments to provide an expansive national perspective of food systems planning by drawing on survey results, followed by (2) a qualitative cross-case analysis based on semistructured interviews with LRM governments in COIs to provide a deeper understanding into the ways that food systems planning operates in different settings (urban versus rural). Detailed methods of data collection for the survey and qualitative research in COIs are described below.

Cross-sectional Survey of Local Government Planning

The first phase of the study relied on data collected from a national survey administered online and directed to all members of the American Planning Association (APA) in 2014. The survey inquired about the ways in which practitioners used policy tools to strengthen community-based food systems. A community's food system was defined by the interdependent activities, resources, stakeholders, and regulations that enable food to be grown, processed, distributed, and acquired by consumers, and food waste to be disposed of in a sustainable way within a community. The survey instrument was piloted with individuals practicing in the core areas of inquiry, including local government planning, agriculture, food access, and food systems planning. Pilot respondents reviewed the instrument, and feedback on questions that were unclear, redundant, or missing was incorporated into the final survey before the deployment to APA membership. Pilot respondents were ineligible to complete the final survey. The survey was approved by the Institutional Review Board at the State University of New York at Buffalo.

Study Participants

The APA membership includes approximately 30,000 people. Of these, 3,103 members (10%) responded to the survey, a response rate that is statistically representative of the full APA membership.³ More than one-third of respondents reported working for or on behalf of LRM governments. This analysis is based on the data extracted for these 1,169 respondents who reported working for or on behalf of LRM governments in the U.S. The survey was distributed to all APA members via an e-mail message from the leadership of the APA. E-mail reminders were sent to nonrespondents within two weeks of the original invitation to participate in the survey. Respondents received no monetary compensation for their participation.

Survey Measures

Seventeen questions, and additional subcategory questions, in the survey queried about respondents'

characteristics (e.g., familiarity with food systems planning or professional involvement with food systems planning) and the use of plans (e.g., long-range plans supporting food production, aggregation, processing, distribution, and sale) and implementation tools (e.g., regulations, budgetary decisions, and development incentives supporting the food system) by respondents' LRM governments. This paper focuses on a subset of questions from the larger survey, specifically those evaluating the use of formal plans in strengthening food systems (Raja, Raj, & Roberts, 2017; Raja et al., 2018). Respondents were asked to evaluate the ways in which plans adopted by their LRM governments affect the food system in communities. Respondents chose from a set of 13 formal plans that included agriculture and/or farmland protection plan; comprehensive plan; climate change plan; community health plan; economic development plan; environmental plan; food system plan; housing plan; land use plan; open space plan; recreational plan; sustainability plan; and transportation plan. Selection of formal plans to include in the survey followed several procedures, beginning with an assessment of peer-reviewed and grey literature as well as consultation with food systems planning practitioners. Respondents also had the option of specifying and evaluating other formal plans not included in the survey, by answering in an open text box.

Respondents evaluated the ways in which formal plans affect the food system, by indicating whether a plan "does not exist," "exists but undermines the food system," "exists but does not make any explicit reference to food systems," "exists and strengthens the food system," "strengthening the food system is a key priority," or "I do not know." Respondents working for LRM governments that adopted a food system plan and explicitly made the food system a key priority were directed to select "strengthening the food system is a key priority," while respondents working for LRM governments that were not explicit in making the food system a priority, but made efforts to address some issues in the food system, were directed to select "exists and strengthens the food system."

³ A sample size from a population of 30,000 with a 95% confidence interval and a 5% margin of error requires 385 respondents.

Survey data were analyzed to gauge broad national trends in how LRM governments are engaging in food systems planning. We performed descriptive data analyses using Microsoft Excel.

Stakeholder Interviews with Public Health and Planning Entities in an Urban Versus Rural Setting
We supplemented the analysis of broad national trends from survey data with in-depth exploration of the ways in which food systems planners engage with other LRM government entities, particularly focusing on public health agencies. We conducted a qualitative analysis, drawing from stakeholder interviews from selected COIs in the GFC project.

In-depth interviews

To gain a deeper understanding of the novel strategies employed and reasons for success in COIs, the research team conducted semistructured interviews with stakeholders in each COI. The list of interviewees in each COI was compiled using web searches focused on identifying local government entities that engage in food systems planning, and was later expanded based on interviewees' referral. Interview questions queried about public policy responses in community food production and food security (i.e., challenges, opportunities, and notable stakeholders involved in the adoption and implementation of food system policies).

Cross-case analysis

All interviews were audio-recorded and transcribed by a professional transcription service. Transcriptions were coded manually and analyzed separately by two research team members. Codes were compared to identify key themes, consistencies, and differences in the two selected communities. Additionally, policies mentioned in interviews were cross-referenced to further examine how those policies strengthened food systems. A preliminary report was prepared for each COI. Using analyst triangulation, findings in the preliminary report were assessed by a third party that included lead stakeholders in each community, to further corroborate our findings.

To illuminate how planning and public health agencies intersect and collaborate in an urban versus rural jurisdiction, we report on interview

findings from two COIs, one urban and one rural: Philadelphia, Pennsylvania (PA; $n=3$) and Region 5, Minnesota (MN; $n=7$). In particular, we examine the public health–planning relationship by focusing on the process of plan and policy-making, the role of local engagement, and the strengths and challenges in developing food-related plans and policies.

Case study settings: Philadelphia, PA, and Region 5, MN
Philadelphia represents an urban community with a long-standing history of a local health department's focus on urban food access issues. Philadelphia is home to over 1.5 million people in the heart of the Delaware Valley, where fresh fruits and vegetables, meat, poultry, dairy, and eggs are the main agricultural products. In this region, growers on small to medium-sized farms experience major difficulties related to a lack of local processing capacity, soil contamination, and limited access to water. Urban growers also experience challenges with profiting in the city, resulting in produce sales made to restaurants rather than to local residents. This disconnect between local food production and food access is troubling because for residents, many of whom suffer from extraordinarily high poverty rates and little to no walkable access to healthy food retailers, food insecurity is also a grave issue. Further, the latest community health assessment reported that the prevalence of adult obesity has increased 5% since 2002, with black Philadelphians experiencing greater adult obesity, hypertension, diabetes, and less healthy food access (Philadelphia Department of Public Health, 2015).

Region 5 is an example of a rural jurisdiction where the local health department is part of an interagency collaborative effort to strengthen the food system. Region 5 is located in central Minnesota and consists of five counties (Cass, Crow Wing, Morrison, Todd, and Wadena), all of which are the most economically distressed in the state. Approximately 163,000 people live in this rural area, which is known for its poultry and eggs, cow milk, cattle, turkeys, grains, dry beans and peas, and over 70 varieties of vegetables. In spite of the agricultural wealth and diversity, Region 5 growers and residents face significant challenges in their food system. Due to its location in the northern

U.S., the growing season in Region 5 is severely limited, and food is generally inaccessible and unaffordable for many residents, particularly during winter months. According to Cheryal Hills, executive director of the Region 5 Development Commission, approximately 10% of the population in all five counties is food insecure, with the greatest prevalence of food insecurity occurring in Wadena County at 13%. The proportion of children eligible for free lunch is well above the state average (30%) in Cass County (52%) and Todd County (42%).

Strengths and Limitations

The strengths and limitations of this study are worth considering. This work builds on prior research by assessing where the food system is addressed across the wide range of official plans that LRM governments adopt and implement, with a particular focus on the ways in which public health departments support healthy and equitable food systems planning. Additionally, the analysis includes a sizable and statistically representative sample of planning practitioners from LRM governments across the U.S. However, the completion rate of questions related to food systems plans adopted by LMR governments was relatively low at approximately 50% (of practitioners who work for or on behalf of LRM governments). We believe this low completion rate is telling in itself, in that the other half of respondents may not have any

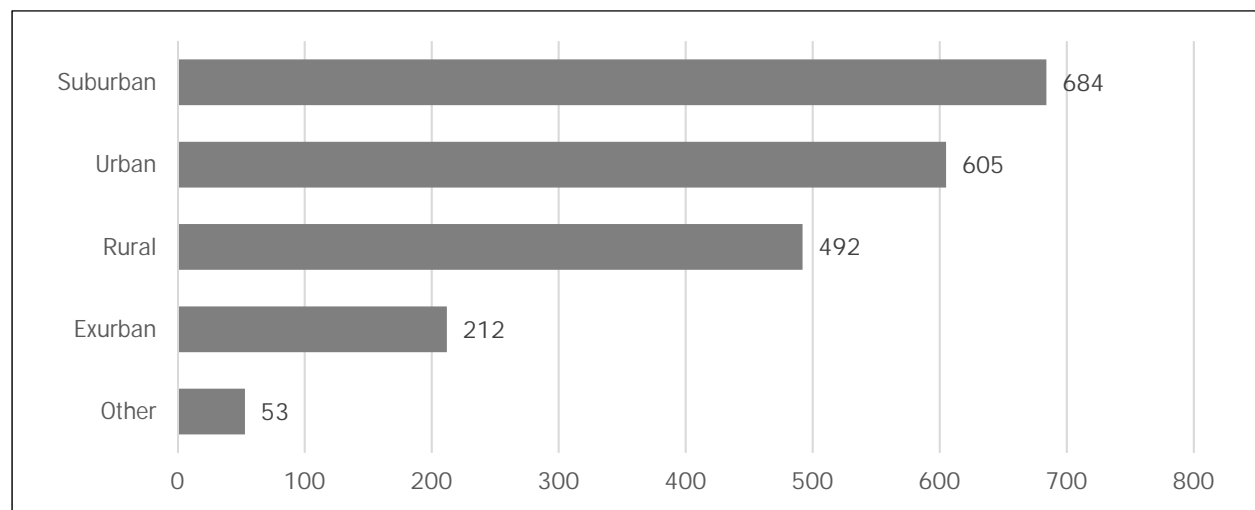
official plans in place or may have limited capacity—that is, minimal familiarity or involvement—within their LRM governments to implement food systems planning, thus making it less likely for nonrespondents to answer questions related to food system plans. Qualitative findings from this study offer insight into how public health departments, in particular, can join with the planning field to facilitate the development and implementation of food systems policies. Future research could benefit from further exploring the barriers and challenges nonrespondents may be facing in relation to adopting plans that support and strengthen the food system.

Results

Cross-sectional Survey of Local Government Planning: Sample Characteristics

Our study sample ($n=1,169$) included practitioners who worked for or on behalf of LRM governments mostly serving suburban or urban districts, followed by rural, exurban, and other areas; other areas included small towns, mountainous regions, or a mix of both urban and rural jurisdictions (Figure 1). Respondents had the option to report working for more than one area. The top organization through which respondents were involved in planning was local government (Figure 2). Nearly half of all respondents (49.4%) reported

Figure 1. Number of Respondents Working for or on Behalf of Local, Regional, and Metropolitan (LRM) Governments Serving Urban, Suburban, Exurban, Rural, and Other Areas



having earned a graduate degree. In regard to field of training, 489 respondents completed degrees in planning, 12 in public health, and 1 in both planning and public health. Women and men composed 34% and 32% of respondents, respectively, and the remainder chose not to report their gender. Seventy percent of respondents had more than 5 years of experience in the planning profession (not shown).

Cross-sectional Food Systems Survey: Food Systems in Adopted Formal Plans

This subanalysis was based on completed results from 584 to 590 respondents (the number varied depending on the plan in question) who reported on formal plans adopted by their LRM governments and evaluated the ways in which those plans affect food systems.

Taking into consideration plans that have a particular focus on food systems, our findings show that all had adopted formal plans prioritize and strengthen the food system, but to varying degrees (Figure 3). Comprehensive plans were most likely to treat the food system as a key priority and to strengthen the food system, as reported by 5% ($n=30$) and 25% ($n=147$) of respondents, respectively. In particular, California and Washington ranked the highest for the

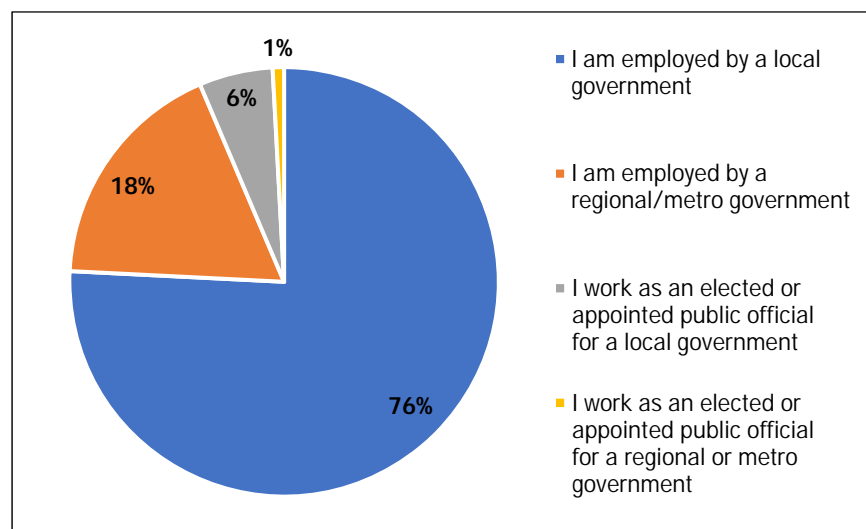
adoption of comprehensive plans that strengthen the food system, whereas Hawaii and Arizona ranked the highest for prioritizing the food system in their comprehensive plans (not shown). Community health plans, which could be an area where planners and public health practitioners collaborate, also appear to view food systems as a priority among 3% of respondents ($n=18$) and to strengthen the food system among 13% of respondents ($n=77$). Additionally, agriculture and/or farmland protection plans, sustainability plans, economic development plans, and open space plans were comparable to community health plans in terms of prioritizing and strengthening the food system. Interestingly, even though very few LRM governments adopt transportation or housing plans that make the food system a key priority, respondents suggest that such plans can still strengthen the food system.

In terms of plans that threaten the food system, transportation and economic development plans were most commonly described as undermining the food system, as opposed to agriculture and/or farmland protection, food system, and climate change plan, which were least commonly described as undermining the food system (Figure 4). All formal plans reportedly strengthen food systems to a greater extent, as opposed to under-

mine the food system, with the exception of transportation plans. For example, while 14% of respondents shared that economic development plans strengthened food systems, compared to the 4% who shared that economic development plans undermine the food system, transportation plans were almost equally likely to be reported as both undermining (5%) and strengthening (6%) the food system.

Lastly, there is considerable variability in the formal plans adopted by LRM governments overall. Comprehensive, land use, and

Figure 2. Proportion of APA Member Respondents Employed by Local, Regional, and Metropolitan (LRM) Governments ($n=1,169$), by Type of Organization



transportations plans were the most prevalent among respondents' LRM governments, while plans *exclusively* related to the food system were largely nonexistent. Specifically, stand-alone food systems plans did not exist for 69% of respondents, and this was followed by climate change plans (60%), farmland protection plans (47%), community health plans (44%), and sustainability plans (44%). Findings also reveal sizable variability in the explicit reference to food systems among adopted plans. More than half of respondents reported that there was no explicit reference to food systems among existing transportation plans (63%), recreational plans (55%), land use plans (53%), and comprehensive plans (51%), separately. Community health plans and climate change plans had the smallest gap to close, with 13% and 16%, respectively, of adopted formal plans that did not explicitly reference the food system. Surprisingly, 4% of respondents reported that although their LRM governments adopted a food systems plan, there was no explicit reference to food systems. One plausible explanation is that

the adopted food systems plan did not actually carry a *systemic* perspective.

Cross-case Findings on the Role of Public Health in Urban versus Rural Food Systems Planning

Comprehensive food systems planning and policy in Philadelphia

The Philadelphia local government has demonstrated a uniquely strong commitment to food systems planning and policy over the last decade. Driven by the collaborative leadership of the Mayor's Office of Sustainability and the Department of Public Health, activities in this urban jurisdiction shed light on the strengths of planning under the public health umbrella of anti-hunger and preventing chronic disease. Our findings reveal that the comprehensive sustainability plan was an anchor in bringing diverse stakeholders together to facilitate a suite of policies to promote equitable access to healthy food. Furthermore, the success of the sustainability plan that incorporated public health goals was made possible due to a

Figure 3. Comparison of Formal Plans Adopted by Local, Regional, and Metropolitan (LRM) Governments that Include the Food System as a Key Priority and to Strengthen the Food System

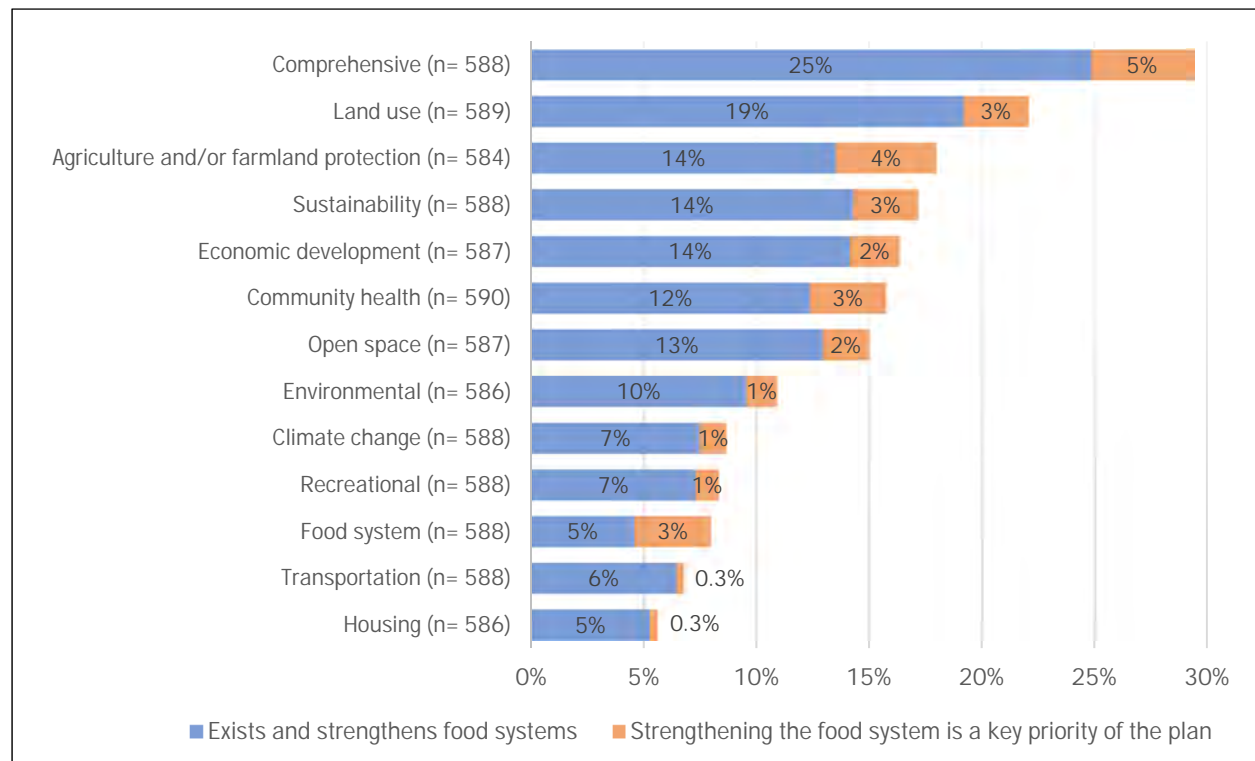
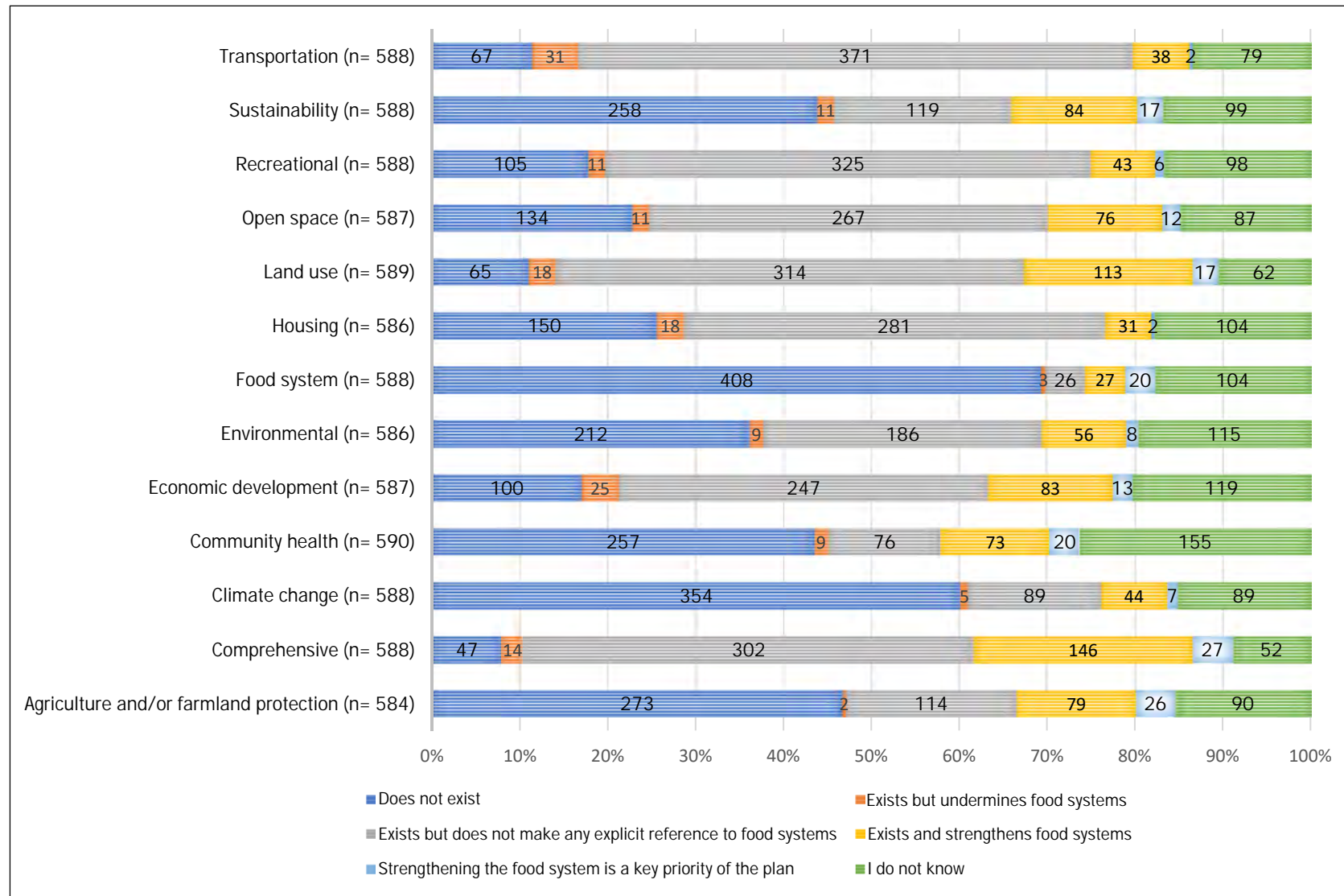


Figure 4. Formal Plans Adopted by Local, Regional, and Metropolitan (LRM) Governments that Address Food Systems



history of grassroots efforts, civic engagement, and food-related advocacy in Philadelphia:

We have a rich history of gardening in Philadelphia [since the] mid 70s and 80s when there was lots of disinvestment in the city. (August 23, 2013)

Despite the long history of urban food production in Philadelphia, it was not until 2008 that the local government took a proactive approach toward food and urban food production in the city. In 2008, then Mayor Michael Nutter established the Philadelphia Food Charter, pledging to support a food system that benefits the community, economy, and environment of Philadelphia. Soon after, Mayor Nutter's commitment to make Philadelphia the greenest city in America resulted in establishing the Mayor's Office of Sustainability, which served as the champion of the Greenworks Philadelphia Sustainability Plan in 2009. This is Philadelphia's comprehensive sustainability plan, which includes eight visions, one of which focuses on access to healthy, affordable, and sustainable food and drinking water. One LRM government representative emphasized the advantages of utilizing a comprehensive plan that focused on food and health, under the leadership of the administration and public health department:

The biggest opportunity right now is that there is an administration that is involved in green work. Our comprehensive plan has a food access goal. There is the health department that is strongly working on the food access. (August 23, 2013).

Critical to note is the historical and ongoing advocacy work in Philadelphia that reinforced governmental food-related policies and programs. In particular were the efforts of the Next Great City Coalition, which put forth an urban environmental agenda that motivated and informed the Greenworks Philadelphia Sustainability Plan:

Greenworks was a reaction to a community organization movement called the Next Great City in Philly—a coalition of external groups that got together and facilitated community meetings where people listed their priorities... The Next Great City asked each mayoral candidate [about] a topic that the people cared so much about. This was one way the city realized that food was such a big issue with people. (August 23, 2013)

Last but not least, then Mayor Nutter's Food Charter established the Philadelphia Food Policy Advocacy Council (FPAC)⁴ in 2011. FPAC members and supporters collaborate to advocate and develop policy recommendations for the city, through regular general meetings and executive sessions. Particularly critical to FPAC was the council's intentional recognition of the value of inclusion, defined by age, socioeconomic status, gender, race/ethnicity, education, and more, in its membership and the food systems planning process for the city. This was operationalized through shared leadership and accountability and trust-building, as well as flexible and adaptive practices. As noted during an interview:

[The FPAC] is doing a great job of getting a representative voice of Philly to the council. (August 23, 2013)

The aforementioned findings from Philadelphia point to how the partnership between public health and inclusive planning was a reinforcing process that strengthened the urban food system by providing financial and human resources, advancing a regional food system planning agenda, and instigating the development of other food-related policies and programs. We found that both planning and public health departments dedicated financial and human resources to working across departments and throughout the administration, connecting both food production and food security efforts. The joint resources helped to fund some of the most innovative food system plans and programs in Philadelphia, including the Greenworks

⁴ See <http://www.phillyfpac.org>

Philadelphia Sustainability Plan, Philadelphia 2035, the Food Charter, Philadelphia FPAC, and Get Healthy Philly. With Philadelphia's local health department as a major partner in the planning process, the scope of planning shifted to include the regional context in addition to the local. For example, dedicated to creating a food systems that is healthy and sustainable, the FPAC brought together perspectives from key city and regional stakeholders around the importance of connecting local and regional food to public health. One LRM government representative shared:

With the food policy advisory council, we have a new subcommittee looking at food procurement in the city... We are examining which agencies in the city buy food and what they buy, and if the regional food production would meet the health and nutrition requirements that the health department needs to fulfill with food producers. We are not thinking about just Philly produced food, but regionally produced food as a whole. (August 23, 2013)

Additionally, the public health and planning departments, along with other stakeholders, successfully deployed a line of food systems strategies under the Get Healthy Philly (GHP) initiative. Because public health departments interface with all levels of government, from local to state and federal, our findings also suggest that public health agencies offer an ability to secure funding from a wider range of resources to support food systems planning and implementation. For example, spearheaded by the Philadelphia Department of Public Health, funding for GHP was awarded through the Communities Putting Prevention to Work initiative of the U.S. Centers for Disease Control and Prevention (CDC). Under the goal of chronic disease prevention, GHP was established in 2010 as a groundbreaking collaborative initiative, including individuals from academia, local government, the private sector, and community organizations, to address physical activity, smoking, and nutrition in Philadelphia. Citywide efforts spearheaded by GHP include the Healthy Corner Store Program, Healthy Carts Program,

Philly Food Bucks, as well as funding for establishing nine new farmers markets in low-income communities. Philly Food Bucks was particularly innovative by increasing the purchasing power of lower-income farmers market shoppers by 40%. Lastly, GHP funded a food policy coordinator for the city. Initially supported by the CDC grant, this position was later formally established as a salaried position with the Philadelphia Department of Public Health.

Findings also suggested that the inclusion of food in the comprehensive sustainability plan initiated a ripple effect, influencing other planning processes to incorporate food system policies and strategies in the zoning code rewrite, 18 district plans, the regional transportation sustainability plan, and the parks and recreation department's work, to name a few examples (Hodgson, 2012). One interviewee pointed to the ways that the Southeast Pennsylvania Transportation Authority (SEPTA) supported increased access to healthy food by developing plans for a new supermarket next to one of its bus stations, as well as leasing land next to one of its stations to community members for growing food.

Ultimately, Philadelphia's leadership, bolstered by the local public health department and other key partners, led to a stream of successful inclusive planning for an equitable food system and public health. Even more, these achievements have influenced the focus on health in the city's 2011 comprehensive plan, Philadelphia 2035.

Food Systems Planning for Economic Development in Region 5, Minnesota

Motivated to improve food insecurity and economic distress, Region 5 Development Commission (R5DC), Todd County Health Department, several healthcare entities, and local governments have worked together to transform food systems planning and policy in this rural jurisdiction. Similar to the case in Philadelphia, the involvement of the public health department, development of a comprehensive sustainability plan, and geographical context were important in supporting food systems change. However, findings from our interviews reveal differences in how the health

department interacted with planning to strengthen the regional food system.

In 1969, Region 5 Development Commission (R5DC) was established and charged with coordinating comprehensive planning and program development at the state, federal, and local levels to address economic, social, and physical issues in the region. Like Philadelphia, the joint effort for building a stronger food system was initiated with a statewide food charter to “set forth policy objectives for [Minnesota] to run local foods” (Interviewee, August 6, 2015). The food charter focused on issues around accessibility and affordability of food. In this context, however, rather than planning under the umbrella of chronic disease prevention, Region 5 focused on identifying opportunities for economic development to lift all counties out of economic distress. Additionally, because agriculture is recognized as a particular strength in this region, results from our interviews shed light on how this signaled an opportunity for planning, public health, and other local government to leverage the community food system to build a stronger local economy:

Our connection to local food is economic development, because this is an industry... Those farmers are businesses, they are running a business. So that was a natural connection to job creation and retention. (August 6, 3015)

Such a cross-sectoral collaboration was promoted by the ways that the food charter, as a state policy, directed money from the departments of agriculture, health, and economic development to set the course on how local foods could be supported. As such, R5DC has served as the key coordinator for the region’s food system planning. Insights from our interviews further illustrate how the planning process motivated cross-sector relationships among food system stakeholders and served as a major driver in food system change in Region 5, culminating in 2012’s Central Minnesota Sustainable Development Plan. Unique to this planning process, also known as the Resilient Region Project, was the use of an inclusive civic engagement model, in which R5DC actively sought

out input from over 600 residents across the region over two years (Region Five Development Commission, 2012). Furthermore, less common partners were brought together to focus on food, such as transportation and community and economic development agencies. This is partly explained by the ways that the LRM governments define and interpret a sustainable and a resilient region. One of the interviewees noted that:

Through the recession, [the food charter] focused on retention not so much creation. So, it seemed to be an immediate critical issue to make sure that we could sustain and to be resilient means to somewhat be able to sustain yourself and that includes a good water and food supply. For me, that connection to economic development clearly was the jobs, the retention, the essential needs. (August 6, 3015)

Adopting an economic development framework for a stronger food system and implementation of community engagement practices has led Region 5 not only to focus on food access and health dimensions of food systems planning, but also to center on creating a regional food system that generates local wealth for small to medium-sized producers and processors. Strategies include establishing a variety of financial and educational programs for small growers developing a regional farm-to-institution program to support growers, while improving food access for vulnerable populations, and constructing a food infrastructure to assist in the aggregation, processing, and/or distribution of products for local growers.

Similarly, focus on the two most vulnerable populations within the local and regional food system—those without adequate access to food as well as small to medium-sized growers—was the main objective for one of the region’s landmark programs: Choose Health. Choose Health, facilitated by the food charter and established in 2014, is a comprehensive program that relies on a public-private partnership among multiple organizations such as Lakewood Health System, a regional food hub (known as Sprout), Todd County Health Department, University of Minnesota Extension,

and Prairie Bay Restaurant. One of the interviewees pointed to the strengths of this comprehensive program:

[One] food access to population that don't have access. Two is the grower incomes. That we are allowing family farmers to be livable wages [sic]. We have focused on minority growers and those that have not had access to markets like our Amish growers and low-income growers for our markets not large production farms that are already doing pretty well. (August 6, 3015)

Findings from Region 5 highlight how the county public health department was particularly important in providing stable, dedicated funding as well as technical support to move food systems change forward in Region 5. Choose Health is particularly illustrative of the role of the health department in food systems planning in this context. Beginning as a six-month pilot project funded by Hunger-Free Minnesota, the program is currently sustained by additional funding from hospitals and healthcare practitioners in the region. According to interviewees, establishment of such a partnership was challenging at the beginning since the Choose Health program did not focus on hunger relief as much as it did on food security, and they perceived the R5DC merely as an economic development entity. However, all partners in the program eventually moved beyond their more conventional practices in order to make the Choose Health program work. One way that the health agencies, especially hospitals, were able to financially support the program was through the federal tax code changes of 2014. The new tax codes allowed nonprofit hospitals to purchase local foods and pay for community supported agriculture (CSA) memberships as a remediation for obesity or mental health. One interviewee mentioned that this mechanism enabled a sustainable funding source for the program and brought support from the health care system:

...That's why the other hospitals started calling...because [this] wasn't an additional expense to them. It was part of their tax

write-off and eligible part of their tax dollars that they had to spend in this purpose anyway. That was really important and Choose Health has also been sustainable through the Obama Administration, and whether you like it or not the whole [Affordable] Care Act, you can now purchase a CSA with your HSA dollars, your health saving account. (August 6, 2016)

In addition to the financial support, the Todd County Health Department provided ongoing technical support, staffing, and a community referral process. Participants of the Choose Health program go through an extensive pre- and post-health-care screening, followed by nutrition education and recipes from the University of Minnesota. Families also receive locally grown and raised commodities bi-monthly from Sprout, the five-county regional food hub of more than 70 local low-income growers. Preliminary evaluation of the Choose Health program indicates greater access to fruits and vegetables and increases in fruit and vegetable consumption by participants, both of which are promising indicators of improved health outcomes. One respondent explained how this partnership allows one to assess the current state of community needs as well as measure process and success, such as healthier eating:

In addition to collecting local data through department resources, Todd County Public Health has been working with hospitals to be more involved through accurately collecting data and sharing reports... Community health needs assessment and community health survey [are] done every three years. Todd County's Public Health Department [use of] other methods and tools include collects qualitative data through one-on-one interviews and focus groups. (August 6, 2015)

This is especially important given the fact that Minnesota is one of the states that disbanded their state planning organizations, meaning there is no central location and organization that can lead and manage data collection. While many organizations

stepped up to fill this gap, such as farmer unions and state economic development organizations, public health professionals were the key players in data collection efforts. Ultimately, with this support from Todd County Health Department, the implementation of the Central Minnesota Sustainable Development Plan was strengthened with more strategic tracking that ensured needs were being met where it was needed most.

Discussion

Relative to other formal plans, planning for the food system still largely does not exist as mainstream planning practice. Results from this study indicate that it is more common for formal plans to focus on some components of the food system and less likely for stand-alone plans to exist. This indicates that unlike other infrastructure, such as transportation and housing, the food system still is not viewed as one that LRM governments are obligated to invest in with intention and a long-term vision. With that said, food systems planning has gained slow and steady momentum over the last decade, pointing to opportunities for further strengthening. Our quantitative results show that a greater proportion of comprehensive plans were reported to strengthen the food system and make the food system a key priority in the plan, and our qualitative findings reveal how the process of developing comprehensive sustainability plans was made stronger by investments from both planning and public health in an urban versus rural setting.

Overall, public health departments are well equipped with metrics on people and communities to identify areas of greatest need and to guide the ways in which planning and its tools (e.g., formal plans) can be maximized to support health. Our findings build on prior literature by offering strategies to leverage the strengths of public health departments in food systems planning. In particular, public health departments can effectively mobilize other public and private entities to influence funding streams, by securing grants and other financial support; food access policies, by providing technical assistance and programmatic support; and structural changes within government agencies, by establishing formalized committees or salaried positions dedicated to food.

Moving forward, more regular interfacing between public health and planning departments is needed to strengthen food systems planning. To build on current efforts, LRM governments are well-positioned for (1) better connecting practitioners in the planning and public health fields; (2) identifying shared goals across departments; and (3) capacity-building to plan, implement, and evaluate food systems. Additionally, the different ways in which engagement between public health and planning can unfold depend on context (historical and geographical) as well as existing community assets.

To leverage the strengths of both disciplines and bolster their reach and impact, LRM governments can institutionalize cross-collaboration by establishing a formal interdepartmental agency or working group. In practice, public health occurs in many domains, from nutrition to disease prevention to occupational safety. Specific strengths of public health departments include the ability to provide evidence of the human health effects of a range of exposures and identify areas of greatest need through strategic data collection as well as the documentation of health outcomes and health disparities. Meanwhile, the plan-making process calls for a range of stakeholder groups to actively participate in the development, adoption, implementation, and evaluation of formal plans that ultimately influence and shape communities. For planning departments that are addressing food systems issues, advantages include a systems perspective by making connections between a variety of interconnected social, economic, and environmental issues, including quality of life, economic opportunity, environmental justice, and food issues. In particular, the Philadelphia Food Policy Advisory Council and Region 5 Development Commission illustrate how cross-disciplinary coalitions can move food systems planning forward in a more systematic and meaningful way. Leadership in Philadelphia from the mayor and health commissioner resulted in the development and implementation of the Greenworks Philadelphia Sustainability Plan, which catalyzed comprehensive planning for sustainable programs and food systems. Similarly, cross-sectoral leadership in Region 5, involving R5DC, the county public health

department, and local government, culminated in the Central Minnesota Sustainable Development Plan and the deployment of novel approaches that addressed food insecurity and economic distress.

Both cases also exemplify how comprehensive sustainability plans can be leveraged to strengthen food systems and beyond. Because stand-alone food system plans are often strategic plans with a shorter time frame, one approach can be to leverage comprehensive plans—which are also often required by state government statute and shape long-term decision-making for a jurisdiction—to make food systems strategies more conventional among LRM governments moving forward. A qualitative exploration of two communities, one urban (Philadelphia, PA) and one rural (Region 5, MN), exemplifies how comprehensive sustainability plans can bolster food systems, with leadership and strong engagement of public health departments that connect planners to underserved communities and provide the capacity to complete the work. Further, development of a comprehensive plan with a collaborative effort from public health and planning has the potential to impact the wellbeing of communities by influencing change beyond food. We observed this in Philadelphia and Region 5 where the integration of food facilitated more health-conscious planning related to the city's transportation system and economic development strategies, respectively.

Issues related to limited capacity to carry out food systems work, such as insufficient staffing, funding, and other resources, remains a challenge in both urban and rural communities. Cross-case results also reinforce how public health departments can help to overcome these barriers and constraints by pooling resources and helping to amplify food systems planning by establishing councils and salaried positions. In particular, the local health department in Philadelphia secured a multimillion dollar grant from the U.S. Department of Health and Human Services, and the local health department in Region 5 provided a dedicated source of funding through Minnesota's Statewide Health Improvement Program for food systems coordination, planning, and implementation. Furthermore, public health departments are well equipped to provide technical support and data

collection, in the form of community needs assessments, eating patterns of residents, nutrition-related health outcomes, and measurement of food access in communities, all of which are much needed data in monitoring and tracking progress in achieving plan goals. These findings are echoed in a prior study reporting on the food movement in New York City, in which public health professionals helped to amplify the health effects of the movement by facilitating conversations among stakeholders, providing empirical evidence and resources to augment policy change, evaluating the impact of the program, and offering technical and organizational support in community organizing and campaigning (Freudenberg, McDonough, & Tsui, 2011).

