Grown Together: Local Food System Policy Tool Typologies and Bundling

Introduction

The ways local governments use and bundle the policy tools that shape local food systems, have been left largely unexplored in extant literature. This is due, in part, to the grassroots nature of the movement to strengthen local food systems and local food access, but also reflects a larger gap in our understanding of where and how these policies fit into local policy agendas. Constituent-led efforts, like increasing demand for local, fresh food, finding ways to produce more food in urban and peri-urban spaces, and initiatives to provide fresh food access equity, have left governments playing catch-up (Laforge, Anderson, and McLachlan 2017; Schupp 2017), often changing policiesto address what is already occurring. It's then up to government agencies, citizens groups, non- profits, or private businesses to translate policy and citizen preferences into programs (Chaskin and Greenberg 2015; Laforge, Anderson, and McLachlan 2017). Urban planning literature often addresses sustainable food systems' planning, but not governance or policy (Buchan et al. 2015; Campbell 2004). Though some work has been done on local food systems' governance, particularly in urban, peri-urban, and suburban settings, it tends to focuson "emerging" or evolving systems in China, Africa, Europe, and, occasionally, the UK and Canada (Battersby and Watson 2018; Gameren, Ruwet, and Bauler 2015; Kennedy and Liljeblad 2016). And while this research is important, the political, social, economic, and environmental variables surrounding both sustainability policies and local food systems are often entirely different than those in the US. For example, in the US, urban agriculture is rarely, if ever, used to provide family units with the majority of their food and income, as it is African countries like Kenya. In the US, we

rarely even witness that dynamic in rural farm families, who now, overwhelmingly, rely on outside income to survive ("USDA ERS - Glossary" n.d.).

Keeping these differences and the lack of data on urban food production in the United States in mind, this paper