Finally, as part of ongoing and future efforts, a key challenge in conjoining the planning and public health fields is to make certain that jointly developed strategies are not blind to the root and historical causes of food and health disparities, namely poverty, discrimination, and oppression. To succeed, planning and public policy processes must be fully democratic, as data from across the country suggest that lack of forethought in the design of policy and planning processes can exclude the very populations planners and public health advocates aim to serve (Clark et al., 2017). It is essential for planners and public health practitioners to work in partnership with local leaders and community members, particularly those who are socially marginalized, so food systems policy and programs meet the unique needs of communities. Leveraging a long history of food advocacy work in Philadelphia, and the R5DC inclusive civic engagement model, are prime examples of the ways in which local knowledge may be uplifted to achieve shared goals for an equitable, healthy, and sustainable food system.

Conclusions

The historic ties between the fields of planning and public health have been re-energized in recent decades by the need to address increasing health disparities in diet-related diseases, such as obesity and diabetes. We have learned that public health departments play a key role as liaisons in strengthening food systems, and the work of planners is

reinforced by addressing the food system in a holistic manner, from policy to human health. This study documented how planners and public health practitioners have worked together to achieve more healthy, equitable, and sustainable communities through the development and implementation of comprehensive plans, in particular. A collaborative, interagency approach across public health and planning agencies is more likely to address place-based food inequities experienced by people, as was the case in Philadelphia, PA, and Region 5, MN. This approach is especially promising in rural communities, where public health departments are more likely to have greater reach and influence than planning departments. Moving forward, such a collaborative approach, while essential, cannot

stop with public health agencies. The public health and planning fields together can be further strengthened by connecting food systems to other functional systems, such as transportation, housing, economic development, and the environment. Further, to fully address the deepest inequities experienced by communities, inclusion is critical in public health and planning processes in order to lift up community-engaged solutions and advance meaningful change.

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Just transitions in a public school food system: The case of Buffalo, New York

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Abstract

This article examines the public school food system in Buffalo, New York, for a *just transition* (Movement Generation, n. d.). School food programs built on just transition characteristics democratize engagement, decentralize decision-making, diversify the economy, decrease consumption, and redistribute resources and power. The Buffalo public school district's food system is an important subsection of the city's food system that reaches the most vulnerable populations. School food systems contain teachable spaces within

schools to introduce students to healthy eating, fresh food, and the (in)equitable economies of the larger community food system. We argue that school food is an ideal entry point for introducing a just transition to the local food system, enhancing food equity built from healthier social, economic, ecological, and political systems. Related to this JAFSCD issue's call on Local Government in Food Systems Work, we aim to bring attention to the role and responsibility of public education systems in managing and enhancing community food systems through public policy. This qualitative case study examines five public school food programs

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Disclosures

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in Buffalo, New York, for characteristics of a just transition using content analysis of policy and program documents. How does one public school food system engage in and build toward a just transition? Key findings include that all five programs analyzed reflected at least one characteristic of a just transition; programs lacked an emphasis on ecological justice; and younger generations must be included in the just transition implementation process. Ultimately, we argue that the school food system is ideally poised to initiate the implementation of a just transition.

Keywords

Community Food Systems, School Food, Just Transition, Food Equity, Ecological Sustainability, Social Justice

Introduction

The objective of this article is to examine the school food system in the Buffalo public school district (Buffalo Public Schools, or BPS) for elements of a *just transition* (Movement Generation, n.d.). A just transition is holistic in scope and emphasizes the following five activities for the well-being of a community: democratize engagement, decentralize decision-making, diversify economic activity, decrease consumption, and (re)distribute resources and power (Movement Generation, n.d.). How does a just transition occur within a school food system? We address this question through the case study of the public school food system in Buffalo, New York.

BPS's food system is an important subsection of the city's community food system (Raja, Hall, Norton, Gooch, Raj, Hawes, & Whittaker, 2014), and has an important role in the community's larger soil-to-soil food system. Schools are sites of food procurement, preparation, consumption, and disposal, and, in some instances, schools are also sites of food production. The BPS district's food system is an important subsection of the city's food system that reaches the most vulnerable populations. School food systems also contain teachable spaces to introduce students to healthy eating, fresh food, and to the (in)equitable economies of the larger community food system. Related to this JAFSCD issue's call on Local Government in Food

Systems Work, we aim to bring attention to the role and responsibility of public education systems in managing and enhancing community food systems through public policy (Raja, Clark, Hodgson, & Freedgood, 2017). Specifically, we examine school food policies and programs for evidence of and potential for a just transition in the school food system. We view a just transition as a non-linear series of equitable and sustainable transformations that bring attention to, disrupt, and change hegemonic systems that oppress, dominate, and harm both people and the environment. Our analysis is guided by the following question: How does one public school food system engage in and build toward a just transition?

To address this question, we begin by first putting forward a theory of a just transition. Afterward, we review the literature on school food systems linked to a broader discussion of food systems. Next is a description of the methodology and methods for this case study (Yin, 2003) of BPS's food system that applied content analysis (Kohlbacher, 2006; Reinharz, 1991). Based upon programs identified in a recent school food report (Gilbert, 2018b), we examine the following five food programs that offer food to students at schools: the National School Lunch and the School Breakfast programs, the Backpack Program, the School Pantry Program, the BPS Farm to School (F2S) initiative, and Buffalo School Gardens. Our content analysis included developing a narrative description of each program and then analyzing each program for characteristics of a just transition. We argue that school food is an ideal entry point for introducing a just transition to the local food system, enhancing food justice and equity built from healthier social, economic, ecological, and political systems. Studies of states' school food and suggestions for improving it (Levine, 2010; Morgan & Sonnino, 2008; Poppendieck, 2010; Ruis, 2017) are plentiful. The current study builds from this strong foundation with an analysis of and suggestions for how to improve the system holistically and equitably through a just transition framework.

A Just Transition

In this section, we begin with a brief history of the concept of a just transition. Then we shift to

operationalizing the five key activities of a just transition: democratize engagement, decentralize decision-making, diversify economic activity, decrease consumption, and (re)distribute resources and power. This is followed by a general elaboration of the concept.

In the 1980s, the concept of a 'just transition' originated within U.S. trade union movements related to pollution regulations. Trade unions needed job creation during an energy transformation (e.g., from carbon-reliant to low-carbon energy transitions) (Healy & Barry, 2017). The trade union movement focused on developing collaborative approaches to such transitions to advocate for workers' rights to quality jobs. The just transition concept then evolved from a concern for job creation in an emerging energy system to include justice for vulnerable communities affected by multiple interacting systems. Since the turn of the 21st century, Movement Generation has evolved the just transition concept to call attention to the harm of an extractive economy and promote a transformation toward a regenerative economy. In this paper, we apply the current just transition framework elaborated by Movement Generation's struggle for healthy, just communities. While their framework includes food as one of the main pillars of an economy, we narrow our examination to the public school food system embedded within Buffalo's community food system and economy.

The aim of a just transition is to encourage action-oriented practices drawn from activist movements (e.g., Movement Generation and trade unions). We identified five characteristics, or attributes, within the framework that we operationalize as tools for analyzing public school food programs. Although they are separated in our discussion to follow, in practice the characteristics interact and overlap. The first two activities involve decision-making. To begin, a just transition requires *democratizing engagement* by creating opportunities for equitable, collective deliberative processes. With this key attribute, process is emphasized. Decisions are made through dialogue, and the analytic focus is on *how* decisions are made. Second, *decentralizing decision-making* involves widening participation among multiple stakeholders in a food system. This occurs through the deliberate inclusion of multiple

voices from communities and schools that have been historically underrepresented and marginalized in decision-making processes. Decentralizing opens up the process of decision-making through shared authority across participants. "The concept of food democracy rests on the belief that every citizen has a contribution to make to the solution of our common problems" (Hassanein, 2003, p. 85). The analysis focuses on who is involved in decision making.

The next two attributes seek to redress economic injustices. The third characteristic *diversifies economic activity* to benefit multiple stakeholders through equitable sharing of resources, wealth, and power (Fraser, 1997). A just transition should involve a shift away from the industrial food system that commoditizes food and exploits employees and the environment. Instead of continued support for agri-business, a school food system can vary its sources of food, thus promoting food produced equitably with an emphasis on differentiated local economies. The fourth attribute involves *decreasing consumption* to reduce harmful ecological impacts of economic activity. Neither community food systems as a whole nor school food can be comprehensively improved without addressing both the social and ecological components.

The fifth and final attribute is *(re)distributing resources and power*, particularly to benefit the least advantaged and most vulnerable members of the food system. Redistribution in a just transition of school food systems involves awareness and action. Critical awareness of the diverse forms of injustices experienced by vulnerable student populations and economic, social, political, and ecological systems can and should lead to actions for change. Food system transitions embracing redistributional justice support equitable valuation, sharing, and distribution of both costs (i.e., negative consequences of environmental crises) and benefits for all members of society (Fraser, 1997). Just-transition practice and research should emerge from the lives and actions of communities most affected and most vulnerable to ecological, political, social, and economic stasis and change (Movement Generation, n.d.). This process should also concern access and choice to participate in food systems, regardless of income, nationality, location, etc. (Jenkins,

McCauley, Heffron, Stephan, & Rehner, 2016).

Addressing Vulnerability

Underpinning these five characteristics are theoretical foundations found in vulnerability studies and theories of justice. Multiple populations and systems—including economic, social, political, and ecological—interact and are susceptible to stress and injustice, thus creating and intensifying *vulnerability* (Eakin & Luers, 2006). Public school food systems serve multiple populations, some of whom are marginalized through intersecting systems of oppression (e.g., racial, economic, gender and sexuality), thus increasing the vulnerability of these populations. Vulnerability “is socially constructed and is magnified by past and present injustices in communities with histories of domination or who have been denied access to power, resources, or participation in decision-making processes” (Miller Hesed & Ostergren, 2017, p. 186). When analyzed, vulnerability illustrates how the communities who have been least responsible for inequities within systems are also positioned to bear the brunt of any negative impacts of transitions. Vulnerability research also produces supportive responses that contribute to strengthening the resiliency of affected communities (Eakin & Luers, 2006). School food research applying a just transition would not only illuminate the intersecting and historical legacies of oppression, but also include marginalized communities in producing responses for building a more equitable school food system.

Examining a school food system in relation to a just transition framework is useful for not only identifying vulnerabilities to humans and the environment but, as discussed above, identifying spaces for actions of transformation toward social justice. For example, if democratic participation in decision-making is successfully implemented into the school food system, food procurement, choices, disposal, and labor may be decentralized, and the economic system that undermines social justice is critiqued and transformed (Morgan & Sonnino, 2013). The number of options for healthy, locally sourced food may increase, while the amount of preprocessed food served and waste produced is reduced. Simultaneously, the local

purchases support the local economy as more food workers and producers are integrated into the system. An increase in the consumption of fresh food decreases the use of natural resources needed for food processing and packaging, as well as how far it has to be shipped. Such reshaping of the school food system may contribute to a redistribution of resources (healthy food more readily available to all, local producers supported) and power (industrial food producers and processors no longer monopolize school food), thus guiding school food through a socially and ecologically just transition.

Literature Review

Equity and Justice in Community Food Systems

To assess accurately how school food can encompass elements of a just transition, school food must be understood as nested within a larger community food system. As Guthman (2011) argues, food-related studies should consider the soil-to-soil process from production to disposal, as well as actors, policies, events, and outcomes both directly and indirectly involved in or impacted by food. A food systems approach is valuable because it integrates issues that may not immediately appear to be connected to food, such as community health, collective decision-making, social justice, and ecological sustainability, as well as taking into account past, present, and future events (Levkoe, 2011). Additionally, examining school food as a system-within-a-system highlights the numerous geographic scales that are connected throughout the various processes involved in food production, consumption, and waste disposal. It is critical to recognize the embedded interscalar power structures of the food system (Ericksen et al., 2012). The transition envisioned in this article identifies and shifts away from disadvantages incurred from the school food system by highlighting the politics that produce inequality and the strategies needed to move the system toward food justice (Gottlieb & Joshi, 2010). The present study encourages a reconceptualization of the issues and vulnerabilities within a school food system and their associated solutions, such that new strategies may be discovered (Levkoe, 2011).

Perhaps one of the most important insights provided by a food systems approach is the interconnectedness of society and the environment (Morgan & Sonnino, 2013). As such, reconceptualizing food as a system emphasizes that solutions addressing food-related issues and vulnerabilities must target both societal and ecological harms. Humans are intricately connected to the world's nonhuman entities, and it is critical to assess food as a process that both is dependent on, and affects, "earth others" (Gibson-Graham & Miller, 2015). Over the past 50 years the food system has undergone widespread industrialization, which has caused extensive degradation to the environmental resources upon which it depends (Ericksen et al., 2012). Unsustainable production methods of industrial agriculture are responsible for decreasing biodiversity, increasing erosion from soil runoff, depleting key soil nutrients, and polluting the soil, water, and air from chemical fertilizers and mechanized farming techniques. Consequently, increasing food production levels has come at the expense of environmental resources (Ericksen et al., 2012). In other words, humans are destroying the "earth others" upon which they rely; current production rates and methods cannot be sustained long-term for the school food system.

A food systems approach for a school food system illustrates the ways in which dominant agricultural practices exacerbate current and future food-related social injustices. If these production methods are maintained, the depletion of resources needed for agriculture will cause food production rates to drop, causing the availability of impacted food items to decrease and their prices to rise (Ericksen et al., 2012). Many low- and moderate-income populations cannot afford rising food prices, and inequity within the food system will be further exacerbated (Ericksen et al., 2012). This example demonstrates the interconnected nature of social and environmental components within the food system, which together necessitate a shift from destructive industrial to pro-environmental agricultural practices. In other words, any injustice, exploitation, or other harm instilled through the food system affects the entirety of the social and ecological community. Similarly, efforts to transition the food system toward equity—or justice—

will improve conditions for both humans and nonhumans.

Furthermore, an examination of food as a system reveals that the aforementioned social and ecological injustices perpetuated by current industrial food production methods exacerbate distributional injustices. The tenets of distributional justice hold that lack of access, control, and the ability to choose whether and how to participate in the food system are additional sources of social injustice, and are particularly visible in urban low- and moderate-income communities (Fraser, 1997). Specifically, many vulnerable communities lack access to affordable, nutritious, and culturally appropriate food; thus, they often face food insecurity, defined as "a situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life" (Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, & World Food Programme, 2015). Yet a food systems approach reveals that simply increasing access to healthy, affordable food cannot provide a solution to food insecurity; instead, the underlying systemic causes must be addressed (Morgan & Sonnino, 2013). Simply striving to achieve food security would not target all injustices throughout the food system, but rather would focus solely on improving physical, social, and economic access to nutritious food for people. Recognizing both the benefits and deficiencies of striving for food security, some scholars have drawn attention to food *equity* to ensure that "food systems are democratically controlled and community stakeholders can determine the policies that influence their food system," and that "all community members are able to grow, procure, barter, trade, sell, dispose, and understand the sources of food in a manner that prioritizes culture, equitable access to land, fair and equitable prices and wages, human health, and ecological sustainability" (Food Equity Ideas Lab Workshop Steering Committee, 2017, pp. 3–4). Food *justice* for public school students and their families requires acting in and on the current food system; bringing into focus equity and disparities from the perspectives of the most vulnerable; and linking to a broader

social justice movement (Gottlieb & Joshi, 2010). Achieving food equity and justice requires challenging the current power structures of the food system that emphasize profit and normalize injustice, and advocating for the implementation of a participatory system of governance that values community and well-being.

School Food: A System Nested in a Community Food System

School food systems are nested within larger community food systems and are composed of integrated and interdependent human and nonhuman components. Therefore, in order to comprehensively improve school food, efforts must account for both the social and the ecological as interrelated parts of communities (Gilbert, 2018b). For this study, we focus on the school food system with its own underlying causal factors of socio-environmental inequity toward producing school food initiatives that tackle the needs and desires of students (Block, Chávez, Allen, & Ramirez, 2012). Adapting Healy and Barry's (2017) suggestions, this requires a focus on politics and the political economy of feeding children. Feeding children at school involves politics or the engagement of communities and corporations with the state over struggles for finite symbolic and material resources (Robert & Weaver-Hightower, 2011). Extensive studies of United States' school food have explored beneath the surface of decision-making regarding procurement (Morgan & Sonnino, 2008), provisioning (Poppendieck, 2010), the nature of the program as an antipoverty, welfare program (Levine, 2010), and the balancing act between competing stakeholders (Ruis, 2017) to reveal a struggle for power over school food. Often times, power struggles have unintended consequences for the health and educational well-being of the children who consume school food and exclude them from potential improvement.

Globally, the health and educational implications of feeding school-aged children are well documented (Bundy, Burbano, Grosh, Gelli, Jukes, & Drake 2009; Fought, Williams, Willows, Asbridge, & Veugeler, 2017; World Food Program, 2017). Healthy food supports children's development emotionally and physically,

encourages attendance, and fosters their ability to learn while at school (e.g., Cooper, Bandelow, & Nevill, 2011; Florence, Asbridge, & Veugelers, 2008; Meyers, Sampson, Weitzman, Rogers, & Kayne, 1989; Murphy, Pagano, Nachmani, Sperling, Kane, & Kleinman, 1998; Wesnes, Pincock, Richardson, Helm, & Hails, 2003). However, school food systems affect more than individual "human capital." Like Poppendieck (2010), we argue that the current state of U.S. school food policy leaves the most vulnerable even more so. School food programs are avenues for justice for children and have the potential to affect communities more broadly through social, political, economic, and ecological transformations. The current study utilizes a just transition framework to illustrate how the school food system can be transformed in order to bring about socio-ecological justice at both the individual and systemic levels.

Research Design and Methods

This is a case study that qualitatively examines the BPS food system for five characteristics of a just transition. Case study research aims to "define research topics broadly and not narrowly, cover contextual or complex multivariate conditions and not just isolated variables, and rely on multiple and not singular sources of evidence" (Yin, 2003, p. xi). Our examination of a public school food system must account for the historical and contemporary manifestations of, in this case, Buffalo's economic, social, and environmental conditions, all of which are embedded, or come to roost, within public schools. Thus, we first frame our case within an overview of the city of Buffalo in which the BPS food system is situated to illuminate the complex, multivariate conditions that affect the school food system, creating constraints to and opportunities for a just transition. The case study is explanatory in nature, with the findings revealing why the programs reflect (or do not) characteristics of a just transition and how the programs move toward just transitions (or do not).

We collected documents and conducted content analysis (Kohlbacher, 2006) as a means of interpreting qualitatively the school food system's policies and programs as a "specific, complex, functioning thing" (Stake, 1995, p. 2). Specifically,

we focus our analysis on five programs identified on publicly accessible websites and through the authors' participation in the school food system: the National School Lunch and the School Breakfast programs, the Backpack Program, the School Pantry Program, the BPS Farm to School (F2S) initiative, and Buffalo School Gardens. While there are numerous food-related programs associated with BPS, we selected these five because they are formal programs that directly provide food to students at schools. There are other food transactions in schools and classrooms; for example, many elementary teachers provide food to students. However, we limit the case study to formal programs sanctioned by the district.

Data include primary and secondary documents relevant to the five programs: policy texts and secondary literature or interpretations of the policies such as program descriptions, procedures, public promotional material, and videos. In fall 2017, we downloaded, or saved via screenshots, documents from the BPS website, the Buffalo School Garden website, and Food Bank of Western New York (WNY) website.¹ In some instances this required following links to federal government pages or to program sponsors' materials. Each program is a piece of the school food system *representing* to the general public (Levkoe & Wakefield, 2011) how the school food system works, how decisions are made, who is included or involved, and how the system is funded and in turn funds food producers.

Our case study draws upon evidence from content analysis of documents (Kohlbacher, 2006; Krippendorff, 2013; Reinhartz, 1991; Reinhartz & Davidman, 1992) and, at times on each of the author's practical experiences as participatory-action researchers² within the BPS community (Akom, 2011). Our first step in analyzing the material downloaded was to develop a descriptive narrative that responds to a simple—though not simplistic—critical inquiry: *who feeds whom what, how, when, and for what purpose?* (Robert & Weaver-Hightower, 2011). We also read the data for the

five just transition strategies, formulated into questions: *Does the program democratize engagement? Decentralize decision-making? Diversify economic activity? Decrease consumption? Redistribute resources and power?*

The findings (the descriptive narrative and Table 1) and their discussion are woven together in the pages that follow. The overarching research question, restated from the beginning of the paper is: How does one public school food system engage in and build toward a just transition? The researchers read the data independently for explicit and implicit reference to each of the five characteristics. We then compared our coding to assess overall inter-rater reliability.

We verified our program and document selection and the content analysis through informal communication with members of the BPS food system. This was not in an effort to expand the scope of inquiry or data collection for this article; rather, it was to clarify that the programs analyzed in the following pages included as many of the formal food programs within the BPS food system as possible during the 2017–2018 school year and to verify the analysis as reflecting the nature of each program.

Buffalo Public Schools: A Case Study of Just Transitions

Buffalo Past and Present

The BPS food system is nested within the historical and contemporary political, social, economic, and ecological systems of the city. Deindustrialization and harsh winters have long given Buffalo, New York, a bleak reputation for snow and rust. Often referred to as “The City of No Illusions,” Buffalo has one of the U.S.'s highest concentrations of urban poverty, intense racial segregation, obesity alongside hunger, lack of access to affordable, healthy food, Superfund-level contamination sites, and diminishing rural landscapes (primarily farmland) surrounding the city due to urban sprawl (Connelly, 2008; Krolkowski & Magavern, 2017; Magavern, 2016; Raja et al., 2014). Additionally,

¹ BPS Food Services Department website: <http://www.schoolnutritionandfitness.com/index.php?sid=0603142256068325>; Buffalo School Garden website: <http://www.buffaloschoolgardens.com/>; Food Bank of WNY website: <https://www.foodbankwny.org/>

² See the Disclosures section on the first page of this article.

Buffalo is a refugee resettlement city for a multitude of communities fleeing “. . . situations of strife such as war, persecution or natural disaster in their home countries” (Partnership for the Public Good, 2018a, p. 1). The top five countries represented by the newest Buffalonians are Burma, Bhutan, Somalia, Iraq, and the Democratic Republic of Congo (Partnership for the Public Good, 2018a).

Youth struggle in the city. The youth poverty rate in Buffalo is the third highest among large cities nationally, surpassed only by Detroit and Cleveland. A majority (53.9%) of children and youth under 18 live below the poverty line (Partnership for the Public Good, 2018b). Challenges are not consistent across all races and ethnicities. Buffalo is the sixth most segregated city in the United States: 9% of Buffalo’s white residents live below the poverty line compared to 37% of both black and Hispanic residents. The median income for whites is US\$55,000, but is only US\$25,000 for blacks and US\$27,000 for Hispanics (Magavern, 2016).

Finally, the placement of supermarkets as well as other healthy food outlets follow the city’s segregation patterns (Raja, Ma, & Yadav, 2008). In racial- and ethnic-minority neighborhoods, corner stores and fast-food restaurants are the main sources of food, and access to fresh and healthy food is dependent upon motorized transportation. Most residents cannot afford a car and must instead rely on a shrinking and unreliable public transportation system (Krolikowski & Magavern, 2017). Public transit serves more to deter, rather than assist, residents from traveling to supermarkets. Lack of access to nearby healthy food outlets or to dependable transit is a key contributor to the high rates of food insecurity in many neighborhoods. In addition, chronic diseases are prevalent; one in five children is obese (Erie County Department of Health, 2017). The public school food system is in a position to confront the health and well-being of the city’s children.

Alongside these challenges, a renaissance is occurring in Buffalo. Renewed interest by developers in accumulating urban land and the capital and power of economic development agencies are reshaping the city. The Buffalo Billion, a statewide

program launched by Governor Andrew Cuomo, is planned to pump capital into the urban environment to address a multigenerational stagnant economy (Buffalo Billion, n.d.). Change is visible: new buildings, formerly abandoned buildings remodeled and inhabited, construction cranes, and more people in the downtown area and adjacent neighborhoods. However, changes are not occurring evenly throughout the city. Some neighborhoods are experiencing high rates of transformation, while others continue to see divestment or gentrification (Krolikowski & Magavern, 2017). Such disparate patterns are evident in the local food system: the number of community supported agriculture (CSA) operations, farmers markets, restaurants, and outlets such as locally owned co-operatives and grocery stores selling organic products is growing in some neighborhoods but leaving out others.

Buffalo is at a historic moment. Its renaissance can move toward or away from a just transition that emphasizes a regenerative economy based on cooperation, democratic participation in decision-making, and ecological and social well-being. It is against this backdrop we examine the role of the BPS district in cultivating a just transition.

Buffalo Public School Food System: Emergence of a Just Transition

BPS enrolls about 34,000 students. The district has 37 elementary schools, eight middle schools, and 27 high schools. BPS operates a “school choice” system in which students are bussed to every corner of the city. A majority of Buffalo’s students eat two free meals a day at school; of the 34,000 students enrolled during the 2017–2018 school year, 24,000 ate breakfast and 27,000 ate lunch. School meals serve as a significant food source for BPS students (Food Bank of WNY, n.d.), which motivates stakeholders both within and outside of BPS to aim for the provision of healthy and nutritious school food. However, due to budgetary restraints, lack of staff training, and limitations of available cooking facilities, most food served to students is preprocessed and reheated (Gilbert, 2018b). As the amount and quality of food consumed directly affects students’ academic performance (Bundy et al., 2009; Faught, Williams,

Willows, Asbridge, & Veugelers, 2017), improvements in school food have the potential to minimize disadvantages. Compared to students from economically stable families, students from low- and moderate-income families often rely on school food for both breakfast and lunch, and, in the most severe cases, take food home for dinner (Gilbert, 2018b). Due to the high percentage of students living in poverty, the quality of school food served by BPS remains not only a nutritional concern but a social justice concern as well. School food programs have taken steps to improve the quality of food served at BPS, but the potential for improvement is constrained by federal budgeting and guidelines for school food (Nutrition Standards, 2012).

BPS food and nutrition committee

A key element of just transitions is the emergence of new governance arrangements. In BPS, a new arrangement has emerged in the form of the BPS Food and Nutrition Committee. This is a partnership of stakeholders, individuals, and organizations from both within BPS and throughout the city working to improve school food. It is led by two individuals: a parent and the director of child nutrition services at BPS.

Much of their work aligns closely with the social values of a just transition. The committee aims to address the social injustices caused by the quality of BPS's school food. For example, this committee played a leading role in enhancing the decentralization and redistribution of resources and power throughout the school food system with the implementation of the F2S initiative. They continue to encourage expanded healthy food choices for students in the district's vending machines. There is also a strong emphasis on youth involvement to ensure that students' concerns are addressed.

As with most initiatives to improve BPS's school food system, the committee has experienced varying levels of success with initiatives. While they have faced numerous barriers, including funding, policy, and participation constraints, one of the primary reasons that they have been unable to contribute to a comprehensive improvement of school food is that they do not address the ecological injustices within the school food system. Yet,

due to their emphasis on reducing preprocessed foods and increasing the role of the F2S program at BPS, the committee has the potential to play a significant role in mitigating the negative environmental impacts of school food, further contributing to a just transition at BPS.

Multiple school-based food initiatives

The BPS Food Services Department implements or coordinates with the following programs: the National School Lunch and the School Breakfast programs, the Backpack Program, the School Pantry Program, the BPS F2S initiative, and Buffalo School Gardens. These programs exhibit some, but not all, elements of a just transition as illustrated in Table 1. Our assignment of "yes" and/or "no" reflect both whether the program reflects the strategy already or whether there is a potential movement toward meeting the strategy identified in the data. Below the table, we provide a narrative of each program.

Traditional programs: National School Breakfast and Lunch Programs

Due to the high level of poverty in the city, all BPS students can eat free school breakfasts and lunches through the Community Eligibility Provision of the federal school meal program. There were 34,000 BPS students in the 2017–2018 school year, and daily the schools provide 24,000 children with breakfast; 27,000 children with lunch; and, 7,000 children with a cold or hot supper. The district participates in the National School Lunch and School Breakfast programs, which cover meal costs in the highest-poverty schools and districts in the nation (Nutrition Standards, 2012). The School Breakfast and National School Lunch programs are federally funded but locally administered and represent a significant input of food to the school food system. Thus it is a quasilocal program, dependent on federal resources and guidelines that govern purchasing and serving of food. Importantly, meals are only eligible for reimbursement by this program if they adhere to USDA nutritional regulations, which limits schools' and students' choice in food consumption (Nutrition Standards, 2012).

The School Breakfast and National School

Table 1. Buffalo Public School Food System

Program Name	Mission or Program Goal	Democratize?	Decentralize?	Diversify economic activity?	Decrease consumption?	(Re)distribute resources and power?
National School Lunch and School Breakfast Programs ^{a b}	"A federally assisted meal program operating in public and nonprofit private schools and residential child care institutions. It provides nutritionally balanced, low-cost or free lunches to children each school day. The program was established under the National School Lunch Act, signed by President Harry Truman in 1946."	No	No	Yes and No	Yes and No	No
BackPack Program ^c	"Many children who are eligible to receive free and/or reduced price school meals may be left without an adequate supply of food on the weekends and holiday breaks. The Food Bank's BackPack Program assists these students by providing easily prepared, nutritious foods in take-home bags each Friday throughout the school year."	No	Yes	Yes and No	Yes and No	Yes
School Pantry Program ^d	"The School Pantry Program provides high school students access to nutritious food that can be share[d] with others in the household. Participating schools host a food pantry within the school building, and discretely allow students to 'shop' the pantry for foods that can be shared [with] younger siblings."	Yes and No	Yes and No	Yes and No	Yes and No	Yes
Farm to School ^e	"Brings healthy, local, and fresh food to schools in Buffalo. The initiative connects schools, farms, and community partners to improve student nutrition through agriculture, health, and nutrition education; and to strengthen our economy by supporting local farmers and food producers."	Yes	Yes	Yes	Yes	Yes
Buffalo School Gardens ^f	"Support the development of sustainable school gardens that facilitate academic growth, community building, and healthy lifestyles."	Yes	Yes	Yes	Yes	Yes

^a <https://www.fns.usda.gov/nslp/national-school-lunch-program-nslp>^b <https://www.fns.usda.gov/sbp/school-breakfast-program-sbp>^c <https://www.foodbankwny.org/about-us/how-the-food-bank-works/programs/food-for-kids/>^d <https://www.foodbankwny.org/about-us/how-the-food-bank-works/programs/food-for-kids/>^e <http://buffalofarmtoschool.org/>^f <http://www.buffaloschoolgardens.com/>

Lunch programs have a complicated relationship with the community food system and with the just transition framework. The fact that it is a quasilocal program, dependent on federal guidelines for purchasing funds, complicates the democratizing and decentralizing that the program could accomplish. On the one hand, the program provides an aspect of equity through education by providing free food for all students. On the other hand, procurement and menu selections are, for the most part, centralized activities, which limits the democratic engagement of students and staff in school food-related decision-making. BPS menus mention by brand certain cereals and breakfast treats, such as Cocoa Puffs™ or French Toast Cunchmania™. Naming brands illustrates the stability of the current commodity chain represented by the centralized National School Lunch and School Breakfast programs' purchasing, which demonstrates a lack of opportunities for democratic engagement.

Further, in the case of Buffalo, with a large population of refugee students, centralized decision-making also reduces the possibilities for providing culturally relevant meals. For example, the student bodies in many BPS schools are predominantly refugee populations who prefer rice rather than pasta, or who are vegetarian but do not eat peanut butter (the standard vegetarian option). BPS's diverse student population would benefit immensely if individual schools were able to create their own menus rather than adhere to the district-wide menu. Therefore, while acknowledging the rationale for the centralized nutritional guidelines and menu options, implementing the same menu districtwide heavily constrains opportunities for decentralized decision-making.

The potential for disrupting the market economic transactions of the school food system is mixed. The federal funds and guidelines for purchasing are constraining. For example, BPS receives almost US\$1 million of free food per year from federal school food reimbursement programs (Gilbert, 2018a). As the district works to maximize the food it is able to procure from these programs, it is limited in its ability to incorporate geographic preference (Gilbert, 2018b). As such, it can be difficult for school districts to purchase more than a small portion of their food from fresh and local

sources (Gilbert, 2018b). The National School Lunch and School Breakfast programs provide few allowances to decrease the purchase and consumption of preprocessed foods and the negative social and ecological impacts resulting from their consumption. Based on our analysis, the potential of the National School Lunch and School Breakfast programs to contribute to a just transition is quite constrained.

Evolving programs: School Backpack and Pantry Programs
Take-home food is provided to students for weekends and holidays through the Food Bank of Western New York's (WNY) Backpack and School Pantry programs. The aim of these programs is to provide food for students deemed to be food insecure, because "many children who rely on free and/or reduced-price school meals may be left without an adequate supply of food on the weekends or holidays when school is closed" (Food Bank of WNY, n.d., "BackPack Program," para. 1). The Backpack program is designed primarily for elementary school students and is a prepacked bag of food sufficient for breakfast and lunch or dinner, placed in students' backpacks to take home. Currently, the Backpack Program provides meals to 1,540 students in 22 BPS elementary schools (E. Burgher, personal communication, October 3, 2017). On the other hand, a recent addition to the food bank's efforts to support food-insecure high school students is the School Pantry Program. As of October 2017, it had been implemented at two BPS high schools, but an expansion was planned during the 2017–2018 year (Food Bank of WNY, n.d.; E. Burgher, personal communication, October 3, 2017). The main difference between the School Pantry Program and the Backpack Program is that the pantry is intended for older students who are able to "shop" in the pantry for food to bring home for themselves and their siblings. The majority of food given to students, while following guidelines recommended by food bank nutritionists, is preprocessed. Students rarely are provided with or have access to healthier, fresh food. Most food provided through these programs is donated by large retailers, such as Wal-Mart, rather than sourced from local producers.

While the Backpack and School Pantry

programs try to remedy many of the social injustices stemming from an inequitable food system, they still lack characteristics of a just transition. Specifically, students' choices of food that they receive, particularly elementary students in the Backpack Program, are limited. These bags are prepacked and placed in the students' backpacks to take home, constraining the potential for culturally relevant food. The food options inside the bags are dependent on what has been donated to the food bank. Selections available in the school pantries are also dependent on donations. There is a slightly wider and more diverse variety of food staples available, offering students some culturally relevant choices. The limited choices are a small step toward democratization, which could be more fully actualized with choice across grade levels and through deliberative processes. Still, since donations are from big-box retailers, power is neither decentralized nor redistributed.

There is potential for a just transition in these programs. The Food Bank of WNY is trying to devise ways to source more food, particularly produce, from local farmers. While the funds paying for this produce would still be donated by large retailers, such an initiative would enable the food bank to help improve the quality of food provided to students and redistribute food system purchasing power to support local farmers. This initiative would reflect several elements of a just transition, including decentralizing, democratizing, diversifying economic activity, and redistributing resources. In addition, sourcing fresh produce from local farmers would decrease consumption of preprocessed food, a clear improvement for the most vulnerable students. This would also reduce the amount of packaging used and the distance that food must travel, reducing the negative ecological impacts of the food given to students.

Unfortunately, other than the indirect ecological benefits of reducing preprocessed foods, the food bank has no further environmental activities planned for the Backpack and School Pantry programs, which greatly inhibits a just transition. Without comprehensive efforts, these programs serve as stopgap measures that have the ability to reach vulnerable populations at particular moments, but lack the ability to address root

causes of social and environmental injustices related to food insecurity.

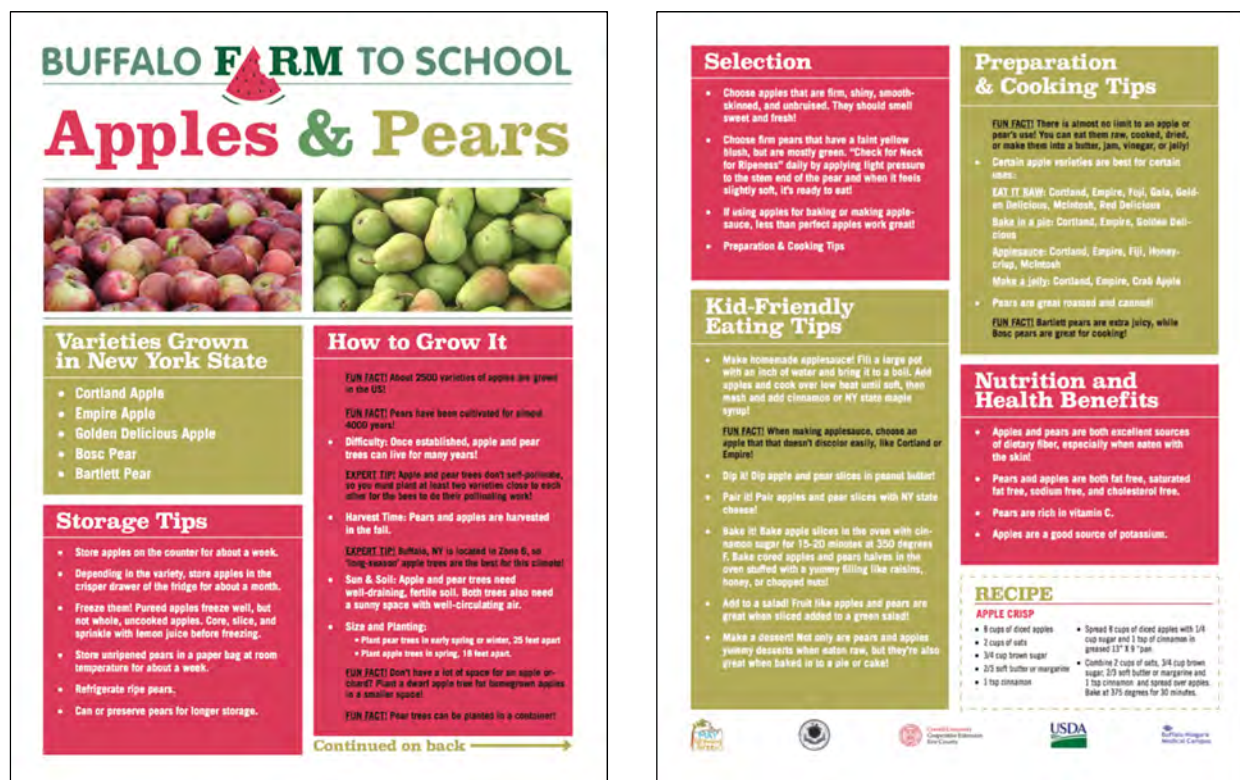
New programs: Farm to School

Beginning in 2015, the Farm to School Program (F2S) was piloted in 12 schools. In the 2017–2018 school year, F2S was rolled out to the rest of the district's schools. The F2S program aims to “[support] regional farmers by increasing the procurement of local farm goods, provid[e] BPS students with access to nutritious locally sourced farm goods and educat[e] the school community about F2S” (BPS Farm to School Coordinating Committee, 2015, p. 3). The F2S program contributes to the local economy and brings fresh fruits and vegetables into BPS. However, this new program is still small in the overall budget, and few menu items contain local products. There is a redistribution of only a small portion of the power and resources across the scaled federal-to-local school food systems.

In order to achieve F2S goals, program coordinators created the Harvest of the Month, which promotes fresh, seasonal produce every month. The Harvest of the Month food is served as a meal component four times per month and is featured on posters and promoted via flyers that explain how the food is grown and what it can be used for, including a simple recipe or two for students and parents to make at home (Figure 1). The commencement of the F2S program initiated an immediate increase in the amount of local produce purchased and served by BPS. In addition, contrary to initial concerns, no significant spending increases have resulted from this shift in procurement. The F2S program has substantial potential to continue toward a just transition.

An important factor influencing the success of the BPS F2S program is student acceptance of new, healthier menu items. As many students have not previously been exposed to the fresh fruits and vegetables introduced by F2S, program coordinators implemented Taste Test Thursdays. Students are invited to sample and vote to add, or to not add, potential recipes to school menus. Voting allows students not only to have a voice in determining new recipes, but also encourages them to try new foods that they might not

Figure 1. Sample Flyer from Buffalo's Farm to School Program



Source: Buffalo Farm to School website: <http://buffalofarmtoschool.org/>

otherwise eat. Due to its use of democratic decision-making processes, Taste Test Thursdays is a program within a program that represents a just transition. This initiative cements the value of distributed, democratic participation in the decision-making process in efforts to improve school food. Through the voting process, Taste Test Thursdays contribute to the decentralization and redistribution of power by allowing those outside of the Food Services Department to contribute to decisions about what is purchased and served. School food service staff also get to participate in this process by administering the voting, which broadens participation in school food decisions, engaging students with district administrators.

The F2S program has overcome numerous barriers and has experienced significant successes thus far. It has generated increased access to fresh, healthy food for BPS students, opened up a new and stable market to local farmers, contributed to a decrease in the amount of preprocessed food that

is served to students, and increased democratic participation in decision-making.

Transitioning toward justice: Buffalo School Gardens
The goals of the Buffalo School Gardens is “to support the development of sustainable school gardens that facilitate academic growth, community building, and healthy lifestyles” (Buffalo School Gardens, n.d., para. 1). As Robert, Stapleton, and Wilder (2017) write, “Despite limited resources and a constrained policy environment as well as the newness of outside, interdisciplinary, experiential learning to city schools, enthusiasm for school gardens continues to spread throughout the district” (p. 1). As of the 2017–2018 academic year, there are 26 elementary, middle, and high schools in the BPS system that have official gardens. All were initiated through the grassroots efforts of parents, students, teachers, and community members.

Buffalo School Gardens is a bit of an outlier within the school food system for several reasons.

The school gardens are a grassroots movement bringing together parents, students, teachers, and administrators (both school-based and district-based). Underlying the stated goal is a movement to incorporate hands-on, place-based, and inquiry-driven experiences with the food system. Students with their teachers, parents, and many other school and community members grow plants, engage in indoor and outdoor learning, and learn and actively participate in the urban environment in which they live. In addition, the gardens are open to the public to foster community-school relationships. The creation and maintenance of school gardens are not only instigated, but controlled, by the school and community together. Power is decentralized and negotiated through democratic decision-making practices about what is grown, where, how, by whom. Finally, recognizing that produce from the school gardens depends on soil health and other environmental resources, school gardens provide a critical lens through which garden participants learn of the importance and interconnections of social and ecological justice.

As a result of bussing, there is a severe disconnect between the populations of schools and the communities that surround them. In less than five years, however, 26 gardens have been created and are maintained at elementary, middle, and high schools, illustrating that the goals of the initial organizers are shared and represent a watershed movement that brings schools and communities together despite significant differences and disconnects between school food system actors. The Buffalo School Gardens are a strong example of a just transition-centered school food program through equitable and decentralized distributions of resources and power. The creation and maintenance of school gardens embody the active and intentional decentralization and redistribution of power and resources from the hands of a few corporations into those of the community. The gardens undermine the corporate structure of the national and community food system by engaging collectively with the environment and each other to reimagine and learn to develop an alternative, locally and democratically controlled (school) food system.

However, enthusiasm, especially in the initial

stages, does not always translate to continued and sustainable (school and community) involvement. This is the current challenge for Buffalo School Gardens: how to maintain participation in the projects. Many of the gardens are located in areas that are not easily accessible to community residents, which has significantly limited neighborhood engagement. Garden leadership also changes as parents, who are instrumental in the creation and maintenance of school gardens, often cease involvement when their children leave the garden's school, or as teachers and administrators retire or transfer to different schools. While new parents and teachers sometimes take over, this is not always the case; sustainability is a constant concern. Additionally, BPS Community Schools (schools that serve as educational centers connecting families and communities in such a way as to foster student learning, parent engagement, and healthier students and communities) have recently been mandated to have school gardens. This presents a curious challenge to a grassroots movement that grew rhizomatically from school to school. Specifically, this new formal program of the school district poses very real challenges to the key elements of democratization, decentralization, and distributed power, which were the spirit of the movement (Robert Stapleton, & Wilder, 2017). Still, the gardens embody many of the just transition strategies by incorporating ecological and agricultural education, cultivating community, increasing the students' and communities' access to and choices of fresh food, and offering an example of how to disrupt dependence on preprocessed foods.

Conclusions

The study presented here reflects a snapshot of a dynamic system. It is particularly important to point out that we wrote this manuscript at the beginning of a school year with a new U.S. president in the Oval Office. The previous administration had prioritized health and healthy eating, especially childhood nutrition, by promoting scientifically grounded improvements in school food and even encouragement of school gardens (National School Lunch Program and School Breakfast Program, 2010). In the first months of

the new administration, it appears that those are no longer priorities (Child Nutrition Program, 2017). The halt to the transition toward healthier school food has not affected the local food system yet because school food procurement is arranged one year in advance. Further research would need to take into account a longer policy timeline to capture the coming transition within the national policy context.

This case study explored how a public school food system engages in and builds toward incorporating elements of a just transition. We used content analysis to examine five programs in the BPS's food system for five just transition strategies during the 2017–2018 school year. We situated the school food system within the larger community food system making strides toward a just food transition. The federal food system in which both the school and community system are embedded will most certainly affect efforts to implement a just transition. This aspect makes the study all the more important because it serves as a marker of a just transition in a process that may be affected by public policy decisions far beyond the local level.

All five programs possess strategies of a just transition. However, there are significant ways to build on the strides they have already made. One particularly urgent missing component is the need to acknowledge the intimate link—the symbiosis even—of human and ecological justice. While many of the programs have begun to address social injustices within the school food system, ecological health has been overlooked. As a food system is inherently social *and* ecological, both components need to be addressed if comprehensive reform and systemic change are to be realized. Thus, school districts and local governments more broadly can improve ecological justice by creating policies that consider environmental sustainability as an integral part of a food system. F2S programs are well poised to act as a starting point for this transition.

Schools also can serve as places of intervention. Not only does school food purchasing possess power in the current food system and thus retain the ability to shift how food is produced, but schools can introduce the concept to students that a just transition in the food system is possible. In addition, schools can offer an educational platform

instructing students in how food transformations occur, why they are important, and how food demonstrates the complex interdependence of social and ecological systems. As the future is reliant on both ecological and social sustainability, it is essential that younger generations be part of any transition process. Finally, implementing a just transition in school food will contribute to decreasing food insecurity among students, thus achieving a vital step toward a just transition.

Several other significant changes would be necessary to enact more just social *and* ecological transitions in school food systems. First, although we do not discuss curriculum in this paper, integrating learning about the food system is an important aspect of creating and sustaining a just food system. The curriculum is centralized and is enforced by states and local district administrations. This enforcement occurs via state testing administered throughout elementary and secondary grades. We do not include curriculum in the data because it is not local *per se*. Future studies can and should examine curriculum for and as opportunities to educate for a just transition (see, for example, Yamashita & Robinson, 2016). We suggest that student learning about and engaging in school food systems serve as important transformational sites within community food systems, where young people learn about food production (and its links to human and ecological health and sustainability), food (in)security, and food connections.

As a second point, there are programs focused on food systems that are not administered or funded by the public school system that we suggest should be integrated into student learning and into school food system policies and regional planning. Recognizing the uneven distribution of food access throughout the city, many organizations run programs to bring healthy, culturally appropriate food to those who need it most. While such initiatives target numerous facets of the food system, perhaps the most active have been those addressing food justice among students, both by employing youth on urban farms and by engaging youth in policy activism and campaign organizing. The study included here does not include these programs or organizations. However, it is important to

acknowledge the impact they have on the system (Raja, Picard, Baek, & Delgado, 2014).

While there are just transition elements in process in these five programs, more transition can and should occur. For example, in addition to promoting fresh food from local farmers, districts could encourage procurement preferences based on pro-environmental production methods, and decreased consumption of the packaging materials needed for preprocessed foods. In doing so, not only would districts encourage the decentralization and redistribution of power back into local hands, but they also would reduce the negative ecological consequences of food production. Addressing both social and ecological issues regarding food production and consumption would bring districts much closer to successfully implementing a just transition through school food. There are strong examples from across the country of school districts that, despite being embedded in the federal school food budgeting and procurement chains, have made significant strides toward a just transition. Other school districts can turn to these for ideas and encouragement—from Oakland, California, to Burlington, Vermont (see Hamerschlag & Kraus-Polk, 2017, and Davis, Hudson, & the Burlington School Food Project, 2011, respectively).

We draw attention to the promise of a just transition framework to provide a structure for considering the ways in which complex and dynamic systems interact and can be modified toward justice-oriented purposes. This work is meaningful to us from the standpoint of engaging as scholar-activists. Our analysis of the local school food system provides us with an opportunity to engage meaningfully within the food system as we can put forward focused and structured goals in conversation and collaboration with local

stakeholders. Others might utilize the just transition framework and analysis similarly, and we suggest that the framework's potential can be both broadened—to include the ways in which multiple systems interact (e.g., food, energy, and transportation systems), or hyperfocused—to selectively explore one aspect of a transition (e.g., the just nature of interactions within decentralizing decision-making practices).

There is a need for local policymakers also to be invested and held accountable for the just transition of the food system. Instances of food-related social injustice are not unique to food at school, nor can inequities caused by school food be addressed without connecting them to the larger food system of which they are a part. Injustices within school food systems are not limited to low-income school districts. Just transitions have potential even in upper-income districts to meaningfully and sustainably affect lives, ecologies, and economies. School food is only a component within a much larger, soil-to-soil system that enables and manages the processes of production, distribution, consumption, and disposal of food, which are driven by environmental resources, technologies, cultural norms, and governance structures, policies, and laws. School food both affects and is affected by all elements of the food system. Therefore, the complexity encompassed within efforts to comprehensively improve school food demands that all actors within and facets of a community food system undergo a just transition.



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Municipal policy enabling regional food systems in British Columbia, Canada: Assessing focal areas and gaps

Special JAFSCD Issue
Local Government in Food Systems Work



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Abstract

Local-regional food systems are increasingly the focus of community activism and local government planning in British Columbia (BC), Canada. At present, there is no provincial or federal government food system strategy to inform or guide local government policy efforts. To ascertain focal points of local government food system planning, we assessed current municipal Official Community Plans (OCPs) in BC and suggest areas for future policy development to enable regional food systems in the province. In BC, an OCP is the most comprehensive, high-level municipal planning document used to guide future management and land use decisions. We reviewed OCPs from 61

municipalities (37% of BC's municipalities) and categorized the food systems policy within according to a set of 13 topics and 53 subtopics. We report policy topic or subtopic frequency, expressed as a percentage of municipalities ($n=49$). We also developed and applied a framework to identify policy gaps for enabling regional food systems. Policy addressing food access for residents as well as policy supporting urban agriculture were identified as the most prevalent food system policy foci in BC. Recognition of and support for Indigenous foodways, however, were scarcely addressed by existing food access policies. We identified gaps in regional food system policy regarding postproduction capacity for regional markets, waste management, and environmental stewardship. We offer that fostering regional systems requires coordinated policy efforts between jurisdictions and suggest that such coordination is particularly important and needed between urban and rural municipalities, which represent primary food-consuming and food-producing areas, respectively. This coordination will require

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municipalities to expand food system policy efforts beyond their current urban agriculture focus, which has been criticized as having a limited capacity to address a number of pressing food system concerns. The framework we developed and applied can serve as a tool in other jurisdictions to assess current local government regional food system policy foci and identify areas for future policy development to enable regional food systems.

Keywords

Official Community Plans; Food System Policy; Food Planning; Regional Food Systems; Policy Categorization; Local Government; Policy Gaps; British Columbia; Canada

Introduction

Our highly globalized industrial food system is criticized for delivering detrimental environmental, economic, and social outcomes while largely externalizing the associated costs of these outcomes. These include, but are not limited to, the economic and social marginalization of farming, the loss of farmers, the consolidation of farms, the hollowing out of rural communities, corporate hegemony, the loss of habitat and biodiversity, water and air pollution, soil degradation, increased occurrence of diet-related diseases, and unjust working conditions for farmworkers (Clapp, 2012; International Panel of Experts on Sustainable Food Systems [IPES Food], 2017; Nestle, 2002; Patel, 2008). Within this food system, 11% of the global population is undernourished, while an equal proportion is obese (Food and Agriculture Organization of the United Nations [FAO], 2017; World Health Organization [WHO], 2017). These externalized costs are often obfuscated by long supply chains that disconnect food system actors from one another (Clapp, 2012). Simultaneously, the majority of wealth generated from this food system accrues to a small number of largely transnational corporations, distant physically, economically, and socially from the regions and people most affected by food system externalities (Clapp, 2012; IPES, 2017). The localization or regionalization of food systems is offered by many as a remedy, in whole or part, for these undesirable and unnecessary outcomes (Cleveland, Müller, Tranovich, Mazaroli & Hinson,

2014; Harris, Nixon, Newman, & Mullinix, 2016; Mullinix et al., 2016).

Conversely, food system localization has been criticized for oversimplifying the relationship between scale and food system outcomes. Born and Purcell (2006) describe this as the “local trap” and caution against directly relating the scale of food consumption to desirable outcomes, such as social justice or environmental stewardship. Others, however, suggest that a place-based food system, which operates within the constraints and per the demands of the region in which it functions, is better positioned to remedy social, economic, and environmental concerns (Klassen & Wittman, 2017; Mullinix et al., 2016). Per the latter perspective, local governments, food sector actors, and community and social organizations are increasingly working to advance local-regional food systems. However, food systems planning has been largely excluded from local government planning efforts throughout the 20th century (APA, 2007; Morgan, 2009; Pothukuchi & Kaufman, 2000), and municipal level food system planning in BC is still in nascent stages, as it is elsewhere in North America.

In BC, food and agriculture have traditionally been viewed as the purview of the provincial/national government. However, many of the impacts of poor or absent food system planning—inadequate access to food for residents, local pollution, waste management, loss of agricultural land and rural livelihoods—are most acutely felt at the local government level (MacRae & Donahue, 2013). As such, including food systems as a fundamental component of community and regional planning presents a substantial opportunity to improve public health as well as the ecological and economic wellbeing of communities (American Planning Association [APA], 2017; Clark, Freedgood, Irish, Hodgson, & Raja, 2017; Morgan, 2009; Youmans, 2014).

Opportunities for Municipal Food Systems Planning in BC

The potential impact of local government planning on food systems holds true in British Columbia (population 4.6 million). For example, while agricultural land in BC is held within the Agricultural

Land Reserve (ALR), a provincial land use zone restricting the nonfarm use of agricultural land (Agricultural Land Commission [ALC], 2002), individual municipalities have considerable influence over how provincial ALR regulations are implemented and enforced. While provincial guidelines for local government bylaw standards exist for a variety of land use activities, (British Columbia Ministry of Agriculture [BC MoA], 2015a; 2015b), agricultural land use regulations vary among BC municipalities. For example, the Corporation of Delta and the Township of Langley are two municipalities in Metro Vancouver with at least 50% of their land base in the ALR (BC MoA, 2014; Stats Canada, 2011). Delta's zoning bylaw limits the footprint of residential uses (house, driveway, etc.) on farmland to 38,800–53,800 ft² (3,600–5,000 m²) and the floor area of the farmhouse itself to 3,550–5,005 ft² (330–465 m²) depending on the parcel size (Corporation of Delta, 1979). In contrast, the Township of Langley's zoning does not restrict the residential footprint or farmhouse floor area on agricultural land commensurate with urban areas (Township of Langley, 1987).

Regional food systems also represent economic development opportunities for communities. British Columbians spend an estimated CA\$17 billion on food annually (Statistics Canada, 2015; 2016). Most of this expenditure is for imported food and nonlocal food businesses, whereby the vast majority of these dollars leave the community by the end of the business day (Heffernan, 2006). As such, promoting businesses to provide, and residents to purchase and consume, regional foods presents a significant economic opportunity for municipalities. Capturing a greater portion of food expenditures locally can allow capital to change hands several times before leaving the community, multiplying the economic benefits for the region (Heffernan, 2006; Mullinix et al., 2016).

Official Community Plans and Food Systems Planning
In British Columbia, local governments develop OCPs to outline the objectives and policies that will guide planning and land use management decisions. OCPs are most frequently developed by local government planning staff or contracted to

planning consultants with stakeholder input. As comprehensive plans, OCPs stem from the understanding that issues such as urban design, social and economic development, community health, and the environment cannot be addressed in isolation (Hodgson, 2012; Neuner, Kelly, & Raja, 2011). OCPs act on a temporal scale of years to decades, and local government policies can benefit from “greater buy-in and longevity” when they take direction from an OCP (Youmans, 2014, p. 4). OCPs do not obligate or authorize local governments to advance particular initiatives; however, subsequently adopted bylaws must be consistent with the OCP (Government of British Columbia, 2015). In this way, OCPs provide long-term direction for community development and, given the impact of food systems on a myriad of issues intrinsic to community planning, are an appropriate vehicle for food system planning.

Local governments can address food policy in other forms than OCPs (e.g., sustainability strategies, regulatory bylaws, zoning, etc.). However, given their mandate, planning timeframe, and ubiquity across all BC municipalities, OCPs are the most appropriate platform to evaluate how food systems are being incorporated into high-level local government policy across the province. The City of Vancouver is an exception, where numerous Neighbourhood Plans are substituted for a single OCP.

Local government food system planning efforts in BC have increased considerably in recent years (Institute for Sustainable Food Systems [ISFS], 2017). Relatively detailed food system strategies have been developed at the local (City of Vancouver, 2013; Selkirk Planning and Design & Ross, 2014) and regional levels (CRD, 2016; Metro Vancouver, 2011) and a number of municipalities and regions have adopted food charters with guiding food system value statements or goals (City of Richmond, 2016; Cowichan Green Community, 2009; North Shore Table Matters, 2013). OCPs, however, are among the most widely used vehicle to include high-level food system policy within local government (ISFS, 2017). While food systems are gaining the attention of planners in BC, concerns have been raised over a lack of coordination in food system planning (MacRae, 1999; Sussmann

& Feeney, 2015). In BC, like many regions in Canada and abroad, there is little direction from provincial or federal governments to guide food system planning. (Although a national food system policy is currently under development in Canada [Finnigan, 2017].) Subsequently, local governments are embarking on food system planning initiatives without a common vision. Such coordination will be critical for advancing regional food systems, particularly between rural and urban municipalities, which represent the primary food-producing and food-consuming regions, respectively. Furthermore, sharing food system planning strategies across regions has been identified as a priority for advancing sustainable food systems in BC (Sussmann & Feeney, 2015). This study, therefore, is a step toward understanding the current status and priorities of municipal food systems planning in BC, noting where and how plans differ between rural and urban communities, and suggesting a high-level direction for local governments to advance regional food systems.

Previous studies of local government food systems planning in Canada have focused on assessing the capacity and contributions of specific planning tools and agencies in advancing local government food system goals (MacRae & Donahue, 2013), such as Food Policy Councils (Fridman & Lenters, 2013; Schiff, 2007) and Municipal Food Strategies (Fridman & Lenters, 2013; Mansfield & Mendes, 2013). While case studies have assessed the local government food system policy of single municipalities (Mills, 2011), very few have examined the cumulative body of municipal food planning efforts in OCPs to characterize policy priorities and direction in the province (Youmans, 2014), and none have done so by comparing the policy priorities of urban and rural communities. As such, taking stock of the current foci for local government food planning in BC, examining how they differ between urban and rural municipalities, and identifying areas for future policy development is a timely contribution to advancing our understanding of the current direction of food system planning and charting next steps.

Study Objectives

Given the opportunity for OCPs to establish planning directives for future development, the recent increase in attention to food system planning at the local government level in BC, the lack of policy coordination between regions, and the need to better understand food system planning strategies in the province, our study aimed to:

- (1) Identify the current food system policy foci in high-level, long-term municipal policy in BC;
- (2) Assess how these foci support foundational elements of regional food systems;
- (3) Assess if and where policy discrepancies exist between urban and rural communities in terms of policy-level support for foundational elements of regional food system; and
- (4) Identify gaps for future policy development to foster regional food systems.

Methods

Policy Categorization and Evaluation of Foci

To code policy, we identified 13 topic categories reflective of the various dimensions of the food system (e.g., food access, waste management) that are commonly addressed in OCPs. Topic categories were informed by the thematic groupings employed in literature evaluating food system plans (Evans-Cowley, 2011; Hodgson, 2012; Youmans, 2014) as well as emerging areas of importance in food system policy, such as Indigenous foodways (Capital Regional District [CRD], 2016; Food Secure Canada [FSC], 2015). We then generated a list of 53 subtopics under the 13 topic categories. Subtopics provided further detail as to how a policy was addressing a given topic category. For example, the policy topic ‘improve access to food for residents’ was assigned the subtopics “direct marketing,” “access to affordable/ nutritious food,” “access to food retail locations (not direct marketing),” “emergency food sources,” “community kitchens,” and “local procurement.” Appendix A presents the complete categorization system we employed to code

municipal food systems policy. All policies were coded with a minimum of one topic category. Similar to Youmans' (2014) coding system, subtopic categories were assigned in addition to a topic category only if a policy addressed a given topic beyond a general statement of support. If policies directly addressed more than one topic/subtopic, then multiple topic/subtopic categories were assigned accordingly.

To determine policy foci, we assessed the frequency of occurrence for each policy topic, expressed as a percentage of municipalities ($n=49$). Food system policy topics were deemed as widely, moderately, or scarcely represented if they were addressed in more than 50%, between 50% and 11%, and 10% or less of OCPs, respectively. To assess topic representation between urban and rural municipalities, municipalities were divided into two groups according to population density (Statistics Canada, 2011). Rural municipalities were defined as having population densities of less than 1,036 people/mi² (400 people/km²) (Statistics Canada, n.d.). Municipalities with population densities equal to, or exceeding this threshold were characterized as urban.

Policy Review and Rationale

This study required food system policy from local government OCPs to be systematically reviewed, thematically coded, and tabulated. Food system policy was defined as any directive related to food systems that addressed a component of the food supply chain. Additionally, directives that touched on food systems in the context of education, economic development, planning or policy, and water management were included.

Selection of municipalities for our OCP policy review was based on geographic location and population size, prioritizing population centers in the province. For this we used Development Regions, an administrative boundary formed from aggregated Regional Districts (British Columbia Development Regions, n.d.), to divide the province into eight geographic regions. We then reviewed the OCPs of the two municipalities with the greatest populations within each Development Region. Selection methodology favored municipalities likely

to have the resources (e.g., food policy councils, dedicated social planners, etc.) to progressively address aspects of food system planning. However, given the uneven population distribution in the province, selecting population centers within each Development Region still allowed for the inclusion of rural communities in the policy review. The Lower Mainland/Southwest Development Region, the most populous area of the province, was an exception to this methodology. In this region, all 34 municipalities were included in the review. The OCPs from an additional 13 municipalities were reviewed because they were identified as incorporating a notable focus on food systems. OCPs currently being updated were excluded (e.g., City of Fort St John). Additionally, the City of Vancouver was excluded from the study because the municipality substitutes multiple neighborhood plans for a citywide OCP. Thus, our sampling methodology was not random, but systematically designed to survey and maximally capture BC regional food system enabling policy.

OCPs from 61 of a total of 162 BC municipalities (37%) were reviewed for food policy (Figure 1). This included municipalities with varying geographic and demographic characteristics, while recognizing the tendency of population centers to contribute more frequently and fully to food system policy development. We therefore believe that food policy compiled from these municipalities is reasonably representative of OCP food policy in BC.

Inclusion Criteria and Food Policy Tabulation

Policies within OCPs that explicitly addressed food systems were compiled and subject to inclusion criteria prior to categorization. Inclusion criteria were designed to ensure that the content of food policies included in the analysis (1) extended beyond recognition of existing standards and (2) included planning objectives transcending a single, isolated action. If the assessment of either criterion was 'yes' for a given OCP policy, then that policy statement was excluded from the analysis (Table 1). After the inclusion assessment, 12 municipal OCPs were excluded, and the final compilation of OCP food policy for analysis totaled 49 municipalities (30% of BC's municipalities).

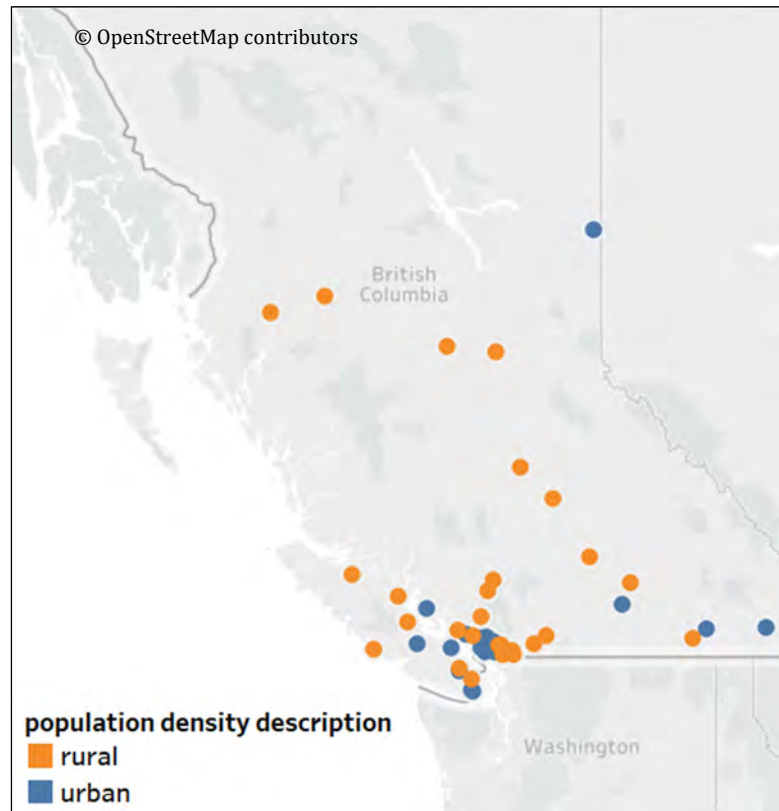
A Framework for Assessing Regional Food Systems Policy

We presumed that a regional food system—characterized by shorter supply chains—must have the capacity to connect food production to regional consumers. We recognized that in order for such a food system to achieve the sustainability outcomes routinely proffered, it must also advance environmental stewardship, improve equity among food system actors, and reduce and reclaim food-related waste (Feenstra, 2002). We thus propose that regional food systems must emphasize the following five elements: (1) food production and postproduction capacity focused on regional markets (Bell, 2010; Gwin & McCann, 2017); (2) economic viability of the agricultural sector (Jablonski, Hendrickson, Vogel, & Schmit, 2017); (3) access to healthy, nutritious, and culturally appropriate food for all citizens (Desjardins, 2010; Morland, 2015; Morrison, 2008); (4) food system waste management (Morone, Papendiek, & Tartiu, 2017); and (5) environmental stewardship (Warshall et al., 2002). Table 2 outlines these five foundational elements of regional food systems and the corresponding food system policy topics used in this analysis. We therefore

assumed that food system policy seeking to enable regional food systems should address these

Figure 1. Distribution of British Columbia Municipalities with Official Community Plans (OCPs) Included in the Analysis

Rural municipalities (population density < 400 people/km²) are in blue and urban municipalities (population density ≥ to 400 people/km²) are in orange.



Data source Statistics Canada, (n.d). Map data available under Open Database License: <http://www.openstreetmap.org/copyright>

Table 1. Examples of Food Policy Statements Included and Excluded According to Inclusion Criteria

Selection Criteria		
Selection Criteria		
Outcome	Is the policy limited to confirmation of and/or compliance with an existing required standard or limited to a reference to another piece of policy?	Does the policy support a single action or occurrence rather than provide guidance for municipal decision making in the future?
Yes ⇒ Exclude	E.g., all subdivision of Agriculture Land Reserve land must be in accordance with the Agricultural Land Commission Act and regulations.	E.g., create a soil management guideline for community gardens.
No ⇒ Include	E.g., support the farming integrity of the Agriculture Land Reserve land by encouraging the consolidation of small parcels to support economically viable farm units.	E.g., support urban agriculture initiatives and the development of resources to improve on-site management.

foundational food system elements, and we used this framework to make recommendations for areas of future policy development in British Columbia.

Results and Discussion

Food System Policy Foci

Five food system policy topics were identified as widely represented (Figure 2), and therefore constitute areas of current policy focus. They were, (1) improve access to food for residents (67%); (2) support for urban agriculture (67%); (3) protect agricultural land and promote its use for agriculture

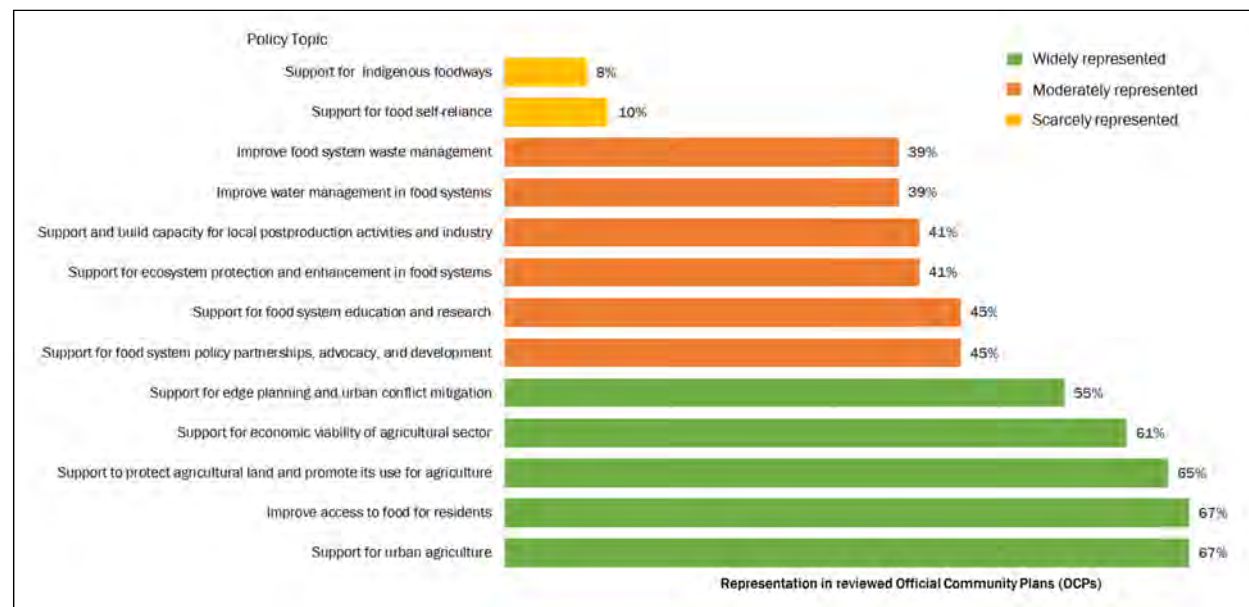
(65%); (4) support the economic viability of the agricultural sector (61%); and (5) support for edge (interface of urban and agricultural activities) planning and urban conflict mitigation (55%).

Six moderately represented topics were identified. They were (1) support for food system education and research (45%); (2) support for food system policy partnerships, advocacy, and development (45%); (3) support and build capacity for postproduction activities and industry (41%); (4) support ecosystem protection and enhancement in food systems (41%); (5) improve food system waste management (39%); and (6) improve water management in food systems (39%).

Table 2. The Five Foundational Elements of Regional Food Systems and Corresponding Food System Policy Topics

Foundational Element	Corresponding Food System Policy Topics
Food production and postproduction capacity for regional markets	Protect agricultural land and promote its use for agriculture
	Support and build capacity for local postproduction activities and industry
Economic viability of agricultural sector	Support the economic viability of the agricultural sector
Access to healthy, nutritious, culturally appropriate food for all citizens	Improve access to food for residents
	Support Indigenous foodways
Food system waste management	Improve food system waste management
Environmental stewardship within the food systems	Support ecosystem protection and enhancement in food systems

Figure 2. Representation of Food System Policy Topics in Official Community Plans ($n=49$)



Only two topics were identified as scarcely represented: (1) policies in support of food self-reliance (10%), and (2) policies supporting Indigenous foodways (8%).

Foundational Elements of Regional Food Systems Policy in BC OCPS and Comparison among Rural and Urban Communities

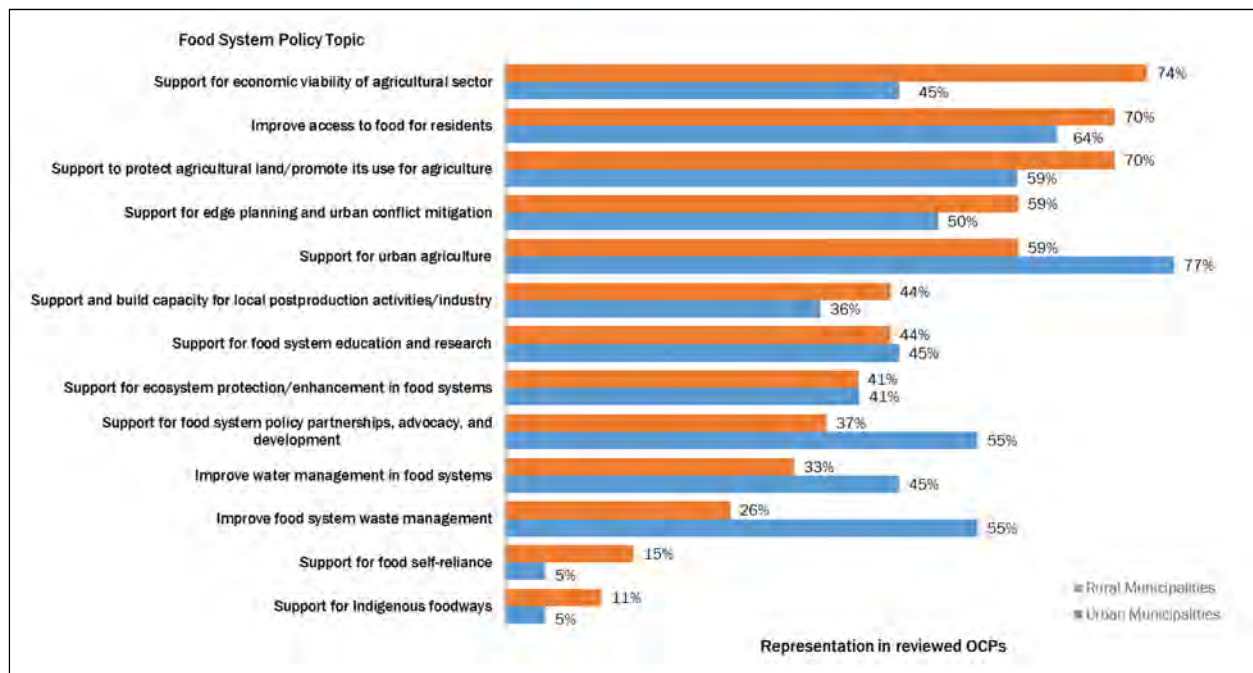
The foundational regional food system element, protecting agricultural land and promoting its use for farming, was the third most widely represented topic across all municipalities (Figure 2). This topic was evenly represented among both urban and rural municipalities. While the use of most agricultural land in BC is regulated through the Agricultural Land Reserve (ALR)—a provincial land use zone—local governments do play a critical role in implementing and enforcing ALR land use regulations within their jurisdictions. This responsibility is widely recognized, considering that 65% of reviewed municipalities include policy statements in their OCP to protect agricultural land and/or promote its use for farming. It is somewhat surprising, however, that the rate of representation

for this fundamentally important foundational element is not more ubiquitous.

The subtopics for this policy (Appendix A) suggest that policy primarily targets farmland protection (e.g., maintaining stable ALR boundaries and/or parcel sizes conducive to farming, supporting urban containment boundaries, regulating residential development), but not the promotion of its use for agriculture (e.g., supporting land access for farmers). The underutilization of farmland in the ALR is an area of increasing concern in BC. Particularly in peri-urban areas, where agricultural land is highly fragmented, land use competition is intense, and valuation precludes economically viable agriculture (Mullinix et al., 2013; Sussmann, Dorward, Polasub, Mullinix, & Mansfield, 2016). Exacerbating this is the erroneous perception that low input, small lot agriculture is generally a niche endeavor that cannot and/or will not be an important part of our food system (Holt-Giménez, 2017). In these regions, the use of farmland for residential development is particularly prevalent (Cooper, 2017; Metro Vancouver, 2016; Tomlinson, 2016)

Figure 3. Proportion of Urban ($n=22$) and Rural ($n=27$) Municipalities with Given Food System Policy Topic Represented in their Official Community Plan (OCP).

Population density of rural municipalities < 400 people/km²



given that the current property tax regime provides considerable financial benefit to landowners who wish to use land in the ALR for residential purposes (Metro Vancouver, 2016; Tatebe, Robert, Liu, dela Rosa, Wirsching, & Mullinix, 2018). A Metro Vancouver land use inventory report revealed that only 50% of the region's ALR land base is used for farming, and almost half of the nonfarm land uses are residential. Other common nonfarm uses of ALR land include golf courses, parks, and natural vegetation (BC MoA, 2014). While addressing this issue requires reform at the provincial level, a recent report identifies that local governments can play a role by both advocating for change, and by improving communication of land use activities to the provincial land assessment authority (Metro Vancouver, 2016). We note that neither of these actions was represented in the OCPs reviewed in this study, and developing the role of local governments in promoting the use of agricultural land for agricultural purposes is an area of needed attention.

Additionally, we note that the regulation of fill (soil) deposition on agricultural land is another dimension of farmland protection that is largely absent. This is an issue of increasing concern (Nagel, 2015) due to the potential for agricultural land degradation resulting from poor fill quality. The Agricultural Land Commission has reported an increase in both the number of applications and the volume of fill. Where previous requests were typically 3.3ft (1m) in depth, some current requests exceed 23ft (7m) of fill, which is generally characterized as poor quality for agricultural purposes (K. Glavas, personal communication, August 2017). This is especially prevalent in the Lower Mainland, where the excavated materials generated from rampant development in adjacent urban centers must be accommodated, and financial gain for property owners from tipping (soil deposition) fees are substantial. Fill depositions, both authorized and unauthorized, are also increasing in other areas of the province experiencing population growth and proliferation of other economic interests (K. Glavas, personal communication, August 2017). Additionally, unauthorized fill sites compose almost 45% of the ALC's Compliance and

Enforcement files (ALC, 2017). While it is recognized that the regulation of fill deposits on agricultural land can be addressed in planning documents outside of OCPs, there is an opportunity to increase local government involvement in mitigating this serious issue by recognizing it as an important component of OCP policies protecting agricultural land.

Policies supporting economic development of the agricultural sector were the fourth most widely represented topic across municipalities; however, this topic was represented at notably different levels between urban and rural municipalities. This foundational regional food system element was addressed in 74% of rural, but only 45% of urban municipalities. Widespread support among rural municipalities likely reflects the relatively high proportion of residents in rural areas whose livelihoods are linked to the agricultural sector and a sense of potential influence. Conversely, for urban municipalities, the relative lack of such policy could be indicative of a disconnect between urbanites and rural food producing areas. If urban municipalities wish to support regional food systems, they must recognize their connection to, and role in, supporting the economic vitality of the agricultural hinterlands that could be a significant source of their residents' food. For example, dedicating the substantial purchasing power of public institutions (e.g., schools and hospitals) in urban areas toward supporting the regional agricultural sector has been identified an important avenue for scaling up demand for, and access to, local foods while supporting rural economies (Benson & Fleury, 2017; Conner et al., 2011; Friedmann, 2007; Klein, 2015). Despite this, policies supporting local procurement (in institutions) were present in relatively few OCPs (12%), and therefore represent an area of future policy focus for enabling regional food systems.

Support for local postproduction infrastructure and activities was moderately represented and is recommended as an area of future policy progress for the development of regional food systems. The topic was present in only 41% of OCPs, with similar representation in urban and rural municipalities (36% and 44%, respectively). Postproduction capacity is key to actualizing a viable regional

food system and realizing the associated economic benefits (Mullinix et al., 2016). Processing capacity can both facilitate the off-season consumption of regional agricultural products and increase their market value. Equally important for regional food systems are storage and distribution channels targeted for regional markets, which can allow regionally produced food to reach regional consumers. However, the centralization of food processing across Canada has hindered the ability of producers (particularly small-scale) to process products for local markets (FSC, 2011). The diminution of BC's local processing capacity has been attributed to both consolidation and centralization in the agri-food sector (Rice, 2014), and to disabling regulatory environments. For example, in 2004 BC imposed new "meat inspection regulations that essentially eliminated small-scale abattoirs" in the province (Miewald, Ostry, & Hodgson, 2013, p. 93).

The policy topic addressing improved food access was present in 67% of reviewed OCPs and was widely represented in both urban and rural municipalities. Food access included availability, quality, proximity to markets, affordability, and utilization (Chase & Grubinger, 2014). While food access was found to be a priority policy area for BC municipalities, the topic of Indigenous foodways was represented in only 8% of OCPs. Given that Indigenous peoples and communities experience disproportionately high levels of poverty and food insecurity relative to the general population, and that Indigenous Nations are integral to BC culture and identity (De Schutter, 2012), this topic represents an area of much-needed policy development. Elevated food insecurity among Indigenous communities is an artifact of long-standing political, social, and economic marginalization (read: colonialism). This includes, but is not limited to, a disproportionate impact of resource extraction on Indigenous food lands, denying Indigenous people access to their traditional fishing, hunting and gathering sites, confining Indigenous peoples to increasingly smaller areas, and active efforts to erode Indigenous knowledge and culture (Daschuk, 2013; Truth and Reconciliation Commission of Canada [TRC], 2015). While it is recognized that strengthening Indigenous foodways is inextricably

linked to larger shifts in federal and provincial policy related to Indigenous rights and reconciliation efforts (Coté, 2010; Manuel & Derrickson, 2015), local governments can and should assume an active role. In their local government capacity-building work, Clark et al. (2017) reflect on how the active engagement of those affected by food system inequalities is critical to the development of policies that support equitable food systems. Prioritizing biodiversity conservation in land use planning, incorporating Indigenous food sovereignty into community planning, and increasing institutional support for Indigenous food programs have been identified as avenues for local governments to strengthen Indigenous food systems (Morrison, 2008). However, actualizing these policy directives will require that the implicated communities be actively and directly engaged in their development. Additionally, policymakers must be ready to challenge dominant narratives, such as the prevailing "highly mechanistic, linear food production, distribution, and consumption model applied in the industrialized food system" (Morrison, 2008, p. 5.) that can reinforce food system inequalities. Examples of current OCP policies addressing Indigenous food systems include maintaining access to natural and traditional food lands, undertaking inventories of municipal lands to better identify traditional food resources, and promoting education initiatives surrounding Indigenous foodways (City of Terrace, 2011, p. 11-12; City of Victoria, 2012, p. 121). These can serve as a starting point for supporting Indigenous foodways, which, at present, represents a nascent area of municipal policy. Despite its low representation among BC OCPs, this is a critically important area for achieving more equitable and socially just regional food systems, as the imposition of any food system upon Indigenous communities can be seen as an avenue to further marginalization (Mullinix, 2016).

Improving food system waste management was also reflected in a relatively few number of OCPs (39%), and primarily among urban municipalities. While food waste occurs at all stages of the supply chain, in industrialized countries like Canada, approximately one-third to one-half of food waste occurs at the consumer

and/or retail stage of the supply chain, generating significant environmental and economic costs (FAO, 2011; Gooch, Felfel, & Marenick, 2010). In Metro Vancouver, food waste composed over 20% of municipal waste (Tetra Tech, 2016). Municipal efforts to prevent and recover food waste, including collection programs, education initiatives, and food recovery initiatives are therefore suggested as an area of future policy development.

Policy-level support for environmental stewardship in food system was moderately represented (41%), with similar representation for both urban and rural municipalities. Given the significant impacts of food systems on ecological systems—including water pollution, soil degradation, loss of habitat and biodiversity, greenhouse gas emissions, etc.—and the associated societal and health consequences, we suggest this, too, as a requisite area of policy attention.

Policy supporting urban agriculture was the second most represented topic across all municipalities and density groups. This result reflects observations in food system policy research and practice that, to date, urban agriculture is among the most targeted aspects of municipal food planning (City of Victoria, n.d.; Mansfield & Mendes, 2013). This production focus is not unique to BC, but reflective of a dominant planning approach that has been critiqued for ignoring the interconnected elements that compose a functioning food system, such as processing infrastructure, distribution and storage networks, and waste reclamation programs (Raja, Picard, Baek, & Delgado, 2014). Furthermore, some OCPs include urban agriculture as part of food security strategies (City of North Vancouver, 2014; City of Victoria, 2012). While urban agriculture has the potential to achieve multiple social and urban planning goals, (e.g., food literacy, urban greening), the framing of urban agriculture as a food security strategy has been critiqued based on its limited potential to satisfy the caloric requirements of urban populations (MacRae, Gallant, Patel, Michalak, Bunch & Schaffner, 2010; Pynn, 2015; Badami & Ramankutty, 2015.) Furthermore, a multiyear investigation of policy interventions to reduce Canadian household food insecurity found

gardening to be unrelated to the occurrence of food insecurity (Huisken, Orr, & Tarasuk, 2017). Lastly, the dominance of urban agriculture policy may simply be a reflection of the newness of food system planning in BC and a lack of more sophisticated local-regional food system thinking. As such, we suggest that local governments emphasize expanding the scope of food system planning beyond their own municipal boundaries and recognize the regional context of a food system and its many interconnected attributes. If robust regional food systems are to be, municipalities—both urban and rural—must act in concert via a common vision with interactive and mutualistic policy.

Conclusions

Per our assumptions and framework, this study revealed the thematic range and prevalence of food system policy in BC Official Community Plans. At present, food access and urban agriculture are the primary foci of municipal food policy in OCPs. We propose that support for traditional foodways and access to culturally appropriate food for Indigenous peoples should receive substantially increased attention among food access policies. Critical to achieving this is the active inclusion of Indigenous communities in the policy development process as well as the willingness of governments to challenge longstanding narratives that reinforce food system inequalities. We identified postproduction capacity for regional markets, food waste management, and fostering environmental stewardship as lacking regional food system policies. While policies to protect agricultural land and promote its use for farming were widespread, the regulation of fill (soil) deposition is an area of need policy attention. Finally, we observed a number of discrepancies between rural and urban policy priorities. These discrepancies, particularly concerning the economic development of the agricultural sector, offer a basis for future study into how we might advance regional food system planning that recognizes important links between rural and urban areas. Local procurement initiatives within public institutions have been identified as one avenue in which links can be established between urban areas and rural areas. Coordination across municipal

boundaries, in our view, will require municipalities to expand food system policy efforts beyond their current urban agriculture focus, which has been critiqued as having a limited capacity to address a number of pressing food system concerns.

The complex and interconnected nature of our food system allows actions within one component to impact other food system components. This presents a particular challenge for segregating food system policy into singular groupings. For example, support for direct marketing (such as farmers markets) can improve food access for residents while simultaneously providing diverse economic opportunities to improve the economic viability of the agricultural sector. For the purpose of completing

this analysis, policy was coded according to the themes directly communicated in the written policy. While this perspective allows for food policies to be coded and assessed, it limits the assessment of the cross-cutting impacts of food system policy. Evaluating the strength of BC food system policies and plans is an additional area of future study that may be completed via plan quality assessments (Evans-Cowley, 2011; Hodgson, 2012; Youmans, 2014). The framework we developed and applied can serve as a tool in other jurisdictions to gain insight into local government priorities concerning regional food system policy, monitor their evolution, and identify areas for future policy development.



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Appendix A. Complete List of Topics and Subtopics Used to Thematically Categorize Food System Policy in Official Community Plans

Policy Topics and Subtopics	Representation in scanned OCPs (%)
1. Support and build capacity for local postproduction activities/industry	41%
a. Support and build capacity for local food distribution	22%
b. Support and build capacity for local food processing	33%
c. Support and build capacity for local food storage	12%
2. Improve access to food for residents	67%
a. Support access to affordable/nutritious food	18%
b. Support access to food retail locations (not direct-marketing)	14%
c. Support for community kitchens	10%
d. Support for direct marketing	47%
e. Support for emergency food sources	12%
f. Support for local procurement	12%
3. Improve food system waste management	39%
a. Other waste management strategies	2%
b. Support for food waste reduction, composting and recovery	35%
c. Support for improved agricultural waste management, reduction, recovery	4%
4. Improve water management in food systems	39%
a. Improve irrigation and drainage infrastructure	20%
b. Support for integrated stormwater management objectives with food systems	14%
c. Support for water conservation /restrictions within food system	6%
d. Support for water rates for agriculture	4%
5. Support for food system education and research	45%
a. Develop and celebrate local food culture	8%
b. Support and build capacity for public food system education	37%
c. Support training and skills development for farmers	6%
d. Support and build capacity for food system research/data collection	6%
6. Support for economic viability of agricultural sector	61%
a. Support for agricultural industry services	12%
b. Support for farm labour	8%
c. Support for farmers to diversify economic opportunities	35%
d. Support for local marketing initiatives	27%
e. Other tools to support economic viability	14%
7. Support for edge planning and urban conflict mitigation	55%
a. Planning and regulation of roads and traffic in farming areas	10%
b. Support for agricultural impact assessment	6%
c. Support for protection of farming development areas	20%
d. Other strategies for agricultural edge planning (e.g. buffers, disclosure agreements)	33%

continued

Policy Topics and Subtopics	Representation in scanned OCPs (%)
8. Support for urban agriculture	67%
a. Support for urban livestock	10%
b. Support for commercial urban agriculture	10%
c. Urban gardens/orchards on public land	27%
d. Urban gardens/orchards on private land	31%
e. Urban gardens/orchards non specified land type	29%
f. Other tools to support urban agriculture	14%
9. Support to protect agricultural land/promote its use for agriculture	65%
a. Address residential development (eg. farm homeplate)	12%
b. Maintain stable ALR boundary and regulation of parcel size	45%
c. Support access to land for farmers	16%
d. Support agricultural/farmland trusts	4%
e. Support for regulation of fill deposit	6%
f. Support for Urban Containment Boundary	14%
g. Other tools/commitment to protect ag land and promote use for agriculture	31%
10. Support for ecosystem protection/enhancement in food systems	41%
a. Commitment to reduce food system impacts on climate change/adapt food systems to climatic changes	16%
b. Support for B.C. Environmental Farm Plan	14%
c. Support for biodiversity and wildlife management/protection	12%
d. Support for ecological production strategies	24%
e. Other tools for ecosystem management/protection	0%
11. Support for food system policy partnerships, advocacy and development	45%
a. Support groups that build food system planning capacity	10%
b. Support partnerships to achieve food system goals	31%
c. Commitment to advocate senior gvt to achieve food system goals	6%
12. Support for Indigenous foodways	8%
a. Maintain access to traditional/wild food lands	4%
b. Support education initiatives for traditional food systems	6%
c. Support collaborative work with First Nations groups	2%
13. Support for food self reliance	10%

Toronto municipal staff and policy-makers' views on urban agriculture and health: A qualitative study

Special JAFSCD Issue
Local Government in Food Systems Work



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Abstract

Municipal governments across the Global North are increasingly becoming key actors in shaping urban food and agriculture policy. In the City of Toronto, recent aspirational policies, such as the provincial Local Food Act and the municipal

Toronto Agricultural Program, created new opportunities to shape a healthier food system. We sought municipal perspectives on the question of “How might urban agriculture policy and programs be better supported to promote equity and health?” Analysis of findings from semistructured key

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Disclosures

Kate Mulligan, Josephine Archbold, and Lauren Baker were active in food policy, urban agriculture and health work as staff of the City of Toronto during the research. Josephine Archbold and Donald Cole were members of the Healthier Harvests Consortium, which gestated the research. The Healthy Public Policy Division of Toronto Public Health contracted Sarah Elton and Donald Cole to provide assistance in write-up for publication.

informant interviews with municipal staff and policy-makers ($n=18$) illustrated broad support for generating better quantifiable evidence of the impacts of urban agriculture on economic development and employment, health and health equity, land use and production, and partnerships and policies. Place-specific economic and equity data emerged as particularly pressing priorities. At the same time, they sought better approaches to the potential risks involved in urban agriculture. Key informants also shared their views on the use of health impact assessment research to make a case for urban agriculture to a range of stakeholders; to manage real and perceived risks; and to move beyond enabling policies to empower new investments and procedural changes that would facilitate urban agriculture expansion in the city. The results informed the evolving praxis agenda for urban agriculture at the intersections of population health, environmental sustainability, and urban governance.

Keywords

Urban Agriculture; Determinants Of Health; Healthy Public Policy; Indicators; Livelihoods; Urban Renewal; Resilience; Municipal Governance; Knowledge Exchange; Canada

Introduction and Literature Review

In recent decades, cities have emerged as leading food policy actors on a scene previously dominated by national and global policy regimes (Morgan, 2015; Tornaghi, 2014). Urban governments of the global North have been addressing the current global food crisis with municipal-level responses, such as creating new food policy councils, crafting integrative strategies that focus on the broader city region (Blay-Palmer, Renting, & Dubbeling, 2015; Raja, Morgan, & Hall 2017), and implementing interconnected interventions (Sonnino, 2013). Among policy and program options, *urban agriculture* (UA)—activities connected with the growing, processing, and distribution of food and food-related products in and around cities—has experienced something of a revival (Ikerd, 2017). Planning facilitation, ordinance changes, and program supports to UA practitioners have been considered and/or implemented in many North American and

European cities (Boston, 2017; Forster, Egal, Renting, Dubbeling, & Escudero, 2015). For example, one of the recommended actions (#20) in the Milan Urban Food Policy Pact (Milan UFPP; Forster et al., 2015, p. 4) was to “promote and strengthen urban and peri-urban food production and processing based on sustainable approaches and integrate urban and peri-urban agriculture into city resilience plans.”

Cities, Agriculture and Health

Among the potential benefits associated with such efforts, urban agriculture’s influence on the social and environmental determinants of urban health has been prominent (Beckie & Bogdan, 2010; Cole, Grace, & Diamond, 2008; Guitart, Pickering, Byrne, 2012; Kortright & Wakefield, 2011; McCormack, Laska, Larson, & Story, 2010). Urban agriculture activities at different scales and settings—from backyard food growing, to community food gardens in city parks, to rooftop gardens on institutional buildings, to urban farms—can increase food security in equity enhancing ways. UA can, at least seasonally, provide relatively low cost, nutritious, culturally resonant, and diverse foods among immigrant-refugee populations and in low income neighbourhoods (Armstrong, 2000; Baker, 2002; Brown & Jameton, 2000; Meenar & Hoover, 2012; Wegener, Hanning, & Raine, 2012a, 2012b; White 2011), though not universally (McClintock, 2014; Warren, Hawkesworth, & Knai, 2015). Improved food literacy (Vidgen & Gallegos, 2011) and increased physical activity (Draper & Freedman, 2010) have also been noted. Indirect health benefits can occur by improving the integration of community-building, increasing social cohesion across ages and cultures, and bolstering solidarity by sharing produce and other forms of assistance (Baker, 2004; Cabannes & Raposo, 2013; Holland, 2004; Kingsley & Townsend, 2006; Wakefield, Yeudall, Taron, Reynolds, & Skinner, 2007). Finally, with climate change, UA can reduce carbon footprints in large urban centers (Pearson, Pearson, & Pearson, 2010). As Ikerd (2017) noted, “the urban agriculture movement is as much about restoring urban quality of life as improving urban food security” (p. 15). Because UA’s social and environmental interventions potentially promote

equity and sustainability, as well as individual health and well-being, they represent potentially important population health interventions in urban areas.

Challenges in Implementation

Yet realizing such potential benefits of UA beyond demonstration projects has been challenging (McClintock, 2014), often getting caught in the complex web of urban governance (Brand et al., 2017; Gore, 2008; Reynolds & Cohen, 2016). This evolving policy and practice environment, in which actors rely on social partnerships and knowledge transfer between community, public, private, and not-for-profit actors operating at different scales, is not well understood. Municipal food policy can respond to civil society and develop from multi-sectoral initiatives within local government (Prain, Lee-Smith, & Cole, 2008; Wegener et al., 2012a, 2012b).

However, promoting urban agriculture as part of shifting food systems to address inequities in broad determinants of health, livelihoods and urban sustainability can often be challenging (Gore, 2008). For example, in Flint, Michigan, civil society actors faced city ordinances that neither matched nor facilitated current or potential UA activities (Masson-Minock & Stockmann, 2010). They organized themselves and engaged the public over an extended period to demand that the Flint City Planning Commission regularize a variety of small-scale food production; this effort was only partially successful. Similarly, the Oakland Food Policy Council (OFPC) recognized zoning “as an obstacle to UA’s expansion” (McClintock, Wooten, & Brown, 2012). They developed broader food systems goals first, in order to garner buy-in of city officials, before focusing on new zoning definitions and operating standards for UA. Land use and zoning decisions remain a crucial area of municipal control, with considerable bureaucratic effort applied to them. However, they are also an arena of substantial contestation for powerful development lobbies and those interested in making land more accessible to marginalized groups in order to promote greater equity. In addition, municipal staff and policy-makers are challenged to choose among the numerous options for municipal initiatives—such as the multitude of recommendations in the

MUFPP—often with incomplete information. Hence, considerable work has gone into UA relevant indicators. These include indicators of *need for* or *inequity* potentially addressed by different food security or UA approaches (Meenar, 2017). The likely *impacts* of particular initiatives have been synthesized through either literature summaries or full impact assessments (health or environmental) (Cowling, Lindberg, Dannenberg, Neff, & Pollack, 2017). *Metrics or monitoring* data from pilots or development projects are also potentially helpful to better understand the implementation of municipal UA initiatives (Cohen, Reynolds, Sanghvi, & Chou, 2012). In dynamic municipal policy and program environments, each of these kinds of indicators might be important for informing decision-making, but, in most cases, they are lacking. Hence, Sonnino argued the need for applied research that can support *knowledge building* “by providing data...that help planners and policy makers to understand the functioning of the urban food system” (2009, p. 433).

Tensions Around UA Promotion as Part of Local Food Systems

Writings on the promise of urban agriculture for the promotion of equity exceed those of rigorous case studies documenting such promotion at the municipal level (Meenar, 2017). Questions remain as to how UA is conceptualized among municipal staff and policy-makers. In particular, how do they understand and navigate, as Tornaghi (2014) writes, “the intermingling of (and sometimes tension between) leisure and economical needs, mental benefits and physical health, environmental ethics and social justice principles, their food preferences and environmental ‘aesthetics’”? (2014, “The blurred line,” para. 1). In particular, to what extent do staff and policy-makers see historical equity concerns as central? (Clark, Freedgood, Irish, Hodgson, & Raja, 2017). Do they think that UA promotion should involve targeted programs primarily for the vulnerable (e.g., subsidized food production by those with mental health conditions); universal approaches (e.g., zoning bylaw changes for a greener city); or proportionate universalist approaches (e.g., expansion of available community gardening plots to be able to respond to all those with

household food security challenges) (NCCDH 2013)? Challenges in implementation may also belie fundamentally different conceptions of municipal mandates, with respect to UA, versus those of other governmental levels. For example, around soil contamination in brownfield areas, often several levels of government—from provincial-state, through federal, to international standards—may be involved in either prohibiting the use of certain land to grow food or guiding clean up (TPH, 2011).

Further, most food consumed in large metropolitan areas comes from regional or global sources (McRae, Gallant, Patel, Michalak, Bunch, & Schaffner, 2010). Cities often brand themselves as projecting regionally, nationally, and globally, which exacerbates tensions associated with scale. With multiple sectors and levels involved in conceptualizing a 'local' or 'city-region' food system, staff must grapple with a huge range of dominant players in the food system at a much larger scale (Clapp, Desmarais, & Margulis, 2015).

In this paper, we locate these tensions in the context of food policy developments in one city in the global North (Toronto, Ontario, Canada). We first outline our approach to seeking the views of municipal staff and policy-makers on the question of "How might urban agriculture policy and programs be better supported to promote equity and health"? We then share our findings, subsequent developments, and their implications for municipal departments working on urban food systems planning.

City of Toronto Context

At the *municipal* level, the Toronto Food Policy Council (TFPC) was the first in North America (Blay-Palmer, 2009), spearheading the development of the Toronto Food Strategy (Toronto Food Policy Council, 2010). In Toronto, a vibrant community of farmers, land owners, not-for-profit organizations, and food activists from diverse communities (of colour, origin, and socio-economic status) has pursued opportunities for urban agriculture in spite of legislative and policy uncertainties (see Box 1, Timeline).

Early work documented the activities and impacts of a small sample of community gardens

(Baker, 2002). This was followed by broader attempts to estimate the potential contribution of vegetable production in the city to its food needs (MacRae, Gallant, Patel, Michalak, Bunch, & Schaffner, 2010) and to strategize around scaling up UA (Nasr, MacRae, & Kuhns, 2010). Early on, Toronto Public Health (TPH) staff played a leading role among municipal departments. It also met traditional public health mandates by developing a guide to deal with soil contamination (TPH, 2011; TPH, 2013).

With a strong push from food activists, non-governmental organizations (Saul & Curtis 2013), farmers, and gardeners, in collaboration with various city divisions and agencies, the possibilities for the advancement of UA expanded with the ground-breaking report titled *GrowTO: an urban agriculture action plan for Toronto* (City of Toronto, 2012). In November 2013, the City of Toronto adopted the *Toronto Agricultural Program* (TAP), an ambitious work plan to advance UA with the development of data to support the rapid expansion of urban agricultural hubs and related programs within the City of Toronto (2013). At the same time, the city council established a Joint City-Sector Steering Committee on Urban Agriculture, directed city staff to explore the removal of policy barriers to urban land use and food entrepreneurship, and sought advice on the establishment of one or more urban agricultural centres. Municipal support has also included the city public health department nurses involved in school gardens; city-funded Live Green Toronto Parks grants and educational and/or outreach materials; Parks, Forestry, and Recreation Community Garden and Children's Garden programs; exploration of the world crops that could be grown to feed immigrant communities (Vineland Research and Innovation Centre, Toronto Food Policy Council, & TPH, 2013); and support for funding applications to foundations and provincial funders like the Ontario Ministry of Agriculture and Food.

Changes in UA policy and practice at Canadian municipal, regional, provincial, and federal levels set out an ambitious agenda for further policy change and community action over the coming years. The provincial *Local Food Act*, for example, aims among other things to "to foster successful

Box 1. Timeline of Dates Relevant to Urban Agriculture for Toronto, Ontario, Canada

1990	Toronto Food Policy Council was formed.
1993	Interdepartmental collaboration at the City leads to the creation of the report: "Supports for Urban Food Production: Creating a Garden City 1997." Community Gardens Program Coordinator position created in the Parks, Forestry, and Recreation Division of the City.
1999	City Council endorses the Community Garden Action Plan, which sets the goal of establishing a community garden in every ward of the city.
2001	City of Toronto Food and Action Hunger Committee releases "The Growing Season" report, which recommends that the City step up to become a champion for food security, through actions such as promoting urban agriculture and enumerating its benefits for Toronto.
2001	Through the adoption of the Toronto Food Charter, City Council commits to supporting community gardening and urban agriculture in the interest of increased food security in the city.
2004	Toronto hosts the American Community Gardening Association annual conference.
2004	City of Toronto partners with Toronto and Region Conservation Authority (TRCA) to create the Toronto Urban Farm at Black Creek Pioneer Village.
2005	The Toronto Community Food Animators program, a partnership between The Stop, FoodShare, Afri-Can Food Basket, and Second Harvest, is funded through the City's Community Partnership and Investment Program.
2006	Toronto's Official Plan expresses support for community and rooftop gardens as important elements for creating beautiful, healthy and active cities and for engaging diverse communities.
2006	The City supports Toronto District School Board (TDSB) research on market gardens.
2007	Toronto Community Housing (TCH) publishes a "Community Gardening Manual."
2008	Toronto and Region Conservation Authority (TRCA) introduces a progressive Sustainable Near-Urban Agriculture Policy.
2009	City Council adopts the report: "Identifying Urban Agriculture Opportunities in the City of Toronto," affirming the City's support for strategies and initiatives that achieve the overall goal of expanding opportunities for local food production in Toronto.
2010	The Toronto Food Strategy led by Toronto Public Health outlines a vision for a healthy sustainable food system for Toronto through the Cultivating Food Connections report.
2011	The City of Toronto Environment Office supports the GrowTO Speaker Series and publishes the booklet "Get Growing Toronto: A Guide to Growing Food in the City."
2011	Toronto Public Health develops a soil assessment guide to assist urban gardeners in determining soil safety.
2012	City Council approves the Greater Golden Horseshoe Food and Farming Action Plan, which promotes the preservation of farmland in Ontario as well as the expansion of urban opportunities to produce food.
2012	Toronto hosts the first International Urban Agriculture Summit
2012	GrowTO: An Urban Agriculture Action Plan for Toronto developed and endorsed by council
2013	Toronto Agriculture Program created by Toronto City Council

and resilient local food economies and systems throughout Ontario" (Ontario, 2013, p. 1). It directs the provincial government and designated public sector organizations to establish targets related to local food production and food literacy. At the federal level, UA is one of the key pillars of Rouge Park, the first Canadian national park in an urban space (Toronto Region Conservation Authority, 2013).

In addition, there has been institutional openness to equity discourse at the City of Toronto.

Toronto Public Health has health equity as a foundational principle and part of its mission: "Toronto Public Health reduces health inequities and improves the health of the whole population" (TPH, n.d.). Citywide initiatives include the Poverty Reduction Strategy (City of Toronto 2015), in which food access is a key component, and the Tower Renewal Program, which promotes market gardens around residential towers as part of revised Residential Apartment Commercial zoning. Both are examples in which community organizations

and activist councillors worked with municipal staff to develop concrete responses for racialized, low-income, and otherwise marginalized communities. Such initiatives have necessarily involved TPH engagement with other municipal sectors and a broad range of stakeholders in order to promote healthy urban planning and public policy.

Healthier Harvest Consortium

As researchers in Toronto Public Health's Healthy Public Policy Directorate (Archbold and Mulligan) and Toronto Food Policy Council (Baker), we convened the Healthier Harvest Research Consortium in May 2013. We were a collective of Toronto-based researchers from academic, public health, and community-based organizations striving to bolster the evidence needed for scaling up UA as part of changes required in Toronto's food system. Through our diversity of experiences working across sectors and jurisdictions, we knew that staff and policy-makers involved in shaping Toronto's policy agenda would likely have varying views on UA and that it would be grounded in their position within municipal or other structures, their fields of study, social locations, and personal experiences.

We particularly sought insights regarding useful and simple-to-communicate indicators which could be used to measure and document the ways UA supports equity, poverty reduction, sustainability, and health promotion goals in the policy-practice dynamic they experienced. At the same time, we saw it as an opportunity to both contextualize such work in the municipal policy landscape and engage in knowledge exchange around operational feasibility, barriers, and opportunities for the growth of UA. By engaging with staff as key knowledge-users throughout the research process—using the “integrated knowledge translation” model set out by Barwick (2008, updated 2013)—we aimed to identify the key discourses, lines of evidence, and areas of collective interest that shape the data needs of staff and potential uses by policy-makers in the municipal policy process.

Applied Research Methods

As a research team, we found Colasanti's (2009) notion of city-scale UA helpful in her conceptual-

ization of the ways in which city food growing is mediated by political and economic processes. Our theoretical stance was closest to the political ecology of urban health framings. We understood human bodies and urban environments as literal, biophysical expressions of social, material, and ecological contexts (Heynen, Kaika, & Swyngedouw, 2005; Keil, 2005). Further, we recognize that the relationship between humans and the non-human living world (e.g., the plants humans grow) is mediated by governance, democracy, and the politics of everyday life (Keil, 2003). Hence, our primary focus was on the conceptualizations and tensions faced in municipal policy-making around UA.

Participants

Prior to recruitment, our study received ethics approval from the Toronto Public Health Research Ethics Review Board. We then purposively sought out key municipal staff and policy decision makers in urban agriculture for key informant interviews. These included policy-makers working in government and community agencies at the municipal and provincial (Ontario)¹ levels, as well as farmers, landowners, and funders in the greater Toronto and Hamilton area. Their areas of work ranged from land use planning and conservation to social inclusion and equity. Twenty-seven prospective participants were identified in the policy and practice communities of the authors and the Healthier Harvest Research Consortium. They received a formal letter by email from Toronto Public Health detailing the study's purpose, methods, confidentiality measures, and procedures for informed consent. Recruitment used a maximum variation sampling strategy to provide for a broad range of perspectives. Eighteen people agreed to an interview (18/27): four municipal and provincial policy-making staff, four members of not-for-profit organizations at the municipal and provincial levels, four funders, three landowners (public and private), and three farmers.

¹ We attempted to interview an individual from the federal government, but no relevant federal departments would agree to an interview.

Data Collection

Interviews were conducted in person or by telephone between November 2013 and March 2014, lasting approximately 45 minutes. The interviews were semistructured and followed a theoretically and pragmatically driven interview guide (see Appendix). A literature review and consultation with the research team informed the questions. With permission, all interviews were recorded and transcribed.

Analysis

We situated our analysis of key informant knowledge, attitudes, and practices within the larger sociocultural and political economic structure of the food system. Further, we followed Barwick's "integrated knowledge translation" model (2008) to identify the dominant discourses, lines of evidence, and areas of collective interest that shape data wants and/or needs around urban agriculture in a municipal context. The interviews were coded and content analyzed with the assistance of the qualitative analysis software ATLAS.ti 6. Thematic codes, emergent and derived from theoretical and empiric literature, were applied to the interview transcripts and refined throughout the analysis. Reliability of the initial coding and its application to the data were assessed using both qualitative comparison and quantitative tests of inter-rater reliability. One internal coder and one external coder applied a set of theory-derived thematic codes to two transcripts while also considering emergent themes using an inductive, grounded approach. The arising themes were qualitatively compared and a high degree of consistency was found between coders. In areas of disagreement between raters, new dialogues emerged and helped to clarify the coding scheme and helped to further identify additional analytical directions. For the final code set, Krippendorff's (2013) Alpha (a measure of inter-coder reliability for three or more coders) was 0.83.

We sought feedback from respondents at two points during the research process. In some interviews, we summarized responses at the time of the interview to confirm accuracy in understanding. Then, after the interview, the participants were shown a written summary of the key findings and

were given the option to comment in writing on the accuracy and completeness of the interview. In ongoing discussion within the research team, and in dialogue with members of the Healthier Harvest Research Consortium, we explored researcher biases and their possible influence on our findings.

However, our study had several limitations: a limited breadth of policy-makers (primarily municipal staff), no politicians, and only a few civil society organizations, such that not all stakeholders relevant to urban food system change through a more fulsome concept of governance were represented (Gore, 2008; Clark et al., 2017). Nevertheless, its scope was appropriate for staff working on policy in a public health department to better understand the context and policy and information priorities of their municipal colleagues. Unfortunately, concerns regarding anonymity meant that we could not clarify the role and sector of each respondent in our findings. We engaged in limited probing of the respondent's views, their context in a globalized city, and the inequities associated with large amounts of resources being generated and funneled in corporate sectors. These sectors do not systematically make their way to racialized and low-income groups, or to municipal staff working with them, except through occasional donations for urban greening. Given the strictures on staff in municipal bureaucracies, key informants might have responded quickly that their mandates in current governance structures do not permit such considerations, despite their importance in the global food system (International Panel of Experts on Sustainable Food Systems [IPES-Food], 2017). Further, the dynamic nature of municipal organizations and politics means that views may have progressed since our data collection, so tracking changes over time would be valuable.

Results

Conceptualization of Urban Agriculture

For most key informants, urban agriculture represented a small but growing priority for themselves and others within the city. Urban agriculture in Toronto was perceived to be driven primarily by public interest and by city-building movements from across socioeconomic and geographic divides,

as one municipal staff person noted: “It’s not just in the wealthy neighborhoods but also from farmer’s markets actually showing up in very diverse and lower income neighborhoods as well....It’s kind of exciting to have this committee that has got urban and rural people on it and having each of them understand the strength that could be in urban agriculture.” Informants shared a broad interpretation of urban agriculture as a multifunctional urban intervention with social, economic, environmental, and health dimensions (Morgan, 2015).

At the regional scale, several key informants noted the intersection of prime agricultural land, an educated workforce, a large supply of fresh water, and an ethnically diverse, high-quality food processing sector as key planks of support for a thriving regional food-based economy. Key informants also noted the steady growth of the food sector, even in times of economic downturn, as one municipal policy staff person noted:

The agriculture and food and food service industries are the largest employer now in Ontario, CA\$34 billion worth of economic activity and also seem to have been fairly resilient to things like global recession etc. where everything else went in the tank. Food continued to grow, albeit a small, steady margin right—2%, 3%...there’s a helpful solution there because everybody needs to eat.

Information to Make the Case for Urban Agriculture
Key informants from a wide range of positions saw evidence-informed decision-making as an important approach to policy-making in the City of Toronto. For example, a government-based respondent said, “We talk a lot about using evidence based information to make decisions so if there’s more evidence to support a policy or direction...I think evidence only helps support policy development.” A nongovernmental advocate noted, “if we can build some metrics and indicators around the health and the economic and environmental impacts that we can actually make a strong solid case that local food systems are the way to go and urban agriculture certainly can be part of that.”

A funder observed, “I think the science is always helpful, it’s always a helpful support. Certainly [my organization] depends very heavily on scientific based research to demonstrate why it’s important to be doing the things that we’re asking proponents of development, for example, to do.” As part of the support for evidence-informed decision-making, respondents expressed a need for a centralized repository for data and information related to urban agriculture and an interest in understanding and measuring change over time.

However, while most respondents agreed that it is important to have, in the words of one respondent, “supporting health evidence to demonstrate that local connections to agriculture and providing agricultural goods and services has a positive health impact for the people involved,” several respondents observed that this was more important in making the case to *others* rather than within their own organizations. For example, one key informant noted that “beyond the intuitive level and beyond the kind of common sense stuff...I wouldn’t say we take a ton of empirical evidence and say we’re going to do this.” Rather, respondents felt that research would be one way to “get policymakers to understand that [urban farms are] needed in the community and access to food should be a huge priority and that urban agriculture is one way of addressing some of these needs so that they put [enabling] policies in place.” Further, it would be a way to reach a wide range of decision-makers with different political or organizational interests. For example, one municipal staff-person noted:

The Economic Development Committee—I mean it’s usually primarily made up of conservative councilors...if you position urban agriculture as the touchy, feely, really good type stuff...it’s not going to play well to that kind of audience. They understood right because they understood the economics of it. So it’s how do you position urban agriculture in a way that not just the conservationist councilors in the city, and there’s lots of those, but that all the councilors can understand what kind of an effect this has.

Translating Policies to Investments and Procedures

Several key informants identified a need to inform their own investment and implementation decisions. As one respondent noted, “that’s the kind of research that we would look at and say should we or shouldn’t we get into food in a more intentional way?...So yes, absolutely I think it can help and also for us I think it helps validate why we’ve invested so much money in food from a social enterprise perspective you know.” Another suggested research could be used to attract investment in local food entrepreneurs or could inform pilot projects: “I think we can [use the data to] do more together to actually create some implementation plans together as well and the pilots... if it’s not successful, then you re-evaluate, you re-interpret and refresh.”

Several key informants noted the need for detailed evidence to support the translation of *policies* (the broad rules and frameworks for urban agriculture) into *procedures* (the mechanisms by which policies are enacted and implemented) to support investment and implementation of urban agriculture in Toronto. For example, one municipal worker noted that “we have committed to greatly increasing civic engagement [including urban agriculture]....Unfortunately they didn’t pass the budget to make it so.” Another saw health impact assessments (HIA) research as a way to gain support from executives: “we just don’t have the time, there are so many competing files....I just wish that our senior management would see it as a real opportunity, because I think it really does enhance the city and the health of the city and the people.”

Indeed, the space between policy and procedure was identified as a major challenge facing the development of UA in Toronto. Repeatedly, key informants identified enabling policies or executive leadership positions supportive of UA that were contradicted by procedural issues on the ground in urban agriculture policy and practice. For example, a number of respondents noted a difference in flexibility and openness on bylaw interpretation depending on rank in the public service hierarchy: “You know, we’ve had generally good relationships particularly with the senior levels but there’s been some disagreements and certainly some challenges at the individual level.” Regarding sale of the

produce of urban agriculture in urban parks, another respondent noted:

For [a public service leader] it was all about scale and interpretation and compatible use. You know from both of our perspectives, until it’s a commercial scale where the uses are incompatible, we can probably interpret things favourably. Now, it’s a lot different to talk to [public service leaders] about that than somebody on the ground who’s like trying to make decisions about what can and can’t happen...for example like putting up a greenhouse.

A lack of procedural and bylaw clarity results in challenges for those involved in enabling new urban agriculture interventions. One key informant noted, “if there’s no guidance to planners or bylaws to enforce whether the land can be used for [urban agriculture], I think that could be a huge challenge because it could be not allowed with the way that a lot of the current language is on land use bylaws.” For community groups, clarity is needed to make decisions around urban agriculture practice more transparent: “It’s either interpretation or implementation right so one group is told they need a permit, another group in a different ward is told you don’t. So it’s a lot of inconsistencies.”

Similarly, policy-level perspectives identified great potential for urban agriculture as an interim use of urban space: “Our public space is going to be changing, it’s so malleable, it’s going to shift over time and this is part of that....We should just embrace those shifts and those changing interests of our citizens in shaping and reshaping our city.” However, those involved with direct implementation were much more cautious about interim use: “The interim use tends to lead to entitlement... put a community garden there or something else there as part of the things for the next two or three years and then, you know, when you try to remove it or stop the use, then the [stuff] hits the fan.”

Urban agriculture as a shared use of public space, particularly in parks, raised similar concerns:

People perceiving that a group has hijacked public space, that they’re using it you know,

there may be an inactive sports activity or some other community group that was displaced in order to achieve that, there might be use conflicts with animals and dogs and off-leash areas.

For those working on the front lines, clear policies and procedures are important for everyday community engagement in spaces of urban agriculture:

The policy becomes very important in having a strong footing for our folks on the street who have to defend to the yelling

citizen who is telling them they're useless pieces of garbage and overpaid...It's very important to have a strong footing for our frontline staff to feel comfortable in those engagements.

Potential Indicators and Metrics

We grouped potential indicators into five broad categories (see Table 1).

Economic development and employment:

There was an emphatic agreement among respondents from all sectors that economic indicators were of primary importance in *making the case* for urban

Table 1. Categories and Areas of Interest to Municipal Staff and Policy-Makers in Relation to Urban Agriculture and Health, Ranked by Salience

Broad Category	Main areas of interest for indicators-metrics
1. Economic development and employment	<ul style="list-style-type: none"> • Financial benefits to local organizations • Employment • Quality of jobs • Job preparedness training opportunities • Farmer viability
2. Equity & health	<ul style="list-style-type: none"> • Access to healthy fruits and vegetables • Food bank use • Physical activity levels • Healthy eating habits • Nutrition-related health outcomes (such as diabetes) • General food and environmental literacy • Mental health • Providing community to new immigrants
3. Risk	<ul style="list-style-type: none"> • Costs • Food safety • Personal injury • Litigation • Environmental health risks (e.g., soil toxicity, dog urine) • Garden waste and compost • Aesthetics
4. Land use and production	<ul style="list-style-type: none"> • Number, size, and type of garden • Types and amounts of food grown per acre • Dollar sales per acre • Import replacement levels • Pollinator habitat
5. Partnerships and policies	<ul style="list-style-type: none"> • Public awareness indicators such as the number of people touring urban agriculture sites • Support indicators including the number of new institutional supports or policies instituted for urban agriculture • Number of nature of inter-divisional, inter-governmental, and/or cross-sectoral collaborations • Cross-sectoral effects on poverty and health care costs

agriculture to government decision makers, funders, entrepreneurs, and private sector actors. Traditional indicators of local economic development were of strong interest: financial benefits accruing to local organizations, numbers of new enterprises started, number of people employed in new enterprises, quality of new jobs produced (income security and wages), job preparedness and training data, and returns on investment (including case-by-case benefits for land developers [Section 37 benefits]; see City of Toronto, 2014). More specifically oriented to UA were economic sustainability and viability for farmers, multiplier effects for local vs. nonlocal foods, and economic opportunities in UA for equity-seeking communities. Unfortunately, these latter are not simple indicators but require substantially more analytical work than most municipal staff are given the time or resources to carry out.

Many key informants noted the importance of urban agriculture as a new job creator and space for entrepreneurship: “For me the purpose of engaging kids in our industry is [that it is] going to require a workforce ten or 15 years down the road... When the food industry is requiring people for it, there will be people...to fill the jobs.” Others identified urban agriculture as a potential catalyst for local economic development, particularly in underserved communities, noting that urban agriculture could generate employment and play a “catalyst role in terms of kick starting development and the neighborhood regeneration that comes from that environment.” As one respondent noted, “I think our crystallization point or coalescing point is food but we think food is a way to have a broader conversation about community development and strong resilient local economies.”

Equity and health: The majority of key informants expressed strong interest in indicators of equity and health impacts across different population and demographic characteristics, such as age, ethnicity, immigration status, suburban or urban residence, and gender. This included impacts of UA on food security (such as affordability and food bank use). Food literacy and environmental literacy were the most frequently raised areas for indicator development around education and

awareness relevant for health. The development of individual and community leadership and self-esteem were seen as important, but not fully framed as UA-specific indicators. Respondents were also interested in indicators of on-site health and safety related to personal and workplace injury and transportation risks.

The primary direct health indicator of interest was access to healthy fresh fruits and vegetables, particularly for equity-seeking communities in Toronto: “The benefit is really being able to grow food for people—right, fresh, affordable food right within the community.” Access was defined in terms of price, availability, and quality (including nutrient information). Direct health benefits related to physical activity and healthy eating were also of interest, including traditional nutrition-related health outcomes such as decreased rates of diabetes. Environmental and ecological health indicators (e.g., air and soil impacts) were of interest to a minority of respondents.

Respondents explicitly linked access to healthy foods with urban health equity, and many identified nutrition, food security, and food literacy as key indicators of interest. A strong majority of respondents indicated interest in indicators of mental health benefits, particularly at the community level. This was described variously as social capital, sense of belonging, community and social health, engagement, and community pride. Measures of community interest in participation, opportunities to participate, and rates of participation in urban agriculture across the life course from childhood to old age were of interest. For example, a representative of a city-building organization noted urban agriculture’s role in slowing the decline in social capital that takes place when new immigrants face barriers in realizing their Canadian dreams:

We’re starting to look at this social capital piece from a whole slew of angles and urban agriculture is one of the angles because it’s such a great place-based, space-based activity...a tool to bring people together. And divergent and diverse people together who may not agree on very much at all except that their hands are getting dirty and

growing food is a common denominator and then eating that food is a common denominator.

Data about impacts on social equity were perceived to be uniquely necessary in Toronto, where at the municipal level social equity is a major priority, and where the social mix differs from the more-often-studied American cities. The majority of respondents indicated a need for their own work to demonstrate a positive equity impact. Several noted ongoing challenges in the differential use of urban agriculture interventions by different communities—e.g., for newcomers and long-term residents. While most respondents raised challenges in grappling with these broader “soft” impacts, they also asserted that it was important to make the effort to measure them or conduct appropriate analyses to generate them. For example, one respondent suggested:

I would love to see how to measure the social capital. And it could be an index...it could be something along the lines of, you know, did you get to know people you wouldn't have known before? Did you work with people of other cultures from you? Did you work with people other ages from you? Did you get to know your neighbor and then see them again five months later or have another interaction with them in the winter after you did your planting in the spring, did you see them at the harvest and did you feel you made friends...because there's this idea around urban agriculture as being something that can actually spark a whole bunch of other things.

Risks: Several key informants, particularly municipal staff, identified ongoing risk aversion as a continued barrier. Respondents expressed concerns about environmental health, from pesticide education to dog urine to soil quality:

Soil toxics certainly [are] an issue that comes up over and over and over again. There is some discomfort from landowners including the City of Toronto in terms...whether or

not somebody would come back and sue the city for allowing them to garden on contaminated lands...Of course all the produce you buy from Mexico and South America has no requirements for soil testing or, you know, so it's ironic that there's that level of discomfort.

Another risk identified by several key informants was the risk that local communities would not support unsightly or untidy urban gardens:

They have to understand that it's not a tidy business, so you can't necessarily have straight rows of pristine, weed free vegetables growing in an area...It's not a perfectly manicured flowerbed and that's what some of the people in urban agriculture are going to expect.

A related concern was in respect to waste management: “What do you do with all the waste, the garden waste or the compost at the end?...It will take some management, it will take some money and it won't be tidy.” Perceived risks that key informants saw as particularly important to address included health and safety risks related to food safety and personal injury, alongside the potential for litigation: “Any of the risks that would be associated with physical activity would be also present with urban agriculture, urban gardening, you know, soil safety, walking safety, biking safety, all those sorts of things that we would want to ensure that we're creating spaces that minimize any of those risks.” However, most noted that these barriers are part of the general and manageable cost of working in public parks and on public properties. Respondents were also interested in addressing community concerns over wildlife management: “For some people urban agriculture attracts rats or other scary things...there's a whole series of connotations associated with urban wildlife.”

Several key informants saw an opportunity for information to be used to allay concerns of residents, funders, and political decision-makers. For example, one respondent suggested that “if it provides a positive supporting role to offset the concern of the councilor or the staff or senior

management team or whatever, then that's how you should do it." Another suggested that "it's important that there just be...a number of supports for why it's a beneficial use as opposed to how or why it's a scary or frightening use." For municipal stakeholders, having city-generated data was also seen as helpful in addressing perceived risks:

It is helpful to us that the city has done its own research. We're not just saying oh yeah, this is a good idea. We're just saying based on this research, that the city undertook, this is what we know. You're much stronger, when you're putting forward a change or proposed best practice even, to have a substantive document or two.

The risk of failure of urban agriculture interventions was of interest to a majority of respondents. Key informants felt this risk took two forms: a lack of commitment and a lack of community proponents responsible for urban agriculture interventions wisely using resources. One respondent noted, "we had a farmer who left, so there's the risk of being associated with that lack of commitment or follow-through or skill set or tactical or financial capacity to implement or to make a success of the project." Another reported, "there's the risk of the property not being used for the purposes that you would like it to be used...We really try to promote agriculture that is organically produced so there's the risk that someone may not be producing according to [that standard]." These risks were particularly acute for landowners and investors. Funders noted the risk that capital improvements to make land useable for urban agriculture (on-site water, waste management, and so on) will be "potentially a waste of money or not being properly utilized." For some, the risk of failure is contextualized by a need for immediate evidence of success for urban agriculture pilots: "They had to say no, not because they're not interested. Because they just don't have the capacity right now, their model is to succeed. They have to build on that success over time so right now there's nobody actually that supports that."

However, for a notable subsection of municip-

pal policy staff respondents, these risks were felt to be overblown: "These things will kind of have a life of their own. That there will be communities that will take it on and really make it successful and others that will not be as successful and yet the success might be on things that you cannot see or measure." Another suggested, "Things go wrong in these projects...we shouldn't run away and be scared from any kind of conflict or potential risks....Like there's a risk that in five years nobody in that community will want a garden. Is that really a big risk? ... It's such a small risk. This is going to happen. It doesn't mean it's a failure." As another respondent advised:

Be bold. Don't let risk aversion prohibit your capacity to support the urban agriculture agenda....You know, for a long time it's been a lot of "we don't have the capacity, we don't have the resources, the staff, the financial investment, all of those things," so I think, you know, my advice would be just jump in.

Land use and production: Respondents felt that there is a lack of data about current agricultural land use against which to assess and understand changes and trends. The need for such data was best expressed at the city level: "The question is, how are we going to replace the farmland that we keep losing to developers?" Data specific to UA included the number, size, and availability of appropriate locations; the number and size of current and new urban agriculture spaces by type (e.g., garden, farm, etc.); the amount of arable land; the farmland and greenspace preserved; and the benefits of using public space for urban agriculture. Similarly, levels of local production and consumption are not currently well understood. Respondents were interested in simple indicators such as: tons of food produced per acre, dollar sales per acre, and the UA amounts in farmers market sales. More analytically challenging were the import replacement levels and proportion of total consumption produced locally, the efficiency of land use per participant, and the energy use per urban agriculture intervention. Respondents were interested in the effect of urban agriculture sites on

neighboring property values and in quantifying the environmental benefits of urban agriculture: “It provides for a number of benefits related to green space, water management, carbon sequestration, just in terms of providing open space for people to access...and abundant environment for wildlife and pollinators.” Most respondents conceptualized these benefits in terms of urban environmental transformations that have both ecological benefits, e.g., “turning some concrete and non-permeable places into permeable places, so that we can recharge groundwaters and avoid flooding,”—and social ones:

It just makes a city better. I think that this is what an urban farm can do. It can be a part of that feeling in a neighborhood where it's like there are cool things happening in my neighborhood, I live in a cool neighborhood. Like everybody has that feeling right that there's something special in my neighborhood and I appreciate that.

For several respondents, urban agriculture represented a productive use of otherwise “unproductive” urban spaces: “Making use of land that's currently vacant or not being used and using it for something like growing food is a really positive thing rather than it being, you know, filled with weeds or whatever is happening to it now.” This transformation was seen as an opportunity for communities and cities to resist development pressures and to reclaim green spaces for their own use. One respondent addressed the effect at the community level:

First off, it's a land that's being put to use. It's not being contaminated....So it's an opportunity to see your community in a different light. Most of our communities are filled with high rise buildings and townhouses, so to see a well maintained green space, like down at the creek... we have the creek down there that families can actually take walks in.

Partnerships and policies: Key informants indicated interest in indicators related to the ongoing

development of partnerships and policies for urban agriculture, given the need for cross department, division, and sector linkages. For example, there was strong interest in tracking changes in government spending on parks (e.g., more community gardens, less other garden maintenance) and spending on urban agriculture spaces per capita, (e.g., for community-based programs on the municipal side or developer investments in growing spaces on roofs or on land surrounding developments). Despite the analytical challenges they pose, key informants were also interested in the potential impacts on poverty levels and even healthcare costs near urban agriculture interventions. Broader partnership indicators of interest included the number and type of different governance models for urban agriculture projects, indicators of cross-divisional and intergovernmental cooperation and partnership, awareness indicators such as the number of people touring urban agriculture sites, and support indicators such as the number of new partnerships, policies, and institutional supporters for urban agriculture. Many respondents noted a need to document and understand collaborations in order to facilitate new investments within and across different levels of government. As one noted,

We're always talking about breaking down silos between ministries. Even within municipalities, you know, the health people work in their part of the world and the planners work in their part of the world.... There is a strength when you do that collaboration and work across the sectors. We haven't even begun to do what we could do there yet.

Some respondents saw research as a way to provide guidance by sharing best practices: “what is working, what are the challenges and, you know, sort of case study type of information so that others can learn.” Several respondents pointed to the need to look beyond Toronto's borders for health evidence and best practices: “if you reach out to the partners, then you can say to them we would really benefit from your research, from your models, from your knowledge and then you build that capacity.”

Key informants took seriously their potential

to widely influence future policy and programs: “Our public space is going to be changing. It’s so malleable. It’s going to shift over time and this is part of that... We should just embrace those shifts and those changing interests of our citizens in shaping and reshaping our city.”

Key Informant Perspectives on Knowledge Exchange

Many key informants had advice regarding the design and communications style of research reports. Most suggested a succinct, readable format accessible to a wide range of audiences with little time to read long research reports:

I think being able to make the information and the research you find accessible but also just easy to digest...the purpose of the research is to actually change behavioural impacts systemically and we’ve got to do that in a way that’s easily, can be easily consumed by those people who actually get it.

The majority of key informants suggested a combination of pictures, stories, case examples, and infographics to support and complement the numerical data. One respondent suggested that photos are particularly important in the case of urban agriculture, which is “really a hidden and invisible activity in our city...it’s like people just have no idea [it is happening].” Others suggested that the inclusion of case studies and examples is essential: “The combination of some really good research and indicators coupled with some great projects is like the wow factor... So if we can have the numbers and the stories, I think it will be quite powerful actually.” At the same time, key informants remained focused on obtaining strong evidence: “It’s not just anecdotal, there is actual hard evidence and there’s appropriate research methodologies”; “We’re much more successful here with policy...now that we’ve taken on more evidence based approach.”

Many key informants identified a need to specifically identify and target key audiences for research results: “You’ve got to figure out how to package it and spin it in a way that it’s going to get the attention of whoever you’re looking to get the attention of.” For some respondents, that target

was industry and required a strong economic evidence base; for others, the target was city council and a strong message related to health and social equity; for still others, it was equity-seeking residential communities seeking evidence that informs and supports action:

The community has been researched over and over and over again so if families are to see a report back of a research that was done and they’re able to see some action items come out of that research, some follow up and a follow through, I think that serves a community better than a report and you don’t hear from the people again.

Discussion

Our findings indicate a nuanced understanding of the complexities of urban food systems governance and UA policy-making and implementation among our respondents, perhaps due to the extensive advocacy work done by members of GrowTO (UA entrepreneurs and community members) working with enlightened Toronto Agriculture Programme staff over time (Sommerfreund, Cook, & Emmanuel, 2016). On the other hand, our research confirmed the need for substantially more research around a wide range of potential quantifiable indicators relevant to urban agriculture and health in the City of Toronto. These would include a mix of simpler measures and more analytically demanding derived indicators, in which attribution to UA activities would be more explicit. Place-specific equity and economic data were of particular Salience among our key informants. Such data were collected, as part of the increasingly pressing priority to support the development of a just, growing, and viable urban food system (Raja et al., 2017). The key role of economic development and employment influenced revisions to the Toronto Food Strategy as can be seen in Figure 1. While improving the food environment, healthy food access, and food literacy are all present, community-building and inclusion, community economic development and infrastructure, and supply-chain improvements represent half of the food system themes.

Some of our interviewees expressed skepticism

Figure 1. Vision and Themes Developed in the Toronto Food Strategy



Source: Toronto Public Health Strategic Plan 2015–2019: A Healthy City for All
<http://www.toronto.ca/legdocs/mmis/2015/hl/bgrd/backgroundfile-80217.pdf>

about the benefits of UA and the extent and breadth of potential impacts. Existing evidence indicates that urban gardens function at very different levels of productivity depending on inputs, skill, time available, and likely soil quality and unmeasured factors (CoDyre, Fraser, & Landman, 2015; Smith & Harrington, 2014). In the experience of our grower colleagues from diverse communities, much depends on the quality of land provided, prior experience with growing (which is more common in elders), inputs, support for communities of colour, and the extent of training provided to younger growers through mentorship by elders in programs run by community organizations (AfriCan Food Basket, n.d.). Systematic sampling and estimation of food production values

in Madison, Wisconsin, were substantial—over US\$7 million (Smith & Harrington, 2014), although only a few households were likely producing more than they needed and hence contributing to markets as well as household livelihoods. Hunold and colleagues found that about half of Philadelphia urban and peri-urban farms (10/20) were profitable until labor costs were included in calculations, when it dropped to 3/20 (Hunold, Sorunmu, Lindy, Spatari, & Gurian, 2017, p. 62, Table 2).

Hence, additional data collection is needed on the skill development, job creation, and other community economic development impacts of urban agriculture programs in order to respond to the information needs of municipal policy-makers. Informed by our work, the Toronto Urban Grow-

ers (Teitel-Payne et al., 2016) program was funded by Toronto Public Health to consult stakeholders within the urban growing community on which production relevant indicators are most relevant to them and which would be feasible to collect. Considerable overlap can be seen in the categories and areas of interest, though more specificity is apparent, relevant to their role as producers (see Figure 2).

Subsequent work on indicators has been extended to the city-region food system (Miller, 2016), with noted persistent gaps in information on urban agriculture production, as one of the alternatives to the dominant food system.

Hesitations about risks were prominent among categories of indicators. Managing potential risks to health has been a key role for public health in many urban agriculture programs, particularly around metal contamination of soil (Witzling, Wander, & Phillips, 2011). In a parallel process, Toronto Public Health staff (led by author Archbold), informed by this study, revisited the soil guidelines (TPH, 2011 amended 2017). Cowling and colleagues (2017), in their review of health impact assessments (HIA) centered around agriculture, note that environmental hazards were one of the health impacts examined in the HIA done for the Urban Agriculture Overlay District in Cleveland, Ohio, (2012) along with empowerment and food access. Similar HIA processes can be applied more explicitly to scope, likely hazards, and benefits through HIA (Mittelmark, 2001) by selecting among the categories and areas of interest laid out in Table 1. Such HIAs may be more feasible than widespread primary data collection for informing policy-makers (Dannenberg et al., 2006). Combined with data from interviews, such as from this study, HIAs can hone in on areas of greater uncertainty and higher importance, guiding additional data collection and analysis (McCallum, Ollson, & Stefanovic, 2015). Municipal policy-makers should be allocating resources to generate such data and analyses to assuage both public concerns as well as their own.

Conclusions

This research validates calls for multifunctional approaches to understanding and developing more

equitable urban food systems (Morgan, 2015; Tornaghi, 2014; Raja et al., 2017; Sonnino, 2013) at the intersections of population health, environmental sustainability, and urban governance. In this study, municipal staff and policy-makers wanted local, tangible evidence that urban agriculture could help them achieve their social, economic, and environmental goals in a way that brought about meaningful impacts for local communities, with any risk being worth the reward. They were willing to work with researchers to conduct deeper investigations of urban agriculture's potential health equity dimensions in a complex and evolving multicultural context such as Toronto's. These might include mixed methods examinations of the policy-procedure dynamic for UA interventions in different settings, from park-based produce sales, to interim uses of fallow spaces, to shared land uses in civic spaces. Prioritizing resources to conduct more thorough investigations or assessments of the risks—both real and perceived—and ways to mitigate them would also be important in order to move from high-level endorsements to on-the-ground interventions in urban agriculture.

At the same time, staff and policy-makers in multiple local government sectors can reach out to health departments to provide evidence, to champion inclusive UA approaches, and to provide funding for key community stakeholders. Brainstorming together may help tackle thorny conflicts, such as dog parks versus community gardens, into better operationalize UA.

Health departments can build on equity oriented healthy public policy approaches to join with their Economic Development, Community Services, and Parks department colleagues. This would allow them to not only work together, but also to support community organizations, which often have a greater scope for action than municipal staff. Cross-departmental or cross-divisional work that includes community organizations can also involve the full range of municipal councilors and representatives to generate the broad support required to approve and fund UA initiatives. Our research indicates that such activities may better realize the multitude of potential benefits that inclusive UA can generate as part of broader food system change.



Figure 2. Production-Related Indicators for Urban Agriculture in Toronto; Toronto Urban Growers



Source: Teitel-Payne, R., Kuhns, J., & Nasr, J. (2016). *Indicators for urban agriculture in Toronto: A scoping analysis*. Toronto Urban Growers. Retrieved from http://torontourbangrowers.org/img/upload/Indicators_AODA.pdf

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Appendix

Interview Guide: Advancing Urban Agriculture Policy: Knowledge, Attitudes and Practices of Key Stakeholders

Purpose of the Study

The purpose of this study is to understand decision makers' perspectives on how the city and province can use health evidence and public policy to better support urban agriculture. In this study, we would like to interview you, in your professional role, about how you use health evidence and public policies in your everyday professional practice. In addition, we would like to ask you about whether and how the results of a research project aimed at measuring, collecting and communicating the impacts of urban agriculture might be useful to you in your work.

1. Context		
Construct	Question	Probes and cues
Professional Practice	What is your professional role or title?	Tell me a bit about what you do.
Role of Urban Agriculture	How does your work relate to urban agriculture in the City of Toronto?	
Role of Policy	Do you see your work as policy-related?	Can you give an example of how you might typically work with policies?
Role of Health Evidence	Do you see your work as health-related?	Do you typically use health evidence in your everyday work? If so, how?

2. Urban Agriculture Policy		
Construct	Question	Probes and cues
Urban Agriculture as Priority	How important would you say urban agriculture is in your daily work? Compared to all the other issues facing Toronto, would you say urban agriculture is considered a priority? Do you see urban agriculture as something that can support other policy goals in Toronto?	How much of your time would you say you spend on issues related to urban agriculture? How important is urban agriculture compared with other things you work on? ...for you? ... for others you work with? ... for key decision makers? Can you give an example?
General impacts of urban agriculture	What do you see as the key benefits of urban agriculture in Toronto? What are the risks?	Do you see any of these as health-related?
Health impacts of urban agriculture	What do you see as the major <i>health</i> impacts, positive or negative, of urban agriculture in Toronto?	

Urban Agriculture Policy Landscape	To your understanding, what key policies or institutions guide urban agriculture activities in the City of Toronto?	Who is involved? What do they do?
Urban Agriculture Challenges and Risks	What are the biggest challenges to supporting urban agriculture in Toronto?	How well is the system working? Who or what is not involved that should be? How could municipal and/or provincial policy better support urban agriculture? Would health evidence help address these challenges? How so? What kinds of health evidence would be helpful?

3. Toronto Public Health (TPH) Indicators Project		
Utility of Indicators	Would having scientific evidence of the public health impacts of urban agriculture in Toronto help support your work on urban agriculture?	Which broad impacts are you most interested in? Which non-health impacts are you most interested in?
TPH Indicators Project	We are planning to develop indicators to measure, assess, and communicate the health impacts of urban agriculture in Toronto.	How do you think you might be able to use that kind of health evidence in your work? Do you have any specific advice as to how this type of project could help meet your needs? I.e., What questions could health evidence answer for you, who could it help you convince, or what format is most useful?
Future networks/relationships	Do you think you might want to continue working with Toronto Public Health (or City of Toronto more broadly) on issues of urban agriculture in the future?	What opportunities for collaboration or networking do you see as having potential?

Growing in the city: Expanding opportunities for urban food production in Victoria, Canada

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Abstract

Growing in the City is a municipally led initiative developed to increase the amount of food grown within the City of Victoria. A comprehensive strategy to update and expand policies and programs enabling urban food production was launched in 2016. This paper describes the project background, the nature and goals of the policy and program changes, and the implementation process and early outcomes. It focuses on the specific initiatives that enable small-scale commercial urban food production, and on community programs that support urban food production in the public realm. These programs include community gardens, boulevard gardening, an inventory of city-owned land with community gardening potential, and a pilot program to plant food trees on city land. This paper explores if and how Growing in the City is achieving its goals to identify and discuss success factors,

challenges and areas for improvement. The conclusion provides general observations and considerations for the ongoing integration of food systems into city planning.

Keywords

Urban Agriculture, Community Gardens, Food Production, Food Systems Planning, Boulevard Garden, Food Policy, Land Inventory

Introduction

In Canada, the jurisdictional authority of local governments over their food system is limited, yet local governments are also service providers with the power to educate, enact policies, and support community-driven initiatives that shape food systems. Pothukuchi and Kaufman (1999, 2000) were among the first to argue that since the food system affects urban quality of life, it is critical for

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local governmental institutions to contribute to developing a more comprehensive understanding of food systems (Pothukuchi & Kaufman, 1999) and to explore how planners could strengthen food systems by engaging in food system planning (Pothukuchi & Kaufman, 2000). In 2018, the body of research pertaining to food system planning continues to grow and the planning community is increasingly playing a role in efforts to create more just and sustainable food systems (Morgan, 2009, 2013; Soma & Wakefield, 2011).

Recent research also shows how municipalities have or could devise integrated food policies and strategies inclusive of a full spectrum of food systems issues, ranging from urban food production, processing, distribution, and access, to waste management (Mansfield & Mendes, 2013; Morgan & Sonnino, 2010; Sonnino, 2009). The role of municipalities in increasing opportunities for urban food production has emerged as an area of focus for both academics and practitioners. Recent examples of resources focused on urban food production include the American Planning Association publication "Urban Agriculture: Growing Healthy, Sustainable Places" (Hodgson, AICP, Campbell, & Bailkey, 2011), the report "Continuous Productive Urban Landscapes: Designing Urban Agriculture for Sustainable Cities" published by Architectural Press (Viljoen, Bohn, & Howe, 2005), as well as "Agricultural Urbanism: Handbook for Building Sustainable Food & Agriculture Systems in the 21st Century Cities" (de la Salle & Holland, 2010). Other examples of academic research include investigations on the resurgence of livestock in urban contexts (Butler, 2012); how land inventories can enable the integration of urban agriculture into planning and policy-making (Mendes, Balmer, Kaethler, & Rhoads, 2008); the impact of zoning in expanding urban agriculture (McClintock, Wooten, & Brown, 2012); and the role of community gardens in enhancing health and well-being (Armstrong, 2000; Draper & Freedman, 2010; Ferris, Norman, & Sempik, 2001; Twiss, Dickinson, Duma, Kleinman, Paulsen, & Rilveria, 2003). Noteworthy research led by Rod MacRae (2010, 2012) focused on the production potential of urban agriculture to meet a portion of commercial demand while exploring what policy supports and

programs would be required (MacRae, Gallant, Patel, Michalak, Bunch, & Schaffner, 2010; MacRae et al., 2012).

This paper builds on the growing body of literature focused on how municipal urban governments are taking a comprehensive approach to enabling urban food production. The paper outlines the process and outcomes of Growing in the City (GITC), a municipally led initiative to update and expand policies and guidelines for urban food production in the City of Victoria. This paper provides an overview of GITC from a project development and implementation perspective, discussing the project background, the nature and goals of the policy and program changes, the implementation process, and early project outcomes. This paper focuses on the specific initiatives designed to enable small-scale commercial urban food production. It also focuses on the programs aiming to support community food production in the public realm, including community gardens, boulevard gardening, an inventory of city-owned land with community gardening potential, and a pilot program to plant food trees in city-owned green spaces. While this paper does not examine the citizen experience with the GITC process and outcomes, it explores if and how the project is achieving its goals to identify and discuss success factors, challenges, and areas for improvement. The conclusion provides general observations on the ongoing integration of food systems considerations to city planning, policies, and regulations.

Research Methodology

This paper uses a qualitative research approach to present a case study of the City of Victoria. The author is an employee of the City of Victoria, and works as food systems coordinator, a position that was created to implement GITC. This paper draws on the review of GITC reports prepared by city employees starting in 2015 and presented to City Council in February 2016. These reports present background information and community engagement results to analyze the issue at hand and provide recommendations for Council to consider. The methods used to develop the GITC recommendations included surveys, roundtable discussions, and interviews. They are further detailed in

the section “Collaboration and Community Engagement.” The paper draws on participatory observation by city employees (including the author of this paper) currently involved in implementing the GITC policy and program changes and monitoring outcomes. The paper also presents secondary data from Statistics Canada.

Background

The City of Victoria is the provincial capital of British Columbia, Canada. Located on the southern tip of Vancouver Island, on the traditional territory of the Lekwungen People, Victoria is a harbour city with an extensive shoreline. With a total area of 19.47 square kilometers (7.52 square miles) (Statistics Canada, 2017a) and 4,405.8 residents per square kilometer, in 2016 Victoria was the seventh most densely populated city in Canada (Statistics Canada, 2017b). Divided into 13 neighborhoods, Victoria has a total population of 85,792 within a regional district of 383,360 residents (Statistics Canada, 2017a). Victoria is the core urban municipality in the Capital Regional District (CRD), a regional government administrative district encompassing the southern end of Vancouver Island and the southern Gulf Islands. Figure 1 shows the location of Victoria within the CRD.

Victoria is a built-out city with little remaining undeveloped land and is committed to accommodating a share of the region’s projected population growth (City of Victoria, 2016m). Between 2011 and 2016, the Victoria population increased by 7.2% (Statistics Canada, 2017a). In 2016, 61% of Victoria households rented compared to 37% in the CRD (Statistics Canada, 2016b) and Victoria vacancy rates were 0.6% in October 2015 (Canada

Mortgage and Housing Corporation, 2015). Victoria is forecasted to need an additional 13,500 apartment units and an additional 2,700 ground-oriented dwellings¹ by 2041 (City of Victoria, 2012).

Regional food and farmlands are important aspects of Victoria’s and the CRD’s history, identity, and ongoing sustainability. However, the region’s traditional agriculture sector is declining, as indicated by a decrease in total farmland area of 842 acres from 2011 to 2016 (Statistics Canada, 2016c), an increase in the average age of farmers from 57.4 in 2011 to 57.5 in 2016, compared to a national average of 55 in 2016 (Statistics Canada, 2016a), and a decrease in the number of farm operators from 1,660 in 2011 to 1,495 in 2016 (Statistics Canada, 2016c). Because Vancouver Island imports the vast majority of its food, the regional trends create concerns for the future cost and stability of the food supply. In light of these challenges, the CRD adopted a Regional Food and Agriculture Strategy in 2016 to support the development and future success of food and agriculture across the region (Capital Regional District, 2016). The Regional Food and Agriculture Task Force

Figure 1. Map of Vancouver Island Showing the Location of Victoria and the Capital Regional District (CRD)



¹ A ground-oriented dwelling is a residential unit that has individual and direct access to the ground, whether detached or attached; the category includes single-detached dwellings, duplexes, rowhouses, and townhouses, as well as the principal unit and secondary suite in a single-detached dwelling.

was created to support the CRD in implementing the recommendations of the Regional Food and Agriculture Strategy.

Victoria is located in a sub-Mediterranean zone, providing some of the most moderate weather in all of Canada and a good environment for year-round gardening and food production. Victoria's public parks and open spaces encompass 207 hectares (511 acres) of municipal parks and open spaces and approximately 132 hectares (326 acres) of other public open spaces (City of Victoria, 2017a).

In 2017, there were 18 community gardens in the city, 14 of which were situated on city-owned land, and four of which were situated on school district or private land. The Official Community Plan (OCP) targets a minimum of one allotment garden per neighborhood (City of Victoria, 2012). Currently, eight of 13 neighborhoods do not have an allotment garden, and all allotment gardens are reported to have a full waiting list. City grants that support community gardening include place-making grants to animate underutilized community spaces (up to CA\$5,000 per project), micro-grants to purchase gardening supplies in community gardens (up to CA\$500), and community garden volunteer coordinator grants available to neighborhoods with community gardens to provide funding for a person to coordinate volunteers (up to CA\$6,000 per neighborhood). Other grant-making streams that can support community gardening include the strategic plan grants that support projects aligned with the city's 2015–2018 Strategic Plan objectives, and the participatory budgeting process grants. Launched in 2017, the participatory budgeting process empowers the community to decide what to do with a portion of the city budget. A total of CA\$52,500 was awarded in the first year of the program. Two of the three projects that received the most votes and won the participatory budgeting grants focused on urban gardening: A pop-up native bee apiary installed at a downtown community garden, and a learning garden and educational outdoor classroom at the Greater Victoria Public Library's downtown branch.

Many Victorians grow a portion of their food in private backyards, balconies, and rooftops, as

well as in community gardens or other green spaces. Numerous households keep backyard chickens and bee hives. The Animal Control Bylaw (City of Victoria, 2015a) allows poultry and bee hives, with few restrictions, making it one of the most permissive in North America. Several non-profit organizations provide educational resources supporting gardening and food production in the city, many of which are long-standing groups considered pioneers of urban agriculture in Canada. Victoria enjoys a vibrant local food scene brought to life by an abundance of restaurants, local producers, community gardens, two farmers markets, nongovernmental organizations, and residents who champion local food.

Growing in the City (GITC): Key Policy Directives

In the City of Victoria, key food systems directives come from the OCP adopted in 2012 (City of Victoria, 2012). In 2012, Victoria became one of the few municipalities in Canada to have a stand-alone OCP chapter on food systems. Chapter 17 of the OCP, titled "Food Systems," directs the city to increase opportunities for urban food production in the private and public realms. These policies aim to move Victoria's food system toward increased local food production and greater access to the skills, knowledge, and resources to produce and process food in urban areas.

The 2015-2018 Strategic Plan (City of Victoria, 2015c) is a road map developed by Council to guide decision making during their terms of office. "Objective 8: Enhance Public Spaces, Green Spaces, and Food Systems" (City of Victoria, 2015) identifies priority food systems action, including the development of food systems policies, programs and grants to support gardening and food production in public spaces.

To advance these key OCP directions, GITC was launched in 2015 with the goal of delivering six specific initiatives:

1. A review and update of the municipal Community Gardens Policy;
2. An inventory of city-owned land for community food production;
3. Guidelines for food-bearing trees on city-held lands;

4. A final version of the Boulevard Gardening Guidelines;
5. A review of city regulations and policies to explore the opportunity for, and implications of, supporting expanded small-scale commercial urban agriculture; and
6. Voluntary guidelines for food production in multi-unit, mixed use developments and other types of housing.²

Policy Process: Collaboration and Community Engagement

GITC presented a unique opportunity to work in partnership across and within city departments, with the regional health authority, and with local organizations and community members. The development and delivery of GITC was led by the Department of Parks, Recreation and Facilities (herein “Parks”); the Department of Sustainable Planning and Community Development (herein “Planning”); and the Department of Engagement (herein “Engagement”). In collaboration with the departments of Engineering and Public Works, Finance, Legal, and Legislative and Regulatory Services, Parks and Planning staff consulted community stakeholders, conducted background research, and developed proposed programs and regulations. City staff also worked with Island Heath, the regional health authority overseeing food safety, to ensure proposed changes in city regulations were aligned with provincial and regional regulations and guidelines.

Parks, Planning, and Engagement developed an engagement process to solicit input from diverse stakeholders ranging from the general public to local food experts. From June to October 2015, city staff conducted a first round of public engagement, which consisted of seven one-on-one interviews with urban farmers, an online survey ($n=809$), pop-up engagement stations at local farmers markets, and a series of meetings among city staff and urban food system professionals, distributors and purchasers. City staff also hosted a roundtable event with representatives of the Urban Food Table, the city’s advisory group for urban food production. Stakeholders were asked to

reflect on opportunities and barriers to increase urban food production. Feedback received in this first stage of engagement guided staff in their preparation of potential changes to policies, guidelines and regulations. A second round of public engagement was held from November 2015 to January 2016, which solicited feedback on the draft changes through another roundtable meeting with the Urban Food Table, an open house, a policy review workshop, and a second online survey ($n=236$).

GITC Policy and Program Changes

In February 2016, the proposed changes were presented to Council in two reports developed collaboratively by the departments of Parks and Planning. Presented by Parks, the report ‘*Growing in the City*’—Part 1: *Urban Food Production on City-Owned Lands* (City of Victoria, 2016f) updated policies and guidelines and introduced new programs to support community food production in the public realm. Presented by Planning, the report ‘*Growing in the City*’—Part 2: *Regulatory Amendments to Support Small-Scale Commercial Urban Farming* (City of Victoria, 2016g) proposed bylaw amendments to enable the sale of food products grown in the city. Key policy and program changes enacted by GITC are summarized in Table 1 and described in the section below.

Urban Food Production in the Public Realm (GITC Part 1)

City staff with Parks reviewed and developed policy and programs to increase the number of allotment gardens, commons gardens, edible landscapes, and food-bearing trees in the public realm based on community preferences. The community preference expressed in the first online survey indicated a high level of support for increasing opportunities for food production in public spaces: Of the 809 respondents, 98% supported an increase in the number of community orchards; 94% supported an increase in the number of boulevard gardens; and, 91% supported an increase in the number of community gardens (City of Victoria, 2015d). Most survey respondents connected

² The development of these voluntary guidelines was ongoing at the time this paper was submitted.

Table 1. Key GITC Policy and Program Changes

Urban Food Production in the Public Realm (GITC Part 1)	
Program or policy	Impact
Revised Community Gardens Policy	Improves opportunities for residents to initiate and participate in community gardens
Inventory of city-owned land with community gardening potential	Helps residents identify city-owned lands for new community gardening projects
Urban Food Tree Stewardship Pilot Program	Residents can apply to plant and maintain up to five food trees in parks and greenspaces
Boulevard Gardening Guidelines and amendment of the Streets and Traffic Bylaw No. 09-079	Allows boulevard gardens throughout the city
Regulatory Amendments to Support Small-scale Commercial Urban Food Production (GITC Part 2)	
Selected bylaw amendments	Impact
Zoning Regulation Bylaw No. 80-159 Schedule L: Small-Scale Commercial Urban Food Production	Defines allowed products; allows commercial food stand sales on lot where product is grown
Zoning Regulation Bylaw No. 80-159 Introduction and General Regulations	Allows commercial urban agriculture in all zones; exempts small rooftop greenhouses from height and density calculations
Zoning Regulation Bylaw No. 80-159 Schedule A: Definitions	Defines "Small-scale commercial urban food production," "Greenhouse" and "Foodstand"
Business Licence Bylaw No. 89-071	Permits on-site and off-site sales of food products provided a business licence is obtained
Pesticide Use Reduction Bylaw No. 07-094	Restricts the use of pesticides in small-scale commercial urban food production

increased food production in the public realm with food security, educational opportunities, and community-building, as illustrated below.

In order to address food security concerns, we should be growing as much food as possible in as many places as possible, and be as inclusive as possible in our definitions. (City of Victoria, 2015h)

More fruit and nut trees in the City is a good thing. People taking responsibility and working together and free food! (City of Victoria, 2016h)

We must begin to educate ourselves and our friends, neighbours and families about the source of our food and the importance of learning to grow, harvest and preserve it. Also, it is imperative that all regardless of their status and ownership of anything participate in these initiatives. (City of Victoria, 2015d)

Some respondents expressed concerned about the potential impact of increased food production on public space and resources:

It should be up to individual property owners whether they want to grow food or not, it isn't something the tax payer should have to finance, and it isn't something to sacrifice our scarce parks land for. (City of Victoria, 2015d)

Revisions to the Community Gardens Policy

The Community Gardens Policy, originally approved in 2003, outlines the process for the creation and sustenance of community garden sites on city-owned lands (see Figure 2), which are operated by nonprofit societies (usually neighborhood associations). The nonprofit society enters into a three-year licence agreement with the city and is required to carry liability insurance. The city does not build or maintain community gardens. All community gardening projects are volunteer-led.

Figure 2. Existing Community Gardens on VicMap

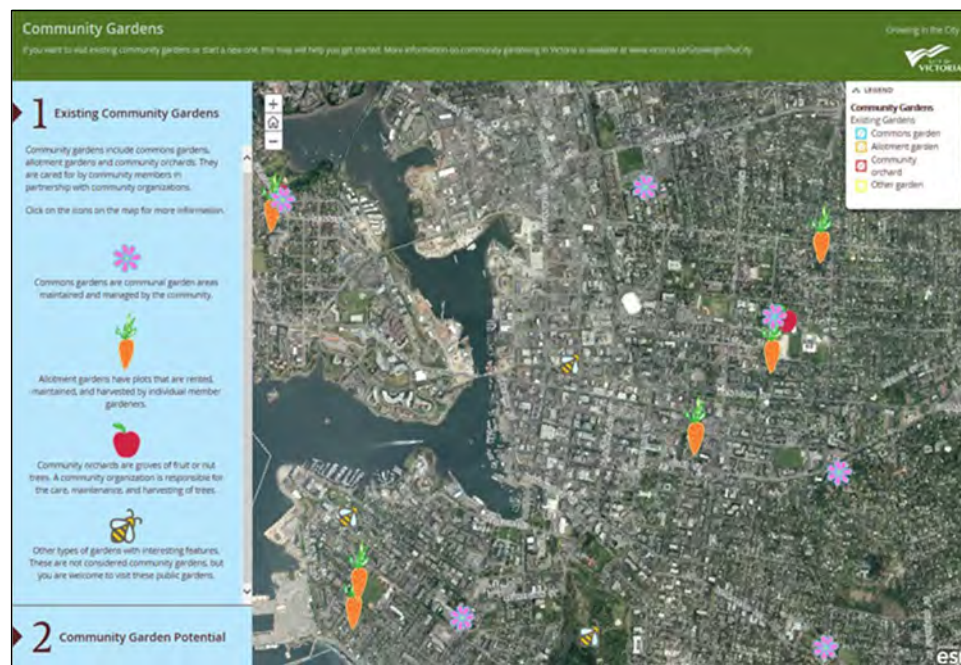
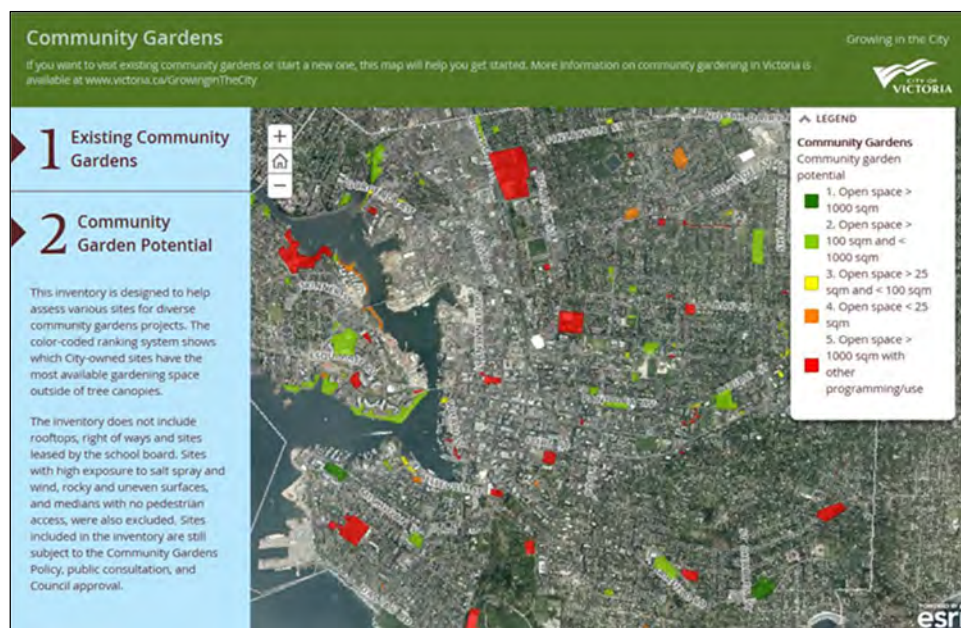


Figure 3. VicMap Inventory of City-owned Land with Community Gardening Potential



Based on citizen feedback, the 2003 Community Gardens Policy was revised in 2016 (City of Victoria, 2016e) to:

- Expand the definition of community gardens to better reflect the wide range of activities of

interest to residents.

- Remove the ability to restrict garden membership by neighborhood of residence. City-owned land with gardening potential is not equally distributed throughout neighborhoods.
- Increase staff support for new community garden projects to assist project proponents.
- Simplify the application process for new community gardens and provide better alignment with the city's grant application deadlines.
- Provide in-kind support, including excess leaf mulch and the waiving of water charges for all community gardens, as well as installation of split-rail fencing and a municipal water hook-up for new gardens on city-owned lands.

Inventory of City-owned Land for Community Gardening

To help residents identify and assess sites for community gardening, the muni-

cipality developed an inventory of city-owned land with community gardening potential (see Figure 3). A ranking system shows which city-owned sites have the most available open space. The inventory considered all properties owned by the city, including both pervious and impervious surfaces,

but excluding roof tops, rights-of-way, lands leased to the school board, lands with highly unfavorable growing conditions, and road medians with no pedestrian access. Sites included in the inventory are still subject to the community gardens policy and Council approval. The inventory is available on the Community Gardens Map on the city's interactive mapping system, VicMap (<http://vicmap.victoria.ca/CommunityGardens>).

Urban Food Tree Stewardship Pilot Program

Community feedback showed strong public interest for planting food trees on city boulevards and other green spaces. However, food-bearing trees grown in public spaces also present potential challenges, including intensive maintenance requirements, harvest management and safety, and allergy concerns. Fallen fruits may attract pests and rodents, damage property, or present a slipping or tripping hazard. GTC introduced the "Urban Food Tree Stewardship Program" in 2016, a five-year pilot program to expand the number of fruit and nut trees planted in the city while recognizing and mitigating the associated challenges. Residents can apply to plant and maintain up to five food trees in a park or open space through a partnership agreement between a community organization and Parks. Community food tree stewards are responsible for selecting, purchasing, maintaining, watering, and harvesting the tree(s). Parks assists with tree planting. Figure 4 shows a photo of the first planting.

Figure 5. Food-producing Container Beds on a City Boulevard with Sidewalk



Boulevard Gardening Guidelines

Generally speaking, boulevards are the strip of city-owned land between a property and the street. Boulevard gardens (replacing the traditional grass boulevard with other plants) have been appearing informally on City of Victoria boulevards for a number of years. Figures 5 and 6 show examples of boulevard gardens. In 2014, a citizen-led initiative resulted in a one-year pilot project to support and guide the creation of these garden beds on boulevards fronting residential lots, based on an interim set of Boulevard Gardening Guidelines. GTC consultations indicated that boulevard gardens were generally supported across the city and that residents perceive the gardens to build neighborhood character, make sidewalks more interesting, provide more space to garden, and

Figure 4. The First Apple Tree Being Planted under the Urban Food Tree Stewardship Pilot Program



Figure 6. Boulevard Garden beside a Retaining Wall Planted with Winter Squash and Tomato



provide beneficial habitat for pollinators and wildlife. Because boulevard gardens can be perceived as being messy or unkempt, site aesthetics were a primary concern. The final Boulevard Gardening Guidelines (City of Victoria, 2016b) introduced as part of GITC were revised to add a mechanism to deal with abandoned or unsafe gardens. The *Streets and Traffic Bylaw* (City of Victoria, 2016k) was also amended in 2016 to allow boulevard gardening and to specify design, safety and maintenance requirements.

Regulatory Amendments to Support Small-scale Commercial Urban Food Production (GITC Part 2)
Commercial urban food production, which produces agricultural products for sale in the city, is an emerging use, but one that does not fit neatly into zoning or other city regulations. Victoria is one of the first Canadian municipalities to tackle the emerging topic of commercial urban agriculture by adopting new regulations that enable the growing and selling of food in the city, with limits to minimize negative impacts on neighboring properties.

Drawing on the results of public engagement, a series of bylaw amendments were proposed to support commercial urban food production on a scale that is compatible with other urban land uses, particularly in residential and commercial areas. These amendments were developed to allow small-scale commercial enterprises to operate and also to allow “hobby producers” to sell surpluses from their home gardens.

GITC engagement indicated that 87% of respondents supported small-scale urban agriculture activities in their neighborhood. Many survey respondents connected increased commercial urban food production with food security, education, and the provision of local economic opportunities. For example:

The closer the food is grown and the more diverse the gardening, the stronger is our food security and the more likely it is to be sustainable. (City of Victoria, 2016h)

People who are doing this good work need more ways to get paid for their work, i.e., more opportunities to sell their produce.

And it's good for others to be able to see (and buy) the produce right where it is grown. (City of Victoria, 2016h)

Some public concerns about these activities included noise (from machinery and deliveries), hours of operations, odors (from compost, soil amendments, or chickens), parking for customers and employees, artificial greenhouse lighting, increased pesticide and synthetic fertilizer use, and site aesthetics and maintenance, as well as compatibility of agricultural uses in residential areas. The following are comments from survey respondents who did not support urban food production becoming recognized as a use in the city's zoning bylaw.

The commercial garden acceptability depends on where it is situated and who may be impacted. This is a land use matter and each should require full land-use system approval. So much depends on the expertise of the gardener, and the impacts on others... (City of Victoria, 2016h)

Prioritise residential development to reduce pressure on housing costs, not so that a small number of people can make money growing food in a cost-inefficient and unsustainable way. Food simply doesn't need to be produced in the city of Victoria, it is done far more sustainably in surrounding farmland. (City of Victoria, 2016h)

Defining Small-scale Commercial Urban Food Production in the Zoning Regulation Bylaw

As part of GITC, the Zoning Regulation Bylaw (City of Victoria, n.d.-b) was amended in 2016 to define “small-scale commercial urban food production” to include the cultivation, harvesting, keeping, sorting, cleaning, and packaging of the following edible and non-edible products: raw and unprocessed fruits, vegetables and mushrooms, flowers, herbs, fiber, seeds, nuts, seedlings, plant cuttings, eggs, and honey. This new definition addresses previous restriction on the sale of animal products (e.g., eggs and honey) and expands allowed products to non-edible crops. The

definition also excludes products regulated by the Controlled Drug and Substances Act and the sale of value-added food products (e.g., jams, bread or prepared meals).

Allowing Small-scale Commercial Urban Food Production in All Zones

In 2008 the city introduced “urban agriculture” as a home occupation under its Zoning Regulation Bylaw (City of Victoria, n.d.-b), which allowed up to two people living on site to produce fruits and vegetables for retail purposes on a portion of the parcel. As with other home occupations, retail sales were not allowed from the site. Urban farmers wanting to establish a commercial urban agriculture operation away from their place of residence were directed to industrial areas. Through GITC consultations, urban producers indicated they would prefer not to be limited to industrial areas due to the limited availability of arable land, risk of soil contamination, and limitations on retail sales. To expand the range of potential sites for new and existing urban farms to include commercial areas, vacant residential lots, rooftops, institutional properties, and other underused sites, the Zoning Regulation Bylaw (City of Victoria, n.d.-b) was amended in 2016 to permit “small-scale commercial urban food production” in all zones, provided it does not create noxious or offensive odors, noise and light pollution. “Urban Agriculture” was removed from the definition of “home occupation” to allow more flexibility for lands to be used for urban food production.

On-site and Off-site Sales of Urban Food Products

There was strong interest from the community and urban producers for on-site sales, but several regulatory barriers limited them.

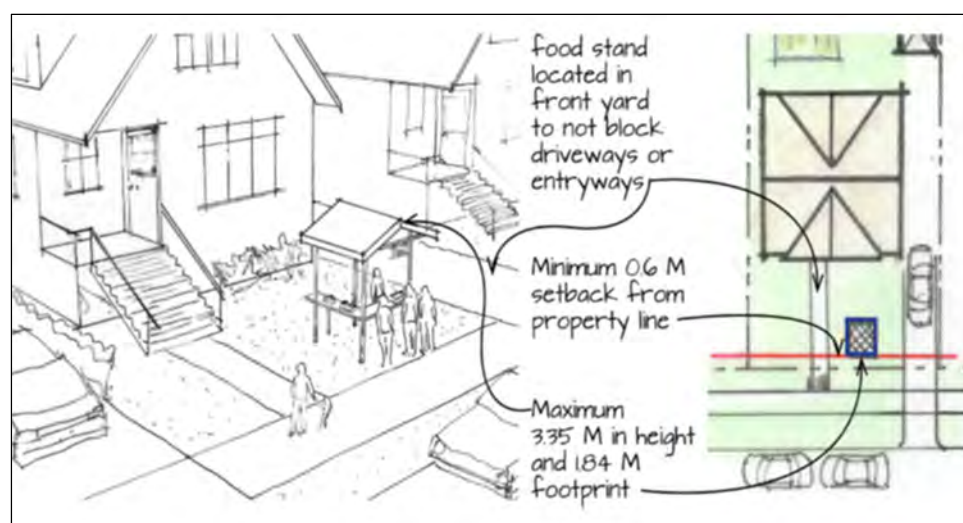
As part of GITC, the Zoning Regulation Bylaw (City of Victoria, n.d.-b) was amended in 2016 to allow food stands in all zones. Only products grown on-site can be sold at a food stand, and food stand sales are limited to products identified in the definition of small-scale commercial urban food production. The bylaw also identifies permitted food stand hours of operations and maximum size, as well as placement and setback requirements (illustrated in Figure 7). Food stands cannot be fully enclosed and can be made of tables, baskets, bins, or shelves. They do not require a building permit. As part of GITC, the Business Licence Bylaw (City of Victoria, 2015b) was amended to introduce a new business licence category. An annual (CA\$100) and a three-month (CA\$25) business licence are now available for food stands or other on-site sales at permitted locations such as restaurants and grocery stores.

The off-site retail sale of commercial urban food products is also allowed in all zones. An annual business licence (CA\$100) for off-site retail sales is also available. Examples of off-site sales include farmers markets, retailers, restaurants, box programs, and other private sales.

Exemptions for Rooftop Greenhouses

Rooftop greenhouses can enable year-round local food production. Where buildings have the structural capacity to support a rooftop greenhouse,

Figure 7. Diagram Showing Permitted Food Stand Dimension and Location



zoning regulations for building height and floor area have constrained opportunities for rooftop greenhouses. To encourage small rooftop greenhouses, the Zoning Regulation Bylaw (City of Victoria, n.d.-b) was amended in 2016 as part of GITC to permit rooftop greenhouses on multi-unit developments such as apartment buildings with at least four units. Rooftop greenhouses are not permitted in low-density residential zones or on smaller multi-unit developments with fewer than four units.

As a result of GITC, rooftop greenhouses are also excluded from zoning height calculations and floor space ratio calculations, provided they meet specific dimension requirements. To minimize visual impacts on neighbors and the public realm, only small greenhouses measuring up to 3.65 meters (12 feet) in height and 28 square meters (301 square feet) or no more than 50% of the building area (whichever is less) are excluded from zoning height calculations and floor space ratio calculations. As a result of the 2016 amendment, greenhouses are defined as a structure made of glass or other translucent materials used for the cultivation or protection of plants, and can be used for personal, community, educational, or business purposes.

Restrict the Use of Pesticides in Commercial Urban Food Production

One of the key concerns expressed by the community and Council was the potential use of pesticides for increased urban food production. The existing Pesticide Reduction Bylaw (City of Victoria, n.d.-a) was amended in 2016 as part of GITC to restrict the application of pesticides in small-scale commercial urban food production. Only pesticides on the provincial list of reduced-risk, permitted pesticides³ can be used for small-scale commercial urban food production, unless a permit is obtained.

Implementation and Outreach

Following the adoption of revised policies, guidelines and regulations, the final phase of GITC focused on implementation and community

outreach. In 2015, a full-time food systems coordinator position was created in the Parks department. The city's food systems coordinator also attends monthly meetings of the Urban Food Table and is a member of the CRD Regional Food and Agriculture Task Force.

From the beginning, municipal staff recognized the importance of good quality communications and educational materials to support the implementation of GITC initiatives. Outreach was directed at both city staff and the community. Educational materials were developed for the public and made available on the city's one-stop web portal for urban food and gardening (<https://www.victoria.ca/growinginthecity>). To support the delivery of city services, summaries of the new urban food regulations were developed for internal use only. Staff meetings provided opportunities to coordinate program delivery to align with existing city operations.

Education materials that support urban food production in the public realm include fact sheets to aid new and expert gardeners (City of Victoria, 2016a; 2016b; 2016c; 2016l). Materials developed to support commercial urban food production (City of Victoria, 2016d; 2016i; 2016j; 2017b) include a handbook and fact sheets, which are available at <https://www.victoria.ca/foodproduction>. City staff also participate in public food and gardening events, and submit information to community newsletters. City-led workshops are being developed to continue dissemination and increase general uptake.

Discussion

Successes

The impacts of the new policies, programs, and bylaws are being monitored. It is too early to evaluate the extent to which GITC initiatives are having the intended impact of increasing opportunities for urban food production. Nonetheless, the increase in the number of community gardens, boulevard gardens, and food trees being planted in the city indicate a strong and possibly growing community

³ The provincial list of reduced-risk, permitted pesticides can be found at <https://www.victoria.ca/EN/main/residents/parks/natural-areas/pesticide-reduction.html>

interest in diverse community gardening projects (see Table 2).

Key factors that explain success include:

- The long-standing active engagement of knowledgeable community members and organizations to deliver programs and services and bring forward new projects.
- Constant support from City Council, who identified enhancing food systems as an objective in the 2015–2018 Strategic Plan, voted in favor of the GITC changes, approved proposals for new community gardens, and awarded grants to organizations involved in food systems work.
- Ongoing inter- and intradepartmental collaboration among city staff who worked closely on the GITC consultation process, development of the policies and programs, and creation of resources to implement the GITC changes.
- City grants support different types of community gardening projects, ranging from coordinating community garden volunteers to building a toolshed. From 2016 to 2018 the city awarded approximately CA\$120,000 through the community garden volunteer coordinator grants. A total of CA\$12,000 was awarded in microgrants for community gardening from 2015 to 2018. Place-making grants, the participatory budgeting process grants, and the strategic plan grants are other granting streams with broader scope that have supported urban food and gardening projects and organizations. Of the

available CA\$52,500, the participatory budgeting process awarded a total of CA\$27,500 to two urban food and gardening projects.

- Recent informal conversations with urban farmers indicate that consumer demand for city-grown food is reportedly high, with local restaurants playing a key role in supporting urban farming businesses.

Challenges: Commercial Urban Food Production

Balancing visual appeal and safety with farmer needs

Although the feedback obtained through the GITC consultation resulted in multiple changes in city regulations, the city was not in the position to address all regulatory issues or implement all suggestions. For example, urban farmers identified as a barrier to expanded commercial urban food production the need for a development permit for structures such as greenhouses and walk-in coolers in applicable areas. Because these permits serve important purposes in regulating visual impacts from adjacent properties and the public realm, buildings and structures associated with commercial urban food continue to require development permits. Urban farmers also identified as a barrier the need for a building permit for agriculture-related buildings and structures, particularly for temporary plastic hoop houses. The city continues to require a building permit for agriculture-related buildings and structures due to the safety risks posed by permanent and temporary structures (e.g., collapsing from the weight of snow, or materials blowing around in strong winds).

Table 2. Number of New Community Gardens, Food Trees, Boulevard Gardens, Business Licences, and Rooftop Greenhouse since February 2016

Community gardens	1 allotment ^a and 2 commons with pollinator and native plantings
Food trees on city land	10 apple and hazelnut trees
Boulevard gardens	Present in all 13 neighborhoods of the city. Number unknown.
Business licences	10 licences approved; most producers grow vegetables
Rooftop greenhouses	No rooftop greenhouses proposed as of June 2018

^a The allotment garden in contained raised beds on the former site of a dry-cleaning business, now a remediated city-owned property. The project was initiated through CityStudio Victoria, an innovation hub for staff, university students and community members.

Mitigating tax burden from farm classification

Some urban farmers encouraged the city to adopt lower tax rates and create incentives for more commercial urban food production. In British Columbia, properties under 8,000 square meters (86,111 square feet) with farm sales exceeding CA\$10,000 can be classified as a farm-class property by the BC Assessment Authority. The assessment value is typically lower for farm-class property, so owners of farm properties typically pay less taxes. However, in 2008, Council directed staff to amend the city's revenue and tax policy so that farm-class properties pay equivalent taxes to residential-class properties. This policy was introduced to mitigate the potential increase in tax burden to existing tax classes with commercial urban agriculture being added to the list of permitted home occupations. The city maintains the current policy with respect to farm-class tax rates.

Non-regulatory barriers

Other barriers identified by urban farmers include the insecurity of land tenure, lack of economic viability of urban farming, lack of preferential water pricing for urban farms, and need for more skills training and access to capital for new farmers. These nonregulatory barriers were outside the scope of the GITC project.

Balancing housing needs and food production

It is difficult to gauge future interest in commercial urban food production. How the city will balance its growth targets for new housing and development with urban agriculture may be negotiated on case-by-case basis. The following quote from a survey respondent illustrates the potential for tension between commercial urban farming and the need for more housing:

I don't think urban agriculture should be prioritised over residential living....There may be a time when an urban agriculture business conflicts with downtown living; at that point I think residential development should trump small-scale agriculture. (City of Victoria, 2015d)

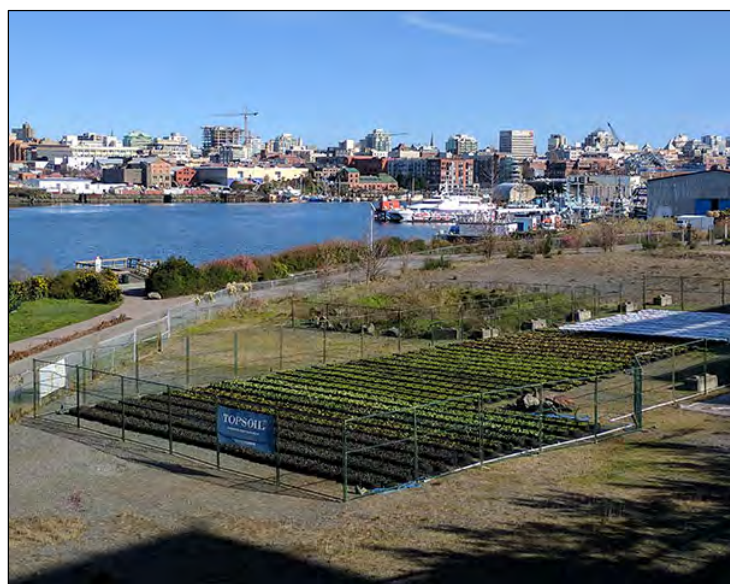
New developments, however, might also present unique and innovative opportunities to integrate commercial urban food production to the built form. For example, in New York, the Staten Island development Urby hires two farmers-in-residence who grow produce in a 5,000-square-foot (465-square-meter) courtyard, keep honey bees on rooftops, and operate an on-site food stand (Rosen, 2017). Lots left empty as they await development also have the potential to host commercial urban food production. For example, the Victoria-based urban agriculture business TOPSOIL (see Figure 8) is located on a 1,400-square-meter (15,000-square-foot) temporarily vacant lot at Dockside Green, a development project in the Victoria West neighborhood.

Challenges: Community Food Production in the Public Realm

Limited land base

Challenges for starting new community gardens include Victoria's limited land base and a sometimes conflicting community desire for more natural areas and unprogrammed open spaces. At the same time, the increasing urban density and the

Figure 8. The Urban Agriculture Business TOPSOIL, Located on a Temporarily Vacant Lot at Dockside Green, Victoria, British Columbia



disappearance of private gardening spaces drive further demand for community gardens.

Capacity for the community garden start-up phase

The process of developing a proposal for a new community garden is demanding and is led primarily by volunteers. The city does not build or maintain community gardens, and currently there is no city funding that supports the community garden planning stage.

Allotment gardens perceived as exclusive use of public space

Allotment gardens may be perceived as an inappropriate use of public space. Although there are 18 community gardens in the city (seven allotment gardens, nine commons gardens, and two community orchards), two neighborhoods do not have a community garden, and eight of 13 neighborhoods do not have an allotment garden. One survey respondent noted that allotment gardens are an exclusive use of public space:

Totally against allotment gardens in public parks. There can be no justification for giving individuals exclusive, open ended access to public land. (City of Victoria, 2015d)

New developments are also perceived as opportunities for increasing the number of allotment plots. One survey respondent asked the city to:

Encourage incorporation of tenant's plot in new developments, and explore ways of encouraging conversion of some existing (apartment) lawns to allotment areas for tenants. It doesn't all have to be done on city land... (City of Victoria, 2015d)

Key Lessons

Community engagement is key in identifying which policy and programs enable urban food production. For example, through in-depth engagement, the city became aware of the context in which urban farming typically occurs and how specific regulations hindered urban farming. Determining factors such as strong community involvement, small profit margins, zoning limitations and where products are sold were brought to the attention of

the city through the participation of urban farmers. The policy changes are, in many ways, a direct reflection of some of their feedback.

Communication and collaboration are key in urban food policy. The process of converting community input into new policies, regulations, and programs, and the process of rolling out these changes both internally and externally, cut across multiple departments. In the short term, the creation of resources for city staff and the public helped communicate the impact of the changes and the opportunities they present. In the long term, the emergence of an environment where urban food production is fully embraced as part of the urban fabric is expected to require ongoing communication and collaboration.

Ensuring that the community has the capacity to benefit from the GITC changes and increase community gardening and urban food production in the public realm may require further support from the city. Because new projects on city land are usually led by volunteers, supportive policies and information may not be enough to have a significant impact on, for example, increasing the number of allotment gardens. Capital investments or funding for the convening, designing, and building phases of new community gardens are avenues that could be considered. At the same time, additional city involvement should not dilute or undermine community ownership of community gardening projects.

Conclusion

Building on a strong foundation of support from the community and City Council, the GITC project aimed to reduce barriers to urban gardening and food production through a variety of policy, educational, and regulatory mechanisms.

The GITC project grew out of a recognition that urban food production and gardening are rapidly evolving to encompass a broad set of activities that go beyond the "traditional" allotment garden. Commons gardens, boulevard gardening, and stewarding food trees in city greenspaces are gaining in popularity and are increasingly being used as community-building and place-making activities. While food production is an important focus for many, a growing number of residents

garden to beautify and animate public spaces and to support biodiversity. Through a suite of updated and new programs, the GITC project aimed to make it easier for residents to participate in gardening on public lands.

The rise of local food movements has supported a growing interest in urban agriculture activities, ranging from sharing food with neighbors through food-stand sales, to supplying regular deliveries to local restaurants. Through the new urban food bylaws and the availability of educational materials, the City of Victoria is committed to enabling small-scale commercial urban food

production. The modest uptake in the first years may be due to the very recent introduction of the new regulations, systemic issues affecting the food and agriculture sector, remaining regulatory restrictions, or other unknown barriers.

As the new programs, policies, and regulations are implemented, both successes and challenges are emerging. Ongoing monitoring will be required to assess the positive impact of these changes, and to adapt regulations and policies to the rapidly changing landscape of urban gardening and food production in the private and public realms.

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What does zoning have to do with local food systems?

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Abstract

This paper investigates the extent to which local governments use zoning ordinances to support local food systems. An audit tool was created that comprised five food system elements and a total of 24 land use items that could be included in a zoning ordinance. Using this tool, the author examined 104 zoning ordinances in Wisconsin to determine if they include any of these 24 items. Zoning ordinances from rural and urban areas and from communities that had evidence of local food systems and those that did not were selected for this study. The findings indicate that there is wide variation in how zoning ordinances address local food systems. There are also significant differences between rural and urban communities and between communities with a focus on local food systems and those without. Communities have an opportunity to include more land use items that support local food

systems within their zoning ordinances than currently exist.

Keywords

Local Food, Land Use, Zoning, Wisconsin

Introduction and Literature Review

The United States food system relies on a complex web of infrastructure, relationships, and regulations to get food from field to mouth. The food system includes processes as diverse as food production, processing and distribution, access and consumption, and waste recovery (Center for Ecoliteracy, 2012; Harvard Law School Food Law and Policy Clinic, 2012). Local governments have recognized that their policies and regulations can inhibit or support the local food system, whether they are in urban areas (Vaage & Taylor, n.d.) or fringe and rural areas (Richardson, 2013), and can create barriers to healthful food environments (Raja, Picard, Baek, & Delgado, 2014).

Zoning is one of many local policy tools and a recognized way to support or hinder the local food

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system. According to Fischel (2000), “there are more than 25,000 local jurisdictions in the US that have the power to adopt zoning laws, and their authority to regulate land is derived from the legislatures and constitutions of 50 states, not from the federal government” (p. 403). Talen (2012) notes that “...codes are the basis for public decision-making to the built environment” (p. 1). Both urban and rural areas use zoning to regulate land use, and while it is used less often in rural areas, rural areas deal with complex issues, such as mining, that can be regulated under a zoning ordinance (Daniels & Daniels, 2003). Due to the ubiquity of zoning and its power to determine land uses within a local government jurisdiction, in this article I analyze the extent to which zoning codes comprehensively address local food systems. The following sections of the article review the literature focused narrowly on the relationship between local food systems and zoning, articulate the methods used to select and analyze zoning codes, and, finally, discuss the results of this analysis and their implications.

An Explanation of Zoning

The zoning code is a policy tool used by most communities across the U.S. to regulate private land and has been used by local governments for over 100 years (Hoch, Dalton, & So, 2000). Its original purpose was to separate land uses and to protect single-family residential areas. The zoning code and its accompanying zoning map defines land uses, density of buildings and land parcels, and the dimensions of the building envelope on a land parcel. The act of amending a zoning ordinance allows for some flexibility in an otherwise rigid policy tool (Hoch, Dalton, & So, 2000). The ease with which amendments can be made depends on a particular community, but it is much easier to add or delete land uses than to rewrite an entire zoning ordinance (Hoch, Dalton, & So, 2000; Kelly & Becker, 2000). The ease with which minor amendments can be made may imply that the code can be more easily influenced by those who are familiar with it, such as developers, in contrast to the average resident.

A zoning map accompanies the zoning code. The zoning map divides the community into

different zoning districts and the text specifies uses that are allowed within those districts, such as residential, commercial, industrial, and agricultural (Hoch, Dalton, & So, 2000; Kelly & Becker, 2000). Each zoning district specifies uses that are allowed-by-right (permitted uses) and those that require special consideration (conditional uses or special exceptions). In a large-lot, single-family residential district, for example, permitted uses might include single-family homes, home-based businesses, and police and fire stations, while conditional uses might include community gardens, daycare centers, schools, churches and other religious institutions. If a particular use is not listed within a district as either permitted or conditional, it is considered prohibited (Daniels, Keller, & Lapping, 1995). That means that in a commercial district, for example, if restaurants are neither permitted nor conditional uses, restaurants are presumed prohibited in that district. It is possible to rezone parcels from one district to another; however, the desired use must be listed in that district. Local governments have the discretionary authority to rezone properties and determine the uses allowed in various districts. That the zoning ordinance is inflexible in terms of listing or not of particular uses, including local food system uses, can create a significant barrier for change in a community.

Zoning and the Food System

Zoning is a key policy tool that can set the pattern of development and encourage or prohibit land uses. Several studies examine zoning ordinances in the U.S. to understand the extent to which zoning addresses areas of concern. This includes topics such as smart growth, sustainability, and mixed uses (Hirt, 2007, 2013; Jepson & Haines, 2014; Talen & Knapp, 2003). A few studies consider local food systems as part of one of these larger topics.

Jepson and Haines (2014) included food production as one component of their study of sustainable communities, finding few examples of food production in their sample. Two other studies used an empirical analysis of municipal codes to examine the local food system. Butler (2012) conducted a study of 22 municipal animal control and/or zoning ordinances to see how they address

livestock in urban areas. For the zoning ordinances specifically, Butler examined zoning districts, lot sizes, setbacks, and other aspects of regulating animals. He found ordinances that allowed livestock in only agricultural districts and ordinances that allowed livestock in residential districts, suggesting that communities vary widely in their approach to regulate agriculture. Meenar, Morales, and Bonarek (2017) reviewed zoning ordinances and other documents in 80 municipalities across the U.S., focusing on urban agriculture for gardens and livestock. They found many examples of urban agriculture being allowed in zoning ordinances; 77 out of 80 municipalities allowed or did not expressly forbid livestock, while only 17 municipalities regulated built structures for urban agriculture.

Zoning is sometimes criticized for creating barriers to urban agriculture in terms of both vegetable and animal production, encouraging unhealthful food options, and harming farmland protection in rural areas and on the urban fringe (Caton-Campbell, 2004; Daniels & Payne-Riley, 2017; Horst, McClintock, & Hoey, 2017; Raja, Born, & Russell, 2008; Schindler, 2014; Soma & Wakefield, 2011; Zapp, 2016). In urban areas, small grocery stores and urban agriculture can be inhibited by zoning, including prohibitions on the sale of fruit and vegetables in outdoor stands or markets, gardening or farming in residential districts, and limitations on the type and number of farm animals (Caton-Campbell, 2004; Desjardins, Lubczynski, & Xuereb, 2011; Feldstein, 2013; Horst et al., 2017; Raja et al., 2008; Schindler, 2014).

One strategy to deal with regulatory barriers is to remove them by amending the zoning ordinance (Caton-Campbell, 2004). Robbins (2016) recommends using the zoning ordinance to expand urban agriculture in residential and commercial districts. Horst et al. (2017) provides several examples of cities that have amended zoning ordinances to allow the keeping of bees, poultry, and goats; cultivation of crops, including fruit and nut trees; urban farm incubators; and local food-based retail, including public markets and street vending. Another strategy is to discourage uses such as fast-food and chain restaurants (Morales & Kettles, 2009; Mukherji & Morales, 2010; Raja et al., 2008;

Robbins, 2016). For example, Concord, Massachusetts, expressly prohibits fast-food restaurants in its zoning ordinance (Raja et al., 2008).

Many researchers have used a case-study approach to examine how particular cities have incorporated local food system goals and policies into existing planning and policy frameworks (Masson-Minock & Stockmann, 2010; McClintock, Wooten, & Brown, 2012; Raja et al., 2014). After many workshops and discussions, the Flint, Michigan, zoning ordinance was amended to allow hoop houses and keeping of chickens (Masson-Minock & Stockmann, 2010). The Buffalo, New York, draft ordinance added urban agriculture activities in many districts and addressed structures like apiaries, chicken coops, greenhouses, farm stands, and market gardens (Raja et al., 2014). Finally, the Oakland, California, interim zoning ordinance allowed urban agriculture in all zoning districts within the city as a conditional use. It also amended the ordinance to allow indoor food production, such as hydroponics, in industrial districts (McClintock, Wooten, & Brown, 2012).

The literature on food systems and zoning is largely focused on urban agriculture and its many uses. There are no comprehensive studies that analyze developing local food systems through zoning solutions (Martinez et al., 2010; Russell, 2011). In this article, I attempted to analyze local food systems by specifically studying zoning ordinances in metropolitan and nonmetropolitan areas. My specific question was: To what extent do zoning ordinances address local food systems in rural and urban areas? I examined zoning ordinances that affect all aspects of the local food system, including food production, processing, aggregation and distribution, retail, and waste (Center for Ecoliteracy, 2012; Harvard Law School Food Law and Policy Clinic, 2012). In addition, using descriptive analysis, I took a deeper look at zoning codes from two communities that have had extensive support for local food systems as a way to provide further insight into the specifics of zoning codes.

Research Approach and Data

My approach to this research had four phases. In the first phase, I selected a set of zoning

ordinances to audit. In the second phase, I created an audit tool and used it to score each zoning ordinance. In the third phase, I used descriptive and statistical analyses to measure the extent of local food systems items within zoning ordinances. In the fourth and final phase, I conducted a review of two cases using description to illuminate each one.

Phase I. Community Selection

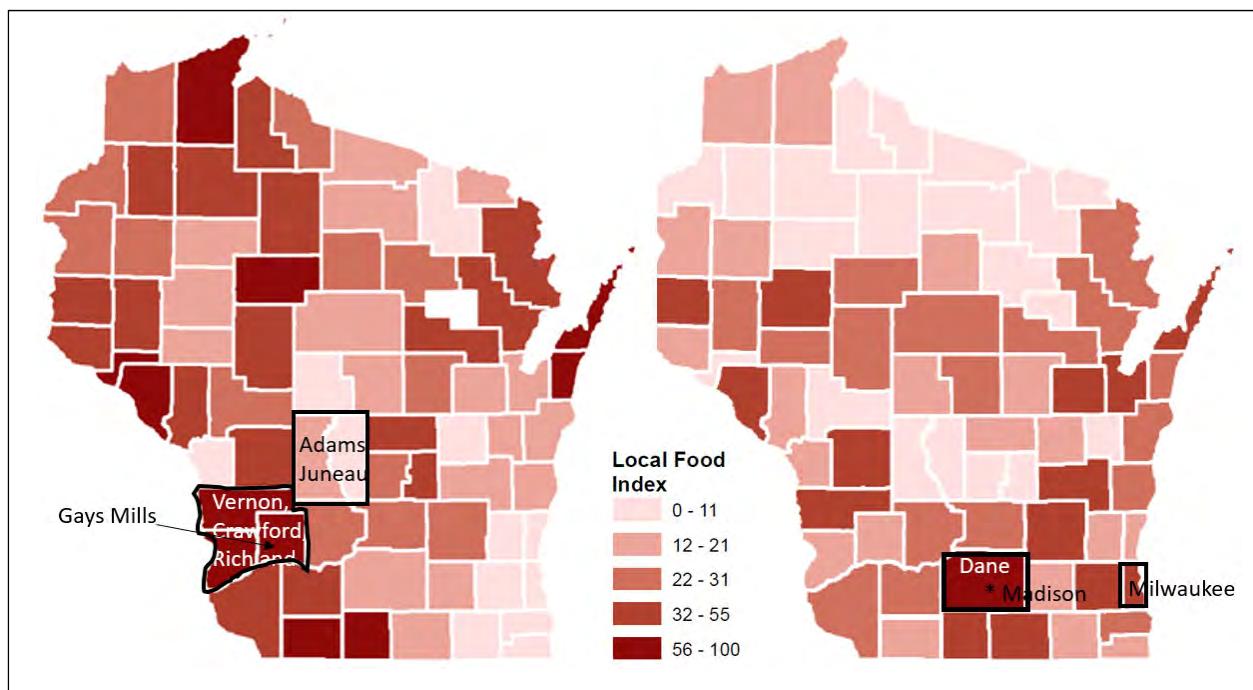
Wisconsin is on Rodale's top ten list of most locavore-friendly states (Zerbe, 2012). As early as 2000, the city of Madison, for example, had created an advisory committee on community gardens, which in turn developed an action plan (City of Madison Advisory Committee on Community Gardens, 1999). Wisconsin communities also operate under the same state laws pertaining to planning and zoning. For these reasons, and due to my familiarity with Wisconsin, I chose to select communities from Wisconsin.

I gathered data for all counties in Wisconsin from the U.S. Department of Agriculture (2012). I created an index to show the presence of local food systems based on ten variables. Three variables represented agricultural production: direct

sales to consumers (\$), farm type (# of family-owned), and farm size (# of farms of 1 to 49 acres [0.4 to 20 hectares]). Four variables focused on small processing establishments with one to nine employees: animal, grain and/or oilseed, dairy, and fruits and/or vegetables. Three variables represented other local food businesses with one to nine employees: bakeries, beverages, and other. The other category includes coffee and tea manufacturing and perishable prepared food manufacturing, among other items. I decided on these tiny firms with the rationale that they primarily process and sell their products locally rather than export it (Deller & Stickel, 2014). The results of this analysis are shown in Figure 1. The map on the right shows the index without normalizing the data by population, and the map on the left shows the index normalized by population. Normalizing allows for consideration of nonmetropolitan areas. The figure shows the counties with low (lighter) to high (darker) scores. A high score means that for the 10 variables, there is evidence of a local food system.

Rather than randomly select communities, I chose to select a cross-section of communities from metropolitan and nonmetropolitan areas, and

Figure 1. Wisconsin Local Food Index and Case Selection



those with high and low levels of local food systems. For metropolitan counties, I chose Dane County, which had the highest local food index score, and it is in the Metro-High group. Local food sales in 2014 totaled US\$2.9 million (University of Wisconsin Extension, 2014). Milwaukee County had half the score of Dane County and is in the Metro-Low group. This county has local food sales totaling US\$106,000 (U.S. Department of Agriculture, 2012). These two counties contain the two largest cities in Wisconsin.

The cluster of counties including Vernon, Crawford, and Richland had some of the highest normalized scores for nonmetropolitan counties (Non-Metro High group). This area has a high number of community-supported agriculture farms and is home to Organic Valley and a local food cooperative grocery store. In 2012, local food sales accounted for US\$2.7 million in Vernon County, US\$1.3 million in Crawford County, and US\$729,000 in Richland County (University of Wisconsin [UW] Extension, 2014). Adams and Juneau are two adjacent counties with some of the lowest scores of the nonmetropolitan counties (Non-Metro Low group). Local food sales amounted to US\$178,000 in Adams County and US\$195,000 in Juneau County (UW Extension, 2014).

I searched for a zoning ordinance for all the local governments within each county—towns, villages, cities, and the county. I used the Municode legislative service when possible and otherwise went directly to the community. Only those

ordinances that were available through the internet were included in the sample. In the seven selected counties, there are 211 local governments, of which 80 (largely town governments) do not have zoning (see Table 1). I scored 104 local ordinances, or just under 50% of the local governments.

Phase II. Creating the Audit Tool and Scoring Communities

Freedgood, Pierce-Quinonez, and Meter (2011) provide an excellent overview of existing assessment tools. However, existing assessment tools do not focus on zoning ordinances, but on other aspects of the food system, including determining foodsheds, analyzing food security, asset mapping with stakeholders, mapping food deserts, and identifying underutilized agricultural land. Evaluation tools have also been developed and used to examine local food systems within comprehensive plans (Evans-Cowley, 2011). An internet search did not find a food assessment tool focused specifically on zoning ordinances.

Given the lack of a tool for my specific purpose, I created an audit tool (see Table 2). I examined the Harvard local food policy report (2012) and Center for Ecoliteracy food system diagrams (2012). The Harvard model (2012) was designed in part to lend itself to analyzing land use policy and includes five food system elements: production, processing, aggregation and distribution, retail, and waste. It includes each of these elements and the types of items one might find in a zoning ordinance. I chose items from the literature that had a

Table 1. Sample of Local Governments and Ordinances

County	Type of Food County Group	Total Local Governments	Total # of Zoning Ordinances	Percent of Local Governments with a Zoning Ordinance	Total # of Ordinances Available and Examined	Percent of Local Governments with an Examined Code
Adams	Non-Metro Low	21	19	90.5%	19	90.5%
Crawford	Non-Metro High	23	8	34.8%	3	13.0%
Dane	Metro High	62	51	82.3%	45	72.6%
Juneau	Non-Metro Low	29	10	34.5%	3	10.3%
Milwaukee	Metro Low	20	19	95.0%	19	95.0%
Richland	Non-Metro High	22	20	90.9%	12	50.0%
Vernon	Non-Metro High	34	4	11.8%	3	8.8%
Total		211	131	62.0%	104	49.3%

land use footprint. For example, community gardens have a land use footprint, while food policy councils do not.

The next step was to audit the local land use policies within each county. Content analysis was used as the primary method of reviewing each zoning ordinance. Following Norton (2008), “the general approach employed for content analysis is analogous to developing a set of close-ended questions for a survey and then administering that survey. It involves preparing an evaluation protocol by defining categories for analysis and then having one or more evaluators or ‘coders’ use that protocol to read and ‘score’ the written communication” (p. 433). Each ordinance was reviewed twice by one coder.

The audit and scoring occurred in the following way: Search for agricultural districts, if present note how many districts are included. If found, search for particular uses that are both permitted and conditional, such as farm stands within each agricultural district. If found, that use would receive a score of 1 to indicate presence. All uses in that district were added for an actual score. For example, Madison has two agriculture districts. With four possible uses, the potential score was four uses multiplied by the number of districts. In Madison’s case, the potential score was 8. To normalize the scores across zoning ordinances, I divided the actual score by the potential score. In Madison’s case, the actual score was 2, the potential score was 8, and the normalized score was 0.25. Thus, for each type of district within the production element, the maximum score was a 1.

This process was followed for each type of district (agriculture, residential, mixed use, commercial, and industrial). Table 2 shows each food system element, along with the types of districts that were searched for, the type of uses within each district that were searched for, and the maximum score possible for that element. When each element is added together, the maximum score possible is 16. In terms of the maximum score, production has the highest weight because five districts are

Table 2. Zoning Ordinance Audit Tool

Element	Zoning districts and Uses within districts	Maximum Score for Element
Production	Agriculture districts	5
	Exclusive agricultural district	
	Small-scale direct consumer	
	Animal direct consumer	
	Farm stand	
	Residential, Mixed Use, Commercial, and Industrial districts	
	Urban agriculture	
	Community/neighborhood garden	
	Commercial or truck garden	
	Vertical or rooftop garden	
Processing	Commercial and Industrial districts	2
	Commercial kitchen	
	Shared-use kitchen	
	Small food manufacturing	
	Brewery	
	Winery	
Aggregation and Distribution	Other beverages	2
	Other	
	Commercial and Industrial districts	
Retail	Marketing cooperative	4
	Food distribution center	
	Agriculture district	
	Farmers market	
	Residential, Mixed Use, and Commercial districts	
	Grocery store	
	Food cooperative	
	Restaurant	
Waste	Mobile vending	3
	Farmers market	
	Residential, Commercial, and Industrial districts	
Total Possible Food Score		16

Table 3. Top Ten Scores by Community and Group

Name of Community	Type of Food County Group	Score
City of Madison, Dane County	Metro High	9.28
Town of Coon, Vernon County	Non-Metro High	4.34
Dane County	Metro High	4.08
City of Wisconsin Dells, Adams County	Non-Metro Low	3.90
Village of Gays Mills, Richland County	Non-Metro High	3.86
Village of DeSoto, Crawford County	Non-Metro High	3.81
City of Stoughton, Dane County	Metro High	3.35
City of Mauston, Juneau County	Non-Metro Low	2.86
City of Fitchburg, Dane County	Metro High	2.84
City of Viroqua, Vernon County	Non-Metro High	2.77

identified for production-related uses. Processing and aggregation and distribution have the lowest weights, because only two districts are identified for these elements.

Phase III. Statistical Analysis

I tested whether the mean scores were statistically different between metro and nonmetro ordinances, and between High- and Low- Food ordinances (see Table 1). The hypothesis is that the score from metro ordinances and high-local food ordinances will be significantly different from nonmetro and low-local food scores. SPSS Statistics for Windows version 24.0 was used for the analysis. The independent samples t-test was used to test for statistical significance. This uses the Satterthwaite approximation “to test the difference between means when the data violate the assumption of homogeneity of variance required of other tests”

(Vogt, 1999, p. 307) such as the student t-tests.

Phase IV. Case Studies

I selected two communities, the city of Madison and the village of Gays Mills, because of their high scores and metro and nonmetro locations to unpack the contents of these zoning ordinances. Madison is the central city of a metropolitan county, while Gays Mills is located in a rural, nonmetropolitan community. The zoning codes and comprehensive plans from both places were the key documents examined for this part of the research, and a descriptive analysis is the result.

Results

How Common Are Food System Elements in Zoning Ordinances?

This section starts with a broad overview of the results and then examines the details of the food system elements (e.g., production, processing, etc.). All but three communities included something in their zoning ordinance related to local food systems. For brevity's sake, Table 3 displays the top ten scores by community. Madison's score is twice that of the next scoring community. Dane County and two cities near Madison are also ranked in the top ten. Four of the top-ten scoring communities are in the Non-Metro High group.

Table 4 displays the means for the total score and for each of the food county groups by each food system element. The mean scores are far less

Table 4. Scores and Standard Deviations (SD) by Food County Group and Food System Element

Elements	Mean Total		Metro High		Non-Metro High		Metro Low		Non-Metro Low	
	Score	SD	Score	SD	Score	SD	Score	SD	Score	SD
Production	1.13	1.29	2.08	1.44	0.60	0.55	0.22	0.27	0.43	0.30
Processing	0.32	0.18	0.28	0.16	0.33	0.15	0.24	0.20	0.46	0.21
Aggregation/ Distribution	0.24	0.22	0.29	0.19	0.06	0.04	0.09	0.17	0.45	0.19
Retail	0.34	0.43	0.29	0.53	0.13	0.26	0.45	0.38	0.55	0.16
Waste	0.08	0.35	0.09	0.40	0.11	0.47	0.03	0.14	0.07	0.23
Total	2.18	1.55	3.03	1.76	1.21	1.18	1.04	0.63	2.10	0.55

than the maximum potential score, indicating that these zoning ordinances did not contain many local food land uses. Among the four groups, the Metro-High group has the highest means, while the Metro-Low group has the lowest means.

Production: Given the emphasis in the literature about urban agriculture and the inclusion of rural or nonmetro areas to capture farmland preservation zoning, I expected that land uses associated with production would be the most prevalent, and indeed 85% of the ordinances had at least one zoning item related to agriculture or food production. Dane County had the highest score of 3.27 and the mean normalized score was 1.13 out of a potential score of 5. Table 5 shows the percent of ordinances that had a particular use present in each district. Urban agriculture shows up in many different districts. There is not a single use that was allowed in more than half of the ordinances. Some uses are rarely allowed, such as community gardens, which are only allowed in 1% of residential districts.

Processing: Ninety percent of the ordinances had at least one of the seven possible uses present. The mean score was 0.32 out of a possible 2. Half of the top ten scorers were villages or cities located in the Metro Low group. One community from the Non-Metro High group was in the top ten and had the highest score with 0.71. Adams County, part of the Non-Metro Low group, was in the top ten for this category. Many land use items were present in industrial districts. Small food manufacturing, other

beverages, and other were permitted in industrial districts in about one-third of the ordinances. Breweries had low presence in both commercial (1%) and industrial districts (9%). Commercial kitchens and shared-use kitchens were not present in any of the ordinances, and wineries were not present in commercial districts.

Aggregation and distribution: Fewer than two-thirds of the ordinances (62%) included any land uses pertaining to aggregation and distribution. The mean was 0.24. A score of 2 was possible for this element, and the highest score was the city of Monona with a 1. This city is adjacent to and somewhat surrounded by the city of Madison. The villages in the Non-Metro High group hold the next two scores and another three ordinances in the top ten are from the Non-Metro Low group. Only two potential land use items were included in the audit tool for this category within commercial and industrial districts: marketing cooperatives and food distribution centers. Food distribution centers in these two districts were allowed in 6% and 14%, respectively. Marketing cooperatives were allowed in one ordinance in an industrial district.

Retail: Uses in this element were evident in 84% of the ordinances. The average score for all communities was 0.34 out of 4 possible points. Madison had the highest score with 3.26. Half of the 10 communities were in the Metro-Low group. One community was from the Non-Metro-High group and one was from the Non-Metro Low group. Commercial districts had the highest presence for

Table 5. Presence of Uses in the Production Element

Uses	Zoning Districts				
	Agriculture	Residential	Mixed Use	Commercial	Industrial
Exclusive agricultural district	20.19%	These uses are not included in the search for the above zoning districts			
Small scale direct consumer	0.96%				
Animal direct consumer	24.04%				
Farm stand	23.08%				
Urban agriculture		6.73%	1.92%	11.54%	57.69%
Community or neighborhood garden		0.96%	0.96%	3.85%	0%
Commercial or truck garden		0.96%	0.96%	12.50%	1.92%
Vertical or rooftop garden		0.00%	0%	1.92%	0.00%

all items, particularly small grocery stores (48%) and restaurants (29%). Surprisingly, not all ordinances allowed restaurants in mixed use and commercial districts. Two-thirds of the ordinances did not recognize restaurants as a possible land use in a commercial district.

Waste: This element had the lowest number of ordinances with local food supporting components. Only eight out of 104 ordinances allowed compost centers. Half of the eight were from the Metro-High group, of which Madison had the top score of 2.58 out of 3. One community was from Metro-Low group, one community was from the Non-Metro High group, and two were from the Non-Metro Low group. For commercial districts, it was present in two ordinances, and in industrial districts in four ordinances.

Does Type of Community Matter?

In addition to analyzing the 104 ordinances, I hypothesized that there would be differences between metropolitan and nonmetropolitan ordinances and between high-local food and low-local food ordinances. Table 6 is the result of a t-test comparing the scores between metropolitan and nonmetropolitan communities. The results show a statistically significant mean difference in the food

score between community types. Metropolitan zoning codes demonstrate higher average levels of local food scores in comparison to nonmetropolitan zoning codes, suggesting that metropolitan communities integrate local food-related uses more frequently into their zoning codes.

Table 7 is the result of the t-test comparing the metro and nonmetro high groups with the metro and nonmetro low groups. The table shows a statistically significant mean difference in the food score between local food types. High-local food zoning codes demonstrate higher average levels of food scores in comparison to low-local food zoning codes. The results suggest that communities with local food businesses and agricultural production have also integrated local food system land uses into zoning codes.

In reporting the means of the groups, I noted that the overall mean for the Non-Metro Low group was higher than for the Non-Metro High group. I ran a similar analysis to test for statistical significance, but the results were not statistically significant at the .05 level.

Two Cases of Local Food Systems Zoning

This final section provides a deeper look inside two zoning ordinances that scored high using the audit tool. The city of Madison's code had the top score

Table 6. Results of t-tests and Descriptive Statistics for Food Score by Community Type

	Community Type						95% CI for Mean Difference		
	Metropolitan			Non-Metropolitan					
	Mean	SD	n	M	SD	n			
Food Score	2.458	1.769	64	1.732	1.102	40	0.167, 1.284	2.578*	102

Note: Satterthwaite approximation employed due to unequal group variances.

* $p < .01$

Table 7. Results of t-tests and Descriptive Statistics for Food Score by Local Food Type

	Local Food Type						95% CI for Mean Difference	t	df
	High Local			Low Local					
	Mean	SD	n	M	SD	n			
Food Score	2.561	1.810	63	1.515	1.037	59	0.520, 1.571	3.940*	99.945

Note: Satterthwaite approximation employed due to unequal group variances.

* $p < .001$

for a metropolitan area and has a known local food focus. Madison is the capital and is the second largest city in Wisconsin with a population of about 250,000 (U.S. Census Bureau, 2016). In contrast, the village of Gays Mills, also known for its local food focus, is located in southwest Wisconsin in the Kickapoo River Valley. Its population is about 525, while all of Crawford County has about 16,400 people (U.S. Census Bureau, 2016).

The reason that Madison received a high score in the audit is that local food systems are extensive within the zoning ordinance. There are 19 uses identified in the ordinance (see Table 8). The city has five categories of districts including residential (15), mixed use and commercial (6), downtown and urban (5), employment (6), and special (5), which includes agriculture, urban agriculture, airport, conservancy, and parks and recreation. All 37 districts include at least some local food uses. In terms of the five local food system elements, Madison is explicitly missing only one—aggregation and distribution, although wholesale uses are permitted in some districts. Madison is the only local government in this sample to have an urban agriculture zoning district.

Community and market gardens and keeping of chickens are present in all 37 districts. An unusual use permitted in all but the downtown and urban districts is the mobile grocery store. The definition indicates that stores can be operated only by nonprofit entities from a vehicle where there is another principal use. Mobile grocery units are recognized as a way to create access to healthy and affordable food in areas considered food deserts (EcoDistricts, n.d.).

Madison's zoning ordinance states that one of its many intents and purposes is "to preserve productive agricultural land and provide opportunities for local food production" (City of Madison, Common Council, 2013, p. 10). In addition, Madison's comprehensive plan recognizes local food production and food processing

as plan objectives (City of Madison, Department of Planning and Development, 2006b, pp. 16–18). As of July 2018, Madison is working on a new comprehensive plan (City of Madison, Department of Planning, Community & Economic Development, 2018).

Gays Mills, unlike Madison, does not include a specific purpose statement in its zoning ordinance focused on agriculture or local food. This small community, however, scored well in comparison to many other local governments' zoning ordinances. The village's plan recognizes the development of local food systems as a goal and outlines four objectives, including developing community gardens, continuing the farmers market, developing a kitchen incubator, and focusing economic development efforts on food and agriculture, specifically local foods (Mississippi River Regional Planning Commission, 2010, p. 108). Gays Mills has made a purposeful effort through its zoning ordinance to support local food systems, primarily through production and processing (see Table 9). Both of

Table 8. Food-related Uses in Madison's Zoning Ordinance

Element	Uses	% present in zoning districts ^a
Production	Agriculture—animal husbandry	30%
	Agriculture—cultivation	35%
	Community garden	100%
	Greenhouse, nursery	27%
	Keeping of chickens	100%
	Keeping of honeybees	95%
	Market garden	100%
Processing	Bakery (wholesale)	14%
	Bottling plant	8%
	Brewery	8%
	Distillery	8%
	Winery	8%
Retail	Farmers market	70%
	Food and related goods sales	22%
	Free-standing vending cart	3%
	Mobile grocery store	87%
	Outdoor cooking operation	87%
	Outdoor eating area associated with food and beverage establishment	46%
Waste	Composting	87%

^a These percentages represent the presence of a particular food-related use in the zoning districts. For example, community gardens are permitted or conditional uses in all zoning districts.

its agricultural districts must “serve on-site residents and/or produce food to be sold directly from the grower to the consumer, such as at a farmer’s market” (Village of Gays Mills, n.d., p. 20). The code focuses specifically on “small-scale,” whether it is agriculture or processing. For example, the brewery use is permitted if it is under 25,000 square feet (2,323 square meters) and a conditional use if it is larger than that size. It has eight districts: residential (2), business (1), agriculture (2), industrial (1), and conservancy (2).

Discussion

Presence of Local Food Land Uses in Zoning Ordinances

As Duerksen (2008) noted, “Ask any local elected official what their most powerful and effective tool is to shape and protect their community and most will say, ‘our zoning code’” (p. 30). This analysis of 104 ordinances found some indication of local food reflected in zoning ordinances; however, it is far from common. The findings from this analysis suggest that food system elements (e.g., food production and processing) and their associated land uses (e.g., community gardens and small food manufacturing) are uncommon in zoning ordinances. Planners know that land uses absent from a zoning code make that use prohibited, whether it is a community garden or a slaughterhouse (Daniels et al., 1995) and that land use legislation (i.e., amendments or

rewrites) is a potentially powerful tool for change (Feldstein, 2013). As I discussed previously in explaining zoning, it is reasonably straightforward to amend a zoning ordinance. The ease with which amendments can occur can be considered a strength—by adding new land uses—or a weakness—by deleting land uses. It implies that local food land uses can be added to various districts by going through a normal local political process. Ordinances can include many more local food land uses than are reflected in this analysis.

While an absence of local food land uses exists, the code analysis and case studies demonstrate that local food land uses can and do occur in zoning ordinances. Local food land uses are embedded across the range of districts (agricultural, residential, commercial, and industrial) and across the spectrum of local food elements (production, processing, etc.). Surprisingly, the most prevalent food system land uses were in the processing element. Ninety percent of the ordinances allowed some land uses associated with food processing. It is perhaps not surprising that cities and villages included food processing in their industrial districts, but many counties and towns also included food processing.

Also surprising was the lower percent of ordinances with food production in comparison with food processing (85% versus 90%, respectively). As noted in the results section, less than half of the ordinances contained land uses such as urban agriculture, community gardens, or farm stands.

This finding follows Jepson and Haines (2014), who found infrequent inclusion of land use items that encouraged local food production. However, Meenar et al. (2017) found that all but three of the 80 municipalities they examined allowed animal husbandry in some form; it is unclear how many of those 80 included animal husbandry in the zoning ordinance per se. Acknowledging that there are other ways in local policy and law to accomplish a more robust local food system is important. Nevertheless, zoning ordinances are the primary local tool to regulate the uses of land.

Table 9. Gays Mills Districts and Uses

Element	Use	% present in zoning districts ^a
Production	Agriculture—animal husbandry	50.0%
	Agriculture—cultivation	25.0%
	Greenhouse, nursery	25.0%
	Harvesting of wild crops	25.0%
Processing	Brewery	12.5%
Retail	Farm stand	25.0%
	Farmers market	37.5%
	Food processing and slaughterhouse	25%
Waste	Composting	12.5%

^a These percentages represent the presence of a particular food-related use in the zoning districts. For example, community gardens are permitted or conditional uses in all zoning districts.

Restaurants were present in less than half of the ordinances in residential, mixed use, and commercial districts. They were present in commercial districts in 41% of the ordinances. With a more careful look at the data, cities and villages tend to allow this use, while it is absent in towns. This absence in towns is not surprising, given these local governments tend to be the most rural entities in this sample. Five ordinances permitted restaurants in residential districts, which may indicate the recognition of older residential neighborhoods or a move toward a mixed-use district. Another surprise was the presence of small food manufacturing in over one-third of the ordinances. One example is a farmstead food processing facility in the town of Coon. Finally, only one-third of the ordinances included land uses related to the aggregation and distribution element. While food hubs and other aggregation uses are recognized as a way to relieve a barrier that producers have to market, store, and transport local food, I found few mechanisms in these zoning ordinances to relieve that barrier (Day-Farnsworth, McCown, Miller & Pfeiffer, 2009; GRACE Communications Foundations, 2017).

The results indicate that particular land use items are more acceptable in some zoning districts than others. For instance, community gardens are a land use item that could be located in many districts (residential, commercial, mixed, or industrial), but I found they were rarely allowed in the ordinances I reviewed. Given zoning's history and roots to separate different land uses, particularly to protect single-family residences (Hoch et al., 2000), it should not be surprising that the findings illustrate the continued separation of uses. According to Hirt (2013), for at least two decades, planners and others have been promoting mixed uses (building and districts). However, this sample of zoning ordinances does not indicate that a mixed-use district is or can provide a relief valve for a range of land use items that one may not find in other districts.

Presence of Local Food Land Uses among Communities

For communities in this sample that were designated "high-local" food, their resulting statistically

significant higher scores indicates that there is a relationship between the presence of small food businesses and agricultural production on small farms as measured by the U.S. Census of Agriculture and the U.S. Census and local food land uses included in zoning codes. This relationship may not be linear, but it bears further analysis. The method by which I identified a sample of communities also needs more refinement and further analysis, especially at a broader regional or national scale.

In addition, community plans, food policy councils, and other local food advocacy may provide indicators that local food land uses are becoming integrated into the community's zoning ordinance. Madison's recognition of local food systems in the ordinance indicates that over some period of time local food system elements can become integrated into the fabric of the city. However, this analysis only examined a snapshot and did not look at how that process unfolded. An important aspect of Madison's ordinance is the statement within its purpose to recognize local food production. However, Madison's ordinance goes far beyond food production, covering a range of uses and four of the five food system elements. All districts have some local food uses. Thus, in a spatial sense, local food systems can take root citywide.

Gays Mills represented a high scoring non-metropolitan village that has used its zoning ordinance to recognize local food systems as it further develops and changes. For a community of 525 people, it is noteworthy that the ordinance explicitly discusses small-scale agriculture in an era of increasingly large-scale industrial agriculture and the sale of food from producer to consumer. While many of the local food elements (processing, aggregation, and retail) are urban-oriented, the villages in the nonmetropolitan group scored high in these areas, including Gays Mills.

Summary and Conclusion

I examined many zoning ordinances from a selected set of communities. This study used a group of three nonmetropolitan counties in southwest Wisconsin that had a high-level focus on local food systems, two nonmetropolitan counties in the

more central part of the state with a low-level focus, and two metropolitan counties—one with a high-level and one with a low-level focus. Overall, most communities included at least some local food land uses in their zoning ordinance.

The findings demonstrate that many zoning ordinances do not integrate land uses associated with local foods, and this absence indicates that zoning may remain a barrier to local food systems. Advocates of local food systems need to work with local staff to modify zoning codes to reflect the types of local food land uses that are wanted (Raja et al., 2014). In addition, local food advocates need to educate themselves about how zoning works in their communities. If zoning is a barrier to local food systems, local food land uses must become integrated into the zoning ordinance. While local context and politics always will play a key role and will influence how, when, and what kinds of change can occur within a zoning ordinance, many ordinances change incrementally, and it is the cumulative impact of those changes that may matter.

In one of her conclusions, Caton-Campbell (2004) suggests that planners can play a role in revising “local... regulations to promote the local food system” (p. 349). She suggests that local planning staff can act to integrate local food systems into the zoning code. A first step is for a community to review its ordinance to make sure desired uses are in it. If not, amending an ordinance is a necessary step to allow a use in a community. When a new use is placed in an ordinance, there is a choice to make it a permitted or conditional use. Conditional uses often have greater

regulatory hurdles associated with them (e.g., an application process, a fee, standards, etc.). Another step to consider is whether it is possible to make conditional uses into permitted uses by directly outlining standards for that use in the zoning ordinance. These steps will go a long way toward allowing local foods.

While more work needs to be done to understand the connection between the local food system and zoning ordinances, this study shows that zoning ordinances can contain many land uses that would make many aspects of the food system more likely at the local level. Additional refinement and expansion is necessary on the audit tool, including two or more coders reading through the ordinances. It represents one way to assess the presence of local food systems in a zoning ordinance, which could be used as a self-assessment tool or for further cross-sectional analysis. With the ubiquity of zoning ordinances in use in local governments of the U.S., it is likely that amending ordinances to include aspects of the local food system would decrease a local policy barrier and increase the likelihood of a more robust local food system. However, it is incumbent on local food system advocates to understand the role of zoning within their community and how the process works in order to influence local food system land uses.

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The role of metrics in food policy: Lessons from a decade of experience in New York City

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Abstract

In the last decade, New York City developed food policies designed to improve access to healthy food, reduce food insecurity, support community development, promote sustainable food systems, and improve conditions for food workers. Since 2012, the New York City Council has mandated the Mayor's Office to prepare annual Food Metrics Reports to present data on selected food system indicators. This article uses these reports to assess how the metrics describe the city's progress in implementing municipal food policies set in the last decade. Our analysis examines: (1) changes in the indicators that the city reports; (2) strengths and weaknesses of the Food Metrics Reports as a tool

for monitoring policy enactment and impact; and (3) opportunities for improvements to the indicators and the development and implementation of future metrics. We found that the reports show improvements in 51% of the 37 indicators and sub-indicators, declines in 40% and no change or no assessment in the remaining indicators. While the food metrics process has provided valuable data on the implementation of selected city food policies, it has several limitations. By adding new indicators, tapping into additional data sources, and engaging additional constituencies in the process, New York City food metrics could play a more useful role in helping New York City to set goals

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and monitor progress towards the development of a more equitable, efficient, and sustainable municipal food system. The experience with food metrics in New York City suggests lessons for the use of food policy monitoring to improve food systems in other cities.

Keywords

Urban Food Policy, Food Metrics, Municipal Food Systems, Food System Assessments

Introduction

In the last decade, New York City has instituted many new food policies and programs designed to improve access to healthy food, reduce food insecurity, support community and economic development, promote a more sustainable food system, and improve pay and conditions for food workers (Freudenberg, Cohen, Poppendieck, & Willingham, 2018; Willingham, Rafalow, Lindstrom, & Freudenberg, 2017). While New York City's food policies have been examined in the academic literature (Freudenberg, Silver, Hirsch, & Cohen, 2016; Isett, Laugesen, & Cloud, 2015; Cohen & Reynolds, 2014; Freudenberg & Atkinson, 2015; Campbell, 2016; Roberto, Swinburn, Hawkes, Huang, Costa, Ashe, & Brownell, 2015; Lederer, Curtis, Silver, & Angell, 2014), the role of metrics in the food policy process, and the strengths and limitations of current food metrics, have been under-studied, despite the close connection between metrics and policy choices.

This paper analyzes six Food Metrics Reports prepared annually by the New York City Mayor's Office of Food policy since 2012 to assess how the metrics describe the city's progress in carrying out various municipal food policies. Our analysis examines: (1) changes in the indicators measured by the metrics the city reports; (2) strengths and weaknesses of the Food Metrics Reports as a tool for monitoring policy implementation and impact; and (3) opportunities for improvements in three domains: the indicators, the process of metrics development, and the implementation of future metrics that would make the metrics more useful for evaluation and planning. Our goal is to identify lessons from the city's experience with food metrics that can inform food policy planning,

implementation, and evaluation in other cities. This article is based on a comprehensive study assessing the city's progress since 2008 in achieving five broad food policy goals: improving nutritional well-being, promoting food security, creating food systems that support economic and community development, ensuring a sustainable food system, and supporting food workers (Freudenberg et al., 2018). These policy goals are briefly defined in Table 1.

Metrics and Policy

An assessment of the strengths and weaknesses of New York City's food metrics requires a brief review of recent developments in the application of metrics to food and other policy arenas. Metrics, also known as indicators, are mechanisms that measure the condition of a system or that represent a system's characteristics. They usually do so through a mix of quantitative or qualitative variables (Feenstra, Jaramillo, McGrath, & Grunnell, 2005; Waas et al., 2014). Accurate and reliable metrics are considered important for evidence-based public policy and management. There is also a long history of their use in addressing a wide range of policy issues, from equality and social justice to public health and ecological sustainability (Bell & Morse, 2013). The use of metrics has grown in recent years as the cost of large-scale data collection (i.e., "big data") and the tools to analyze and visualize large quantities of data have dropped and become more accessible to agency staff, advocates, and the public (Kitchin, Lauriault, & McArdle, 2015; Athey, 2017).

Metrics serve several different purposes in the policy process. A common view is that metrics play an instrumental role in the evaluation and assessment of policies (Sébastien & Bauler, 2013) by measuring activities and outcomes, often through a reduced or simplified set of variables that represent more complex systems. Metrics allow policies to be tracked. If data are conveyed in a form that government officials, advocates, businesses, and the public can understand and use, the data can be used to measure impact, cost-effectiveness, comparative costs and benefits, longitudinal change, geospatial differences, and other variables. These are all examples of variables

that can help avert unintended negative consequences and achieve desired outcomes. At best, the development and analysis of metrics can serve as a catalyst for the democratic public discussion of policy goals.

Metrics can also drive decision-making processes. The choice of indicators influences our perception of policy problems and shapes our approach to solving them (Barrett, 2010). Metrics are socially constructed, and the social process of metrics development can facilitate shared understandings of problems and desired outcomes, engage actors in the policy process (Innes, 1990), or present a partial or distorted view of reality. By focusing attention on certain outcomes over others, some metrics can serve to exclude people. The recognition that indicators can reinforce existing structures and policies led to the social indicators movement of the 1960s and 1970s. This movement aimed to develop alternative measures of progress and engage citizens in indicator development (Talberth, Cobb, & Slattey, 2007; Meadows, 1998). The importance of locally developed indicators has been embraced by advocacy organizations and global programs like the Local Agenda 21 planning process (Pires, Fidélis, & Ramos, 2014).

The adage, “what gets measured gets managed” over-simplifies the impacts of metrics on policy. The instrumental and social dimensions of metrics enable them to make the policymaking process more or less democratic in several ways: (1) by providing decision-makers and advocates with common evidence; (2) by limiting access to particular sources and types of data; (3) by substituting information for action, thereby delaying change; (4) by framing concerns like equity or health as technocratic issues, thereby limiting political debate; or (5) by strategically communicating metrics to support predetermined positions (Hezri & Dovers, 2006).

The Growth of Urban Food Metrics

Cities have collected data about urban food systems, from food adulteration to urban agriculture, since the emergence of public health and food planning at the turn of the 20th century (Vitiello & Brinkley, 2014). The focus on collecting metrics on

the environment and health accelerated in the 1970s as federal and state laws required a wide range of indicators to be measured and reported. But it was not until the early 2000s, as the urban food system became a legitimate focus of urban planners and policymakers, that cities started developing discrete food metrics, initially focused on urban sustainability (Heller & Keoleian, 2003). USDA published guidelines for food security metrics in 2002 (Cohen, 2002), and philanthropic organizations and non-profits launched initiatives like the Vivid Picture Project, an effort in 2004-5 to create indicators of California’s food system and benchmarks to gauge the system’s sustainability (Feenstra et al., 2005). Though criticized for reinforcing rather than challenging policies and norms (Guthman, 2008), Vivid Picture and other food metrics projects focused attention on the process of food system metrics development, the validity of the measures, and the application of metrics to policy.

Within the past two decades, national and international programs have accelerated the development of local and regional food system indicators to track and compare (or “benchmark”) food systems management. Prosperi, Moragues, Sonnino, and Devereux (2015) compared the use of food system metrics in eight such projects. In 2015, the Institute of Medicine and National Research Council published a framework for assessing food systems that included recommended metrics (Institute of Medicine and National Research Council, 2015; Clancy, 2016). Following the adoption of the United Nations Sustainable Development Goals (SDGs) in 2015, scholars have examined how the collection of urban food systems data on hunger, food security, nutrition, and sustainable agriculture, as well as social equity, public health, and ecological sustainability coincide with the indicators required to show attainment of the SDGs (Marmot & Bell, 2018; Ilieva, 2017).

At the city scale, the proliferation of food system plans, strategies, and policy papers over the past decade has been the impetus for municipal governments to develop and collect urban food systems metrics (Coppo, Stempfle, & Reho, 2017; Ilieva, 2017). An analysis of the content of food strategies and plans from five North American

cities (New York, Philadelphia, Los Angeles, Chicago, and Toronto) identified 260 distinct food system indicators in these cities alone (Ilieva, 2017). Food systems strategies sometimes contain definitions of how goals and objectives are to be measured, but the level of specificity and degree to which cities, regional planning agencies, or other entities (e.g., food policy councils) are expected to collect and report data vary significantly. Municipal indicators are typically derived from pre-existing government data, data collected by academic institutions and NGOs, and proprietary data from private sector firms. Different data collection and reporting methods and frequencies, geographic boundaries, definitions, and limited or inconsistent data availability result in inconsistencies in the information collected within and across cities (Ilieva, 2017; Coppo et al., 2017). In another example, the Milan Urban Food Policy Pact plans to release a set of indicators to guide the 132 signatories to the Pact in tracking their progress achieving the commonly agreed-upon goals (Food and Agriculture Organization [FAO] of the United Nations, 2017).

Food Metrics in New York City

Food policy became politically salient in New York City about a decade ago (Freudenberg et al., 2018). Appendix 1 shows some of the policy and programs implemented since 2005 by New York City and New York State, each of which has jurisdiction over several domains of food policy in the city. Yet, despite the reputation of the Bloomberg administration (2001-2013) for having a data-driven government (Kelly, Davies, Greig, & Lee, 2016), food metrics were not systematically collected and disseminated. City departments like Health, Parks, Sanitation, and Environmental Protection published information about the food and agriculture programs under their jurisdictions, yet there was no process for regularizing the data collection and no central repository of the data. Even the city's 2007 sustainability strategy, PlaNYC, which detailed more than 100 initiatives of 25 agencies (Office of the Mayor of New York City, 2007) with measurable milestones, did not include food policies until a 2011 update (Office of the Mayor of NYC, 2011).

FoodWorks

Food metrics in New York City was an outcome of *FoodWorks*, a food systems strategy document launched as an initiative of City Council Speaker Christine Quinn in 2009 (New York City Council Speaker, 2010). *FoodWorks* was designed to be a comprehensive plan that proposed “new policies and investments [that] can encourage positive changes for the food system of future generations.” The report described the city's existing food policies and programs and outlined “key legislative changes, public and private investments, infrastructure improvements, and partnerships to improve [the city's] food system” (Brannen, 2010, p. 2), including policy recommendations that extended beyond the jurisdictional and physical boundaries of the city (Campbell, 2016).

During the Council's work on *FoodWorks*, it became apparent that there were gaps in the basic data about the food that the city buys and serves and the impact of various food-related programs (New York City Council, 2011a). The first report, released in 2012, described the document as “a resource for New Yorkers to better understand our food system and how municipal government plays a role” (New York City Mayor's Office of Food Policy, 2012, p. 1).

Food Metrics Legislation

After releasing *FoodWorks*, the Speaker introduced a “package” of food bills in 2011 to implement several of the initiatives in *FoodWorks* (Cohen, 2011). In response to gaps in available data about the food system, a core aim was to ensure that indicators of food strategies outlined in *FoodWorks* were collected and made available to the Council and advocates to monitor progress in implementing the food strategy. Council staff began by identifying relevant indicators for the strategies proposed in *FoodWorks* and then developed legislation requiring politically feasible metrics that were logistically possible to collect to be reported.

The Council introduced three bills requiring agencies such as the Departments of Health and Mental Hygiene, City Planning, and Education, among others, to produce: (1) a list of all city-owned real estate and the potential for vacant parcels to be used for urban agriculture; (2) an

annual report of New York State food products procured by city agencies for their institutional food programs compared to purchases from outside of New York during the state's growing season; and (3) an "omnibus" metrics bill covering 19 different indicators for activities under the jurisdiction of different agencies. The Mayor's Office opposed these mandates, claiming they imposed unfunded burdens on agencies that had already faced budget cuts after the 2008 global financial crisis (Campbell, 2016). Testimony on the legislation by representatives of the Administration stressed the difficulty (and costs) of collecting data on issues like the provenance of food procured by city agencies or the suitability of city-owned property for food production (New York City Council, 2011b).

In response to these concerns and to ensure that the legislation was passed by the Council and signed by the Mayor, the Speaker's legislative staff entered negotiations with Administration staff and amended the food metrics legislation to address issues raised by the Administration. The changes included: (1) extending the deadline for the first reporting period; (2) specifying that for metrics requiring information from vendors and other third parties, city agencies were only obligated to request such data and report it to the extent it is available; (3) removed metrics "where it was not possible to ease the burden of collection from third parties;" and (4) revised metrics to allow agencies to report similar information that the agency already collects or could collect within existing budgetary resources (NYC Council, 2011c). Following these changes, the City Council passed, and the Mayor signed, Local Law 52. Appendix 2 shows the indicators included in Local Law 52. While these changes enabled final approval of Local Law 52, they limited the scope of what was monitored and reduced the utility of the reports.

This legislation established annual reporting requirements for the first time for many food-related initiatives (New York City Mayor's Office of Food Policy, 2012). Local Law 52 assigned responsibility for the annual reports to the Mayor's Office of Long Term Planning and Sustainability, the agency also responsible for tracking the city's sustainability strategies and collecting data to assess

progress in meeting sustainability goals. In practice, this responsibility was assumed by the Mayor's Office of Food Policy, created in 2007. The data for these indicators are collected by the responsible city agency and submitted to the Office of the Director of Food Policy in the Mayor's Office, whose staff then aggregates the indicators into the annual report, capturing a snapshot of the work agencies are doing within the city's food system. The Food Metrics Report illustrates the intersectoral scope of food policy in New York City through indicators that cut across numerous sectors, including public health, education, food waste, and urban planning. In 2013, the City Council passed a new law requiring additional metrics on levels of food insecurity in New York City (New York City Council, 2013).

Three governance factors shaped Local Law 52. First, New York City's "strong mayor" form of government gives the Mayor sole authority to estimate the city's budget and manage all city agencies (Eichenthal, 1990). While the City Council legislates and must approve the Mayor's budget, it has relatively little authority over agency commissioners; however, the City Council does have the authority to conduct public hearings in which they scrutinize the progress of an agency in carrying out its duties. Requiring the city to submit annual metrics on the outcomes of food policies and programs provides the Council with the opportunity to monitor the progress of new food initiatives and hold commissioners accountable. As a City Council staff report on the Local Law 52 observed, "to adequately monitor and address the challenges facing New York City's food system, policymakers and members of the public must have access to full and accurate information." (New York City Council, 2011a, p. 4).

Second, the food metrics legislation also served to draw attention to elements of *FoodWorks* for which future City Council members and civil society groups could advocate. Thus, it was a more practical and less politically contentious, although perhaps less effective, effort to set policy goals without enacting legislation and authorizing funding for every issue addressed.

Finally, the Food Metrics Reports were a way for the Speaker to solidify support among

advocates for stronger food policies. Requiring comprehensive food metrics was a way to demonstrate her office's commitment to these issues and to provide advocates with annual data that would help them in their efforts to hold agencies accountable, as testimony in support of the legislation from advocates from food justice, environmental and anti-hunger organizations illustrated (New York City Council, 2011b).

Metrics as Assessment Tools






As shown in Table 1, the Food Metrics Report tracks 37 separate indicators in the 19 categories listed in Appendix 2. The main purpose of these indicators is to measure progress in implementing major food policies. We examined the city's Food Metrics Reports between 2012 and 2017 to assess changes in five broad policy goals (shown in the left column of Table 1) that we had identified in another comprehensive study of food policy in New York City (Freudenberg et al., 2018).

For each indicator, we assessed the change

between 2012 and 2017. When data were not reported for 2012, we used the earliest subsequent year available for comparison. For each indicator, we determined whether the observed change represented an improvement, decline, no change, or no assessment. We used the intent of the policy instrument that authorized the program or policy to make this classification. When two investigators disagreed about the classification, we discussed the assignment to reach a consensus.

Of the indicators tracked between 2012 and 2017, 51% (19) showed improvements, 40% (15) showed declines (often by small amounts), one showed no change, and two were not assessed. To evaluate progress across policy domains, we assigned each indicator to one of the five policy goals, then assessed the change in this indicator reported between 2012 and 2017. We recognized that some policies may contribute to two or more of these goals. However, we assigned each to the single primary goal that we thought best reflected the policy authorizing that activity.

Table 1. Distribution of Food Metrics Indicators by Goals and Direction of Change

Policy Goals		Number of Indicators	Improvements in indicator	Declines in indicator	No change in indicator	Not reported
1. Improve nutritional well-being. Policies that promote health and reduce diet-related diseases		21	10	8	1	2
2. Promote food security. Policies that reduce hunger and food insecurity and provide the quality and quantity of food needed to maintain health		4	4	0	0	0
3. Create food systems that support economic & community development. Policies that promote community economic development through food and improve food production and distribution in the region		3	1	2	0	0
4. Ensure a sustainable food system. Policies that reduce food waste and food-related pollution and carbon emissions and protect the region's farmland		8	3	5	0	0
5. Support Food Workers. Policies that provide food workers with decent wages and benefits, safe working conditions, and the right to organize		1	1	0	0	0
Total	N (%)	37	19 (51%)	15 (40%)	1 (3%)	2 (5%)

Nutrition and Food Access Goals. The most frequently assigned goal for the policies monitored in the Food Metrics Report was to improve nutritional well-being. This was the primary goal assigned to 21 of the 37 policies (57%). Of these 21 indicators, 10 (48%) showed improvements, 8 (38%) showed declines, one showed no change, and two were not assessed.

Some examples of the activities implemented to achieve this goal include:

- Between 2012 and 2017, the Food Retail Expansion to Support Health (FRESH), a city program to encourage supermarkets to open or expand in low-income neighborhoods, approved 27 new supermarkets, of which 14 had been completed by the end of 2017.
- The number of food stores participating in Shop Healthy, an initiative to expand access to healthy food in bodegas and supermarkets, increased from 161 in 2012 to 1,117 in 2017.
- In both 2012 and 2017, the compliance rate with New York City Food Standards, the rules that mandate less sugar, fat, and salt in the meals and snacks served by 11 city agencies in their institutional food programs, was more than 90%.
- The number of snack and beverage vending machines in NYC public schools declined slightly, and the inclusion of healthier fare that complied with NYC Food Standards led to a 16% decline in revenues from these machines.
- Salad bars were installed in all city schools by 2016, with the number of salad bars increasing by 38% in six years.

On several other nutrition and access indicators, the Food Metrics Reports showed declines:

- The number of meals and snacks served in the city's institutional food programs declined by 11%, from 271 million in 2012 to 242 million in 2017. Of 12 New York City municipal programs serving food in both years, the number of meals and snacks

served in 2017 compared to 2012 declined for nine and increased for only three. In some cases, the cause seems clear. For example, reduction in the city's jail population led to the need for fewer meals while an increase in the number served by homeless shelters led to a 48% increase in the number of meals served in shelters, a dramatic indicator of a growing problem. The largest food-serving institution, the New York City school system, reported 800,000 fewer meals were served in 2017 than in 2012, a 4% decline.

- Green Cart vendors sell fruits and vegetables on street corners in low-income neighborhoods. The number of Green Cart permits declined by 37% between 2012 and 2017. The number with Electronic Benefits Transfer (EBT) systems, which allow customers to purchase produce with their SNAP benefits, increased by 14%. However, the number of carts with EBTs fell sharply between 2016 and 2017.
- Greenmarkets and farmers markets provide many New Yorkers with access to fresh, locally grown produce. The number of farmers market and Greenmarket locations fell slightly between 2012 and 2017 although many new ones were in low-income neighborhoods.

Food security. Of the four indicators assessing food security initiatives, all showed some progress:

- The number of older people getting SNAP benefits increased by 25%. However, between 2000 and 2014, the number of people aged 65–74 in New York increased by 24%. This suggests that some of the observed increase in the number of seniors receiving SNAP benefits may be the result of population growth, not increased enrollment rates. In addition, New York City's older adults experienced an increase in poverty from 16.5% in 1990 to 19.3% in 2014. This suggests that more seniors are eligible for SNAP now than in earlier periods (New York City Department for

the Aging, 2016).

- The number of sites providing SNAP enrollment services increased by 45%, and funding for enrollment activities increased by 12%.
- The number of SNAP recipients receiving nutrition education between 2012 and 2015 increased 14-fold and spending on this increased by 10%. No information is available on the procedures used to count participants.

Several measures included in the nutritional well-being section may also contribute to reducing food insecurity, including the number of Green Carts accepting EBTs, the system that allows them to accept SNAP, and the number of FRESH supermarkets opened in under-served neighborhoods.

In 2014, as required by the 2013 City Council addition to the Food Metrics Report, the first Food Metrics report released by the newly elected de Blasio Administration added data on the number of New York City residents reported to be food insecure. In 2012, this report showed that 1.4 million New York City residents, 17.4% of the population, were food insecure. The Meal Gap—that is, the number of meals missing from the homes of families and individuals struggling with food insecurity—was reported to be 250 million meals. The 2017 Report, using self-reported data from the 2015 Feeding America Survey, reported that 1.25 million New Yorkers, 14.9% of the population, were food insecure and the Meal Gap was 224.8 million meals. Between 2012 and 2015, the self-reported rate of food insecurity fell by 14% and the number of missing meals fell by 10%. These were both significant achievements that reduced the pernicious effects of poverty in New York City.

Community and Economic Development. Two indicators assessed the contribution of food programs to community and economic development. The number of community gardens on city-owned property increased by 32% between 2012 and 2017. An estimated 1,200 lots are used as community gardens in New York City (Nir, 2016),

suggesting newly registered community gardens account for about 11% of the total. In 2015, NYC's affordable housing plan proposed to build new housing on 14 community gardens (Nir, 2016).

Between 2012 and 2017, the New York City Economic Development Corporation and the Industrial Development Agency made 161 awards totaling US\$14.3 million to food manufacturers. Funding levels and the number of awards stayed about the same over those years.

Sustainable food systems. Four of the eight indicators that assess progress towards a more sustainable food system showed improvements:

- The number of acres of farmland participating in the New York City's Department of Environmental Protection (DEP) watershed protection program increased by 6% between 2012 and 2017. The number of acres covered ranged from a high of 26,359 in 2014 to a low of 18,735 in 2012.
- There was a 5% decrease in the number of farms participating in the DEP watershed agricultural program in 2017 compared to 2012; there was a 6% increase in the number of acres covered.
- Between 2012 and 2017, New York City increased annual spending on local milk, yogurt, and produce by 9%. In 2016, the Department of Education's spending on local food accounted for 12% of its total Other Than Personnel Services (OTPS) expenditures on food services (New York City Department of Education, 2016).
- An 80% decline was reported in the number of daily truck trips to or through the Hunts Point Food Market, and a 45% decline was reported in daily rail trips. These changes are associated with a reduction in air pollution.

Sustainability indicators that showed negative trends between 2012 and 2017 were a 5% decline in the number of farms participating in the city's watershed protection program; a 59% reduction in city financial support to upstate farms participating in the watershed protection program; and a 65%

decline in city spending on the more environmentally friendly large containers of bottled water for city agencies and a 35% increase in spending on the more wasteful single-serve containers.

Food Workers. The single indicator that assessed support for food workers showed a 24% increase in the number of workers trained by the city's Small Business Services between 2014 and 2017. The 324 trainees who received training in 2017 represented a tiny fraction of the city's 63,000 grocery store workers and the 320,000 who work in food service and drinking establishments.

What are the strengths and weaknesses of the Food Metrics Reports as a tool for monitoring policy implementation and impact?

The Food Metrics Reports provide valuable data for understanding the implementation of city food initiatives. As the only compendium of food data published by the city, they offer evidence for an assessment of progress in implementing selected food policies approved in New York City over the last decade or so. This makes Metrics Reports an important step forward in food policy planning. The fact that the Reports show measurable progress in the implementation of 51% of the indicators provides assurance that a bare majority of implementation measures for food initiatives are moving in the right direction. The findings on the lack of progress in 40% of the indicators show the need for additional efforts.

The production of six annual reports and their findings are a tribute to the determined efforts of two Mayoral Administrations and the City Council to improve food policy in New York City. The reports and the reporting process are also the results of consistent advocacy, education, policy monitoring, and community mobilization for more effective and equitable food policies by a variety of community organizations, civic groups, and the emerging New York City food movement.

But, the Food Metrics reporting process could be more useful to the food planning process in several ways. As our summary indicates, they provide a somewhat scattershot view of city food

policy. The lack of geographical analysis precludes their use by community leaders who want to compare their neighborhoods to other city neighborhoods. Most indicators lack denominators for the population to be served, preventing their use to assess the reach of existing programs. The metrics do not include numerous other sources of public data on food, blocking policymakers and advocates from utilizing the full range of data that is collected to inform policymaking. Moreover, by using fixed metrics the profile they draw is of a static system; however, as Meter (2011) has observed, food systems are in fact dynamic and complex, an insight reinforced by our findings.

Most fundamentally, the lack of any organizing framework or articulated food policy goals for New York City and the focus of the selected metrics on implementation rather than outcomes limits their use in assessing progress toward broader food policy goals. While our summary of the Metrics Reports provides tantalizing and useful snapshots of food policy in action in New York City over the last six years, it does not provide meaningful answers to whether New York City is making progress towards achieving the five goals shown in Table 1. In the next section, we suggest how New York and other cities can take steps to address these limitations.

Food Metrics Reports 2.0: Toward a Comprehensive Food Plan for New York City

What changes in the Metrics indicators and process might make the reports more useful for strengthening food policy, improving food governance, and creating a more equitable and efficient municipal food system? Six years of experience with the Food Metrics Reports provides a foundation for considering Food Metrics 2.0, an expanded approach to food planning that builds on the successes and limitations of the last decade of food policy in New York City. Our suggestions are intended to encourage conversation among food planners in other cities, New York City and state policymakers, public officials in the many agencies that have food responsibilities, food advocates, food businesses, and community leaders and residents.

1. Include denominators as well as numerators for relevant metrics.

Few of the indicators provide a denominator that allows the reader to interpret the significance of the change reported or to assess the population impact of the results. For example, Indicator 1 reports the number of farms and their acreage participating in the DEP watershed agricultural programs but not the total acreage of farmland in the region or state. Other evidence shows that the acreage protected since 2012 accounts for only a small fraction of the farmland in these watersheds (Watershed Agricultural Council, 2017). Similarly, without knowing the number of children enrolled each year in city schools, the number who are served school lunches has little meaning. Several other indicators would benefit from denominator data and specified targets for achieving policy goals.

2. Select additional indicators.

Through the political deliberations we described, in 2011 the City Council somewhat arbitrarily selected several indicators for the Metrics Reports. As the city considers its food policy goals for the next decade, it should identify indicators that will add new insights and guide policy to solve emerging problems. Especially welcome additions would be measures that capture emerging and dynamic dimensions of the food system (Meter, 2011), e.g., the changing patterns of the retail availability of food by neighborhood. Other metrics to consider are the number of individuals or households eligible for public food programs but not enrolled, the number of retailers who accept SNAP or other benefits by community district, the density of fast food establishments, and the number and percent of various sub-populations experiencing food insecurity (e.g., immigrants, college students, and older people). By assessing the feasibility, benefits, and cost of adding such additional indicators, the creators of the reports could select new indicators that could lead to more useful monitoring of food policy in the coming years.

3. Add other sources of data and create a unified publicly available data platform.

New York City and State agencies report food data in several other formats, including the Mayor's

Management Report, annual city Budget Reports, the New York City Department of Health's annual Community Health Surveys and its restaurant inspection data, the Department of Education's reports on the use of school meals, and the New York State Department of Agriculture and Markets' food retail database. Policy-makers and residents could realize the potential of using Big Data to inform policy by aggregating these multiple sources into a single user-friendly database that could be used to assess municipal and local food environments.

In addition, in the last decade the city has commissioned several reports that have produced point-in-time data on characteristics of the food system that warrant ongoing monitoring. Examples include studies on the special distribution of supermarkets and grocery stores (New York City Department of City Planning, 2008), the sources of New York City's food supply (Barron et al., 2010), and the transportation of food within the city (New York City Economic Development Corporation, 2016). Two major Mayoral strategic plans, Mayor Bloomberg's 2011 Update of PlaNYC (Office of the Mayor of NYC, 2011) and Mayor de Blasio's OneNYC (Office of the Mayor of NYC, 2015) also present goals and data on the city's food system and on other sectors. The first uses a sustainability lens to plan for the city's future, the second an equity lens. Each plan provides a useful framework for intersectoral food planning but has been divorced from the food metrics process.

In 2012, the City Council passed an Open Data Law requiring all city public datasets to be published on the Open Data Portal, which by 2017 included more than 1600 datasets (Hopkins, 2017). By using open access platforms such as New York City Open Data, the site that makes these data more widely available, an expanded food metrics initiative could assist public agencies, community leaders, advocates, and academics to participate more effectively and equitably in food policy governance.

4. Include more constituencies inside and outside city government in the metrics process.

Creating, analyzing, and using mutually agreed on

metrics to monitor and inform food policy has the potential to engage diverse constituencies in shaping those policies. Conversely, restricting the process to a few public officials limits the opportunity for public discussion and collective ownership of the process.

Improvements in food policy require an intersectoral perspective in which many municipal agencies work together to enhance their cumulative contributions. The Food Metrics Report already includes data from the Departments of Health, Education, and Environmental Protection, the Human Resources Administration, Small Business Services, Economic Development Corporation, and others. By enlisting these agencies in defining and collecting data on other outcomes that contribute to better food systems, the Mayor's Office of Food Policy could begin to monitor other outcomes that contribute to reductions in food insecurity and diet-related diseases.

For example, increases in the minimum wage or decreases in residential rent puts more money in the pockets of low-income residents, enabling them to spend more on food (Cohen, 2016). Changes in commercial rent influence the profitability of food stores. By expanding its intersectoral focus, the food metrics process could keep track of a wider range of influences on diet and food systems. This would allow food metrics to identify emerging problems and to inform preventive policy measures.

Another group that could contribute to and benefit from more extensive involvement in the food metrics process is academics. They could assist the city to improve the quality and transparency of the data used in the report, identify other useful metrics, and design small-scale studies to inform the metrics process. They could also suggest qualitative methods that would yield evidence that could help to assess *why* policies were succeeding or failing.

Further attention to the knowledge systems by which various constituencies use data such as those in the Food Metrics Reports to influence food policy could also enhance their utility. Asking community leaders, advocates, and policymakers, as Cash et al. (2003) have suggested, about what they need to know might increase the utility of the

reports. For example, enabling community leaders to localize data might help to identify, then reduce inequitable access to healthy affordable food. One way to broaden participation in the metrics process may be for the City Council to hold hearings on the food metrics reports. This would provide its authors with an opportunity to answer questions and explain findings and its users an opportunity to make suggestions for improvements.

5. Make equity a priority.

Food policy scholars suggest that promoting more equitable distribution of healthy urban food environments should be a high priority for food planners (Dixon, Omwega, Friel, Burns, Donati, & Carlisle, 2007; Hawkes & Halliday, 2017). Despite more than a decade of attention to food policy, the New York City's progress in reducing the prevalence of inequities in its most serious food problems—food insecurity and hunger, diet-related diseases, the adverse environmental impact of our food system, and the low wages and poor working conditions of food workers—have been at best modest (Freudenberg et al., 2018).

By using metrics to chart progress towards reducing socioeconomic and racial and/or ethnic inequities in the distribution of food insecurity and diet-related diseases, New York City can begin to realize the current Mayor's commitment to making New York City the "fairest big city" in the nation (Office of the Mayor of NYC, 2018). In addition, the city government can use Mayoral equity initiatives in other sectors to increase food equity. For example, expanding the supply of affordable housing in ways that also increase access to affordable healthy food, making food a central component of universal pre-kindergarten programs, and including food workers in workforce development programs to increase the number of good jobs in New York could amplify the equity impact of each of these initiatives (Cohen, 2016; Office of the Mayor of NYC, 2015, 2017). Measuring the success of such efforts could help the food metrics process put equity front and center.

Various strategies have been used to highlight inequities in food-related outcomes across neighborhoods and populations. For example, a

comparison of food environments in neighborhoods with varying Gini coefficients, a common measure of inequality used to represent the income or wealth distribution of an area's residents, can highlight inequitable outcomes and opportunities for action (Raja, Ma, & Yadav, 2008). Another effort established indicators for food outcomes (e.g., the percentage of high school students who eat fruits and vegetables five or more times per day), tracked the outcomes identified by a community coalition across neighborhoods and assessed progress towards achieving five-year goals in reducing inequalities (Healthy Kids Healthy Communities Buffalo, 2013). Engaging community residents and leaders in setting, collecting, and interpreting measures of inequality can increase their capacity to tackle the conditions that produce these disproportionate burdens.

6. Focus on outcomes as well as implementation

The goal of food policy is to improve the well-being of the population and provide more equitable access to healthy food for all sectors of the population. Food metrics can help to achieve this goal by clearly defining the pathways by which implementing programs and policies leads to desired short-term impact and long-term outcomes. For example, improving access to affordable fruits and vegetables seeks to improve diet quality, reduce food insecurity, and shrink inequities in diet-related diseases. To assess progress towards this goal, a metrics process could examine the associations between the implementation of a host of programs and policies (e.g., Green Carts, supermarket expansion incentives, New York Food Standards, fruit and vegetable prescriptions) and the changes in daily fruit and vegetable consumption by community and population group. By looking at the cumulative impact of several policy initiatives related to key outcomes, New York City could begin to track progress towards its broader goals.

7. Present analyses and frameworks for interpreting changes in metrics as well as describing them

The current Food Metrics Reports present data on selected indicators but provide no analyses of progress, no compelling rationale for why New

Yorkers want to track such outcomes, and little analysis of the reasons for successes or failures. What entity or entities conducts such analyses, whether it is the Mayor's Office, the City Council, civil society groups, or some combination, deserve public discussion. But collecting and reporting metrics without providing a publicly-accessible rationale or deeper analysis is like a baseball umpire calling balls and strikes but never recording runs or outs. While readers of the reports can make their own determination, this does not provide a solid foundation for policy development.

Conclusion

Our recommendations suggest a few ways in which the metrics process could be developed in the coming years to provide more useful evidence to guide food policy in New York City. Most essential, in our view, New York City needs a comprehensive, intersectoral multi-year food plan. The purpose of monitoring food policy indicators is to track progress in achieving goals; without clearly articulated objectives, food metrics become less useful. While we acknowledge the challenges in deciding who should develop such a plan and finding the resources necessary for its implementation, it seems unlikely that New York City will make progress in reducing its most significant food problems without a clear roadmap to guide who should be doing what.

In our view, the process of developing such a plan should be participatory, time-limited, and guided by the available evidence. One approach might be to first set a few specific 5- to 10-year objectives for each of the five broad policy goals shown in Table 1 and then begin aligning current policies and identifying gaps to fill to achieve those objectives. Many other cities have developed multi-year food plans, including London (Cretella, 2015; London Food Link, 2016), Chicago (City of Chicago, 2013), Los Angeles (Los Angeles Food Policy Council, 2017) and Toronto (Mah & Thang, 2013), and their experiences can help guide New York City. In addition, international partnerships such as the Milan Urban Food Pact (Tegoni & Licomati, 2017) and recent reports on urban food policy governance (Hawkes & Halliday, 2017) have also begun to suggest approaches to using data to

inform municipal food planning.

In the last decade, New York City has made significant progress in creating and implementing new food policies. The annual Food Metrics Reports have been an important part of the process, and they remain the most comprehensive documentation of the city's progress in food policy. In the coming years, New York City—and other big cities—will need to incorporate the lessons learned from the first years of the food metrics process, build on its successes, and minimize its limitations to use the monitoring process to inform the development of a comprehensive food plan. By doing so, New York City and other

big cities can increase the likelihood that, five or ten years from now, they will be able to show substantial progress in creating healthier, more efficient, more equitable, and more sustainable urban food systems.



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Appendices

Appendix 1. Selected Major New York City and State Food Policies, 2005–2017

2005.....	Shop Healthy and other later initiatives including Healthy Bodegas launched to improve quality and healthfulness of food in bodegas.
2006.....	Launch of Health Bucks, a farmers market incentive program; expanded to all NYC farmers markets in 2012.
2007.....	NYC Health Code updated to establish limits on sugary drinks served in child care centers; extended to summer camps in 2012.
2007.....	Food Stamp Paperless Office System launched, allowing residents to apply for food stamps at partner food pantries and soup kitchens.
2007.....	Ban on artificial trans fat in NYC restaurants.
2007.....	Water jets installed in many NYC public schools to increase access to safe drinking water.
2007.....	First food policy coordinator position established in Mayor's Office.
2008.....	Green Carts, a new class of mobile fresh fruit and vegetable produce vendor permits, established for high-need areas.
2008.....	NY State expands SNAP eligibility, extends recertification.
2008.....	Chain restaurants required to post calorie information on their menus or menu boards.
2008.....	Online application for school meals implemented to facilitate enrollment.
2008.....	Nutrition standards for all food purchased and served by city programs promulgated.
2008.....	Garden to Café pilot in 20 schools, later expanded to "Grow to Learn," a citywide school gardening initiative.
2009.....	Food Retail Expansion to Support Health (FRESH) program launched, providing incentives to attract grocery store development in underserved communities.
2009.....	"Pouring on the Pounds" media campaign, encouraging New Yorkers to choose beverages with less sugar.
2009.....	SNAP call centers opened to increase access to information on program.
2010.....	National Salt Reduction Initiative launched by NYC Department of Health to reduce sodium intake through voluntary corporate commitments announced.
2011.....	NY State ends requirement for finger imaging for SNAP.
2011.....	Vending machine standards for food-dispensing machines in city buildings go into effect.
2012.....	Local Procurement Guidelines encouraging agencies to buy New York State food products released.
2013.....	Food Waste Challenge announced asking NYC restaurants to commit to diverting 50% of their food waste.
2013.....	Fruit and vegetable prescription pilot program launched at two city public hospitals; later expanded.
2013.....	New York City Housing Authority launches first large-scale urban farm, later expanded to more sites.
2014.....	New York City Food Assistance Collaborative created to increase emergency food availability and increase access to food and income assistance benefits for eligible New Yorkers.
2015.....	Breakfast in the classroom programs expanded in NYC schools.

Continued

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- 2015..... Universal free school lunch implemented in most New York City middle schools, expanded to 90% of all New York City public schools in 2017.
 - 2016..... Salt warning labels required on restaurant menus.
 - 2016..... Minimum wage of New York City, New York State, fast food and other workers raised to US\$15 per hour to be implemented over three years.
 - 2016..... Zero Waste Challenge (ZWC) invites New York City businesses to support the city's zero waste goals by working to divert at least 50% of their waste from landfill and incineration by the end of the challenge.
 - 2016 and 2017 New laws to protect fast-food workers from unpredictable scheduling and payments.
 - 2017..... Approved for Universal Free Lunch in all NYC public schools.

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Appendix 2. Indicators Included in Annual Food Metrics Reports (see abbreviations and explanations below)

1. Number of farms participating in the DEP Watershed Agricultural Program; Annual dollar amount of city financial support received by participating farms
2. Total DOE expenditure on local milk, yogurt, and produce, defined as produced in New York State
3. Registered community gardens on city-owned property
4. Food manufacturers receiving monetary benefits from EDC or IDA
5. Truck and rail trips to or through Hunts Point Market
6. Grocery store SF per capita and the number of grocery stores opened during the past five calendar years
7. Grocery stores receiving FRESH benefits
8. Number of stores participating in Shop Healthy
9. Number of food-related job training programs administered by SBS
10. Number of meals served in city institutional food programs
11. Compliance with food standards
12. Number of DOE vending machines and revenue generated
13. Number of seniors receiving SNAP benefits
14. Funds spent on SNAP enrollment by HRA
15. Funds spent on Nutrition Education by HRA: (a) Funds DOHMH Spends on Nutrition Education: Stellar Farmers' Market Initiative; (b) Funds DOHMH Spends on Nutrition Education: Eat Well Play Hard Program; (c) Funds DOHMH Spends on Nutrition Education: District Public Health Offices
16. (a) Salad bars in schools; (b) Salad bars in NYC Health and Hospitals facilities
17. Funds spent by DCAS on bottled water in 5-gallon containers and in single-serve bottles
18. Number of Green Cart permits, number of violations, locations, and number of operators that accept EBT
19. Number of vendors at GrowNYC farmers markets

Abbreviations and explanations:

DCAS	NYC Department of Citywide Administrative Services
DEP	New York City Department of Environmental Protection
DOE	NYC Department of Education
DOHMH	NYC Department of Health and Mental Hygiene
EBT	Electronic benefits transfer, a device that allows SNAP recipients to use SNAP card to pay for food in stores and farmers markets
EDC	NYC Economic Development Corporation (a nonprofit corporation created by NYC)
FRESH	Food Retail Expansion to Support Health, a city program to encourage supermarkets to open or expand in low-income neighborhoods
Green Carts	NYC program to authorize vendors to sell fruits and vegetables on city streets in low-income communities
GROWNYC	NYC nonprofit that administers many of the city's farmers markets and green markets
HRA	NYC Human Resources Administration, the city's social services agency
Hunts Point Market	NYC's wholesale food market
IDA	Industrial Development Agency
NYC Health + Hospitals	The city's public hospital system
SBS	Small Business Services, a city agency
SF	Square feet
Shop Healthy	NYC Department of Health program to encourage bodegas and grocery stores to sell healthier food
SNAP	Supplemental Nutrition Assistance Program

Source: New York City Food Policy. (Various dates). Food metrics reports. Available at <http://www1.nyc.gov/site/foodpolicy/about/food-metrics-report.page>

COMMENTARY

Special JAFSCD Issue
Local Government in Food Systems Work

Seeking food justice and a just city through local action in food systems: Opportunities, challenges, and transformation



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Producing social change and supporting social justice has always required multiscalar strategy and action. Federal policy actions can be transformative, but are sensitive to extreme philosophical shifts and partisan conflict in federal leadership. When federal leadership is unstable, local and regional government action provides a critical space for maintaining movement forward and presenting opposition when federal policies are not supportive.

These dynamics are evident in many spheres of policy, such as housing, transportation, economic development, education, health, and food systems. We can see this tension in food systems today, as federal policies regarding agricultural subsidies and proposals to tighten food assistance programs (e.g., SNAP) can be in opposition to local goals of supporting sustainable and just local food systems.

Local activities and practitioners must be agile to work within an ever-changing federal policy landscape.

The long-term trend of federal devolution places even greater emphasis on “going local” to support reforming systems and social change. Discussions of federal versus local action can be overwhelmed by academic debate around the evils of neoliberalism. But for local activists, practitioners and marginalized communities, these theoretical arguments do little to bring change to their communities. Local action remains the primary sphere of influence to support social justice. Local action also is the primary space of innovation, as collaborative local efforts organically evolve and create new models for supporting food justice.

The collection of experiences documented by scholars and practitioners in this special issue of the *Journal of Agriculture, Food Systems, and Community Development* (JAFSCD) illuminates the opportunities for reshaping food systems through local government action and collaboration. They also demonstrate the persistent challenges facing systemic

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reforms and offer insights from practice that should inform our efforts to produce transformational change in systems. Upon review of these diverse works of scholarship, several themes emerge.

Recognizing the Intrinsic Value of Activist Scholarship

I am moved by the passion and dedication of the many activist/practitioner scholars who contributed to this special issue. Activist scholars and practitioners can present a unique and enriching perspective on producing social change while assuring objectivity through disclosure of conflicts of interest and rigorous methods. These scholars deeply inform our collective knowledge, and their contributions should be encouraged by the academy. I am encouraged by venues such as JAFSCD that feature works of activist scholarship. I argue that for the continued evolution toward broader civil rights and justice, activist scholarship is critical to engage, inform, document, and empower social change movements. Scholarship and university resources are critical to support social justice movements and to counter entrenched political and corporate opposition to reforms.

Local City Planning as an Opportunity and Obstacle

City planning stakeholders and processes (such as the comprehensive plan) are identified by multiple authors as critical to moving food system reforms into local policy. The comprehensive plan, and by extension local zoning ordinances, can be powerful tools when structured correctly to position a community to engage food systems. While food systems have not traditionally been a focal point of land use policy, city planning is generally an evolving practice that is open to multidisciplinary perspectives (Friedmann, 2008). Planning will continue to embrace food systems efforts, just as it has evolved to engage emerging issues such as public health, social equity, sustainability, and climate change or resilience. As noted in *Rejoining the Planning and Public Health Fields: Leveraging Comprehensive Plans to Strengthen Food Systems in an Urban versus Rural Jurisdiction* (Mui, Khojasteh, Hodgson, & Raja, 2018), the built environment is a “unifying issue”

for the disciplines of planning and public health. Food system reformers should view planning offices as potential allies to support their efforts and infuse reforms into policy.

While planning can be a pathway to reform, food system actors should be cognizant of the challenges in reforming city planning practices. Planning is a highly political process, not immune to the conflicts that can disable reform in other venues of local government, and the profession has a mixed history of both supporting and impeding social equity goals. This dichotomy is most evident in local government, where local jurisdictions have played the role of both progressive reformer and disenfranchising villain in supporting social justice through land use policy (Reece, 2018). Land use policy and zoning have worked to improve the health, well-being, and quality of life within our cities, but also have been manipulated nefariously to support the goals of social control and segregation of marginalized communities.

Euclidian zoning (which places emphasis on separation of use) is the bedrock of our local land use regulatory system, and this antiquated model of regulation can be a barrier to 21st-century planning goals. In its infancy, zoning was designed to tame the chaos and disorder of the late 19th-century city. As the U.S. Supreme Court notes in the 1926 *Euclid v. Ambler Realty* decision, urban land use nuisances were often valid activities, but were just located in the wrong location, “like a pig in the parlor instead of the barnyard” (*Village of Euclid, Ohio v. Ambler Realty Co.*, 1926).

Thus the separation of land uses through zoning was an appropriate policy solution to address this early 20th-century urban challenge. The philosophy of Euclidian zoning is most evident in how zoning has been used historically to disconnect food systems from residential areas and to force the separation of food system functions (e.g., growing, processing, and retailing). As we seek to reform our land use to engage food systems, we must acknowledge systemically the need to reform antiquated land use practices molded by Euclidian zoning. These reforms are critical to meet a number of contemporary challenges, from encouraging physical activity to producing affordable housing and supporting diverse communities. Food system

reformers should engage with other stakeholders who see reforming land use practice as essential to supporting a more sustainable and just 21st-century city.

The Goldilocks Dilemma: Where Do We Center Reform Efforts?

Food policy councils face a Goldilocks dilemma, trying to find the delicate balance between government legitimacy and influence while avoiding domination by local government political agendas. As demonstrated by several of the authors in this special issue, shifting local political dynamics can rapidly disrupt or alter progress. Food policy councils must effectively weather these storms while keeping an emphasis on policy advocacy, simultaneously engaging the community and facilitating strong relationships with decision-makers. To achieve these goals, councils must sit in a unique space, not as isolated advocates, but also not as an official arm of government. In essence, food policy councils become their own semi-autonomous “advocacy planner” in the larger planning system, acting as a continual voice of reform in a constantly changing political atmosphere.

Moving Decision-makers: Making the Case through Metrics while Valuing the Relational

As demonstrated in the case study *The Role of Metrics in Food Policy: Lessons from a Decade of Experience in New York City* (Freudenberg, Willingham, & Cohen, 2018), food system reform requires clear success metrics to move decision-makers forward. Clear, measurable outcomes that can be tied to evidence-based research are essential to motivate policy-makers, particularly around more abstract concepts such as equity. But, as this and other case studies demonstrate, measures and metrics can be challenging to define, keep consistent among stakeholders, and routinely monitor.

Despite these challenges, food system reform must allocate resources and energy to assuring that success measures can be articulated and documented. While emphasizing hard data and evidence-based research, we cannot forget the power of the *relational* in driving systemic change, particularly through the lens of collective impact (Kania, Hanleybrown, & Splansky Juster, 2014).

Relationship-building and a consistent process of co-learning can facilitate transformative ideas and solutions among diverse stakeholders. This messy but important relationship-based process for driving “serendipitous collaboration” (Gupta et al., 2018, p. 19) for food system reform is clearly documented within the case studies.

Equity and Inclusion: Important but Elusive Goals

All efforts documented in these case studies illustrate the importance of equity and inclusion as foundations of food system reform. Yet achieving equity goals can be elusive and frustrating. Dynamics of systemic inequality, marginalization, and “othering” has a tendency to reemerge within progressive reform movements, a challenge that is seen in the local food systems movement, which is often dominated by a White upper- and middle-class demographic.

This othering can be seen in the article *Commercial and Anti-Hunger Sector Views on Local Government Strategies for Helping to Manage Food Waste* (Otten, Diedrich, Getts, & Benson, 2018) as an interviewee refers to individuals seeking food assistance not as individuals, but as the health challenges (diabetics, obese) projected upon them. This lack of cultural understanding and empathy also is reflective of our national dialogue around issues of diet, nutrition, and obesity.

Social determinant and life course research in public health has clearly demonstrated that our overall health is less a reflection of our choices or access to particular types of food, but rather a reflection of deep structural inequalities and the presence or absence of societal privilege. Chronic stress from various forms of discrimination and deprivation over the life course can be more damaging to metabolisms and health outcomes than physical access to fresh food. But rarely are these important dynamics surfaced in our efforts toward food justice. Food justice should not only be about access and nutrition, but also about empowerment and improving the quality of life for marginalized communities.

The various scholars in this special issue routinely acknowledge the inherent challenges in supporting equity, in a food system context that

includes not only food security, but local empowerment and just wages for food workers. As suggested by Gilbert, Schindel, and Robert (2018) in *Just Transitions in a Public School Food System: The Case of Buffalo, New York*, we should be dreaming and thinking bigger—we should be concerned not only with access, but with seeking just transformation of our system. Yet to achieve these broad goals, food system reform efforts must become truly diverse and inclusive.


Equity requires replacing tokenism for sustained efforts to open decision-making to those communities most marginalized by the current systems, and if necessary to develop pipelines for leadership development. Any social change effort dominated by White and higher-income practitioners will be undermined by the dynamics of race, class, ethnicity, power, privilege, and bias. This commitment to equity will require time, resources, and a willingness to hand over power by White progressive leaders.

Cultivating leadership is an essential mechanism of power- and resource-sharing, to assure that marginalized communities have the opportunity to be at the forefront of decision-making. It requires the practice of cultural humility and an openness to listen more than lead. Most importantly, it requires an elevation of those most “othered” by the system to equal status within efforts to reform the system.

A Word of Caution: Food System Reform and the Threat of Eco-Gentrification

Multiple authors acknowledge conflicts in their

case studies related to the use of public space for urban food production. I caution that these minor conflicts can also reflect a larger challenge to a just food system movement. Continued urbanization will increase the density of our cities, threatening public spaces, and if not mitigated will result in gentrification in marginalized communities. Food system reforms in urban and metropolitan spaces will also be affected by these dynamics and may unknowingly contribute to gentrification. Practitioners and scholars have acknowledged the threat of urban greening becoming a form of “eco-gentrification” (Haffner, 2015). The urban amenities produced by food system reforms can serve the needs of marginalized communities, or they can spur speculative development, rising property values, and displacement.

The difference between these two outcomes depends on how practitioners manage urban food production efforts. Do we fully understand if marginalized communities are empowered to express their positions on whether their community should embrace these local land use changes? As initiatives develop, are marginalized communities authentically engaged and are residents placed in leadership positions? Are changing neighborhood conditions being monitored, and have mitigation efforts been identified to avoid displacement? Are food system reforms tied to other critical needs, such as affordable housing and economic empowerment for marginalized neighborhoods? These are the needs and questions that must be on the agenda for food system reform efforts moving forward. 

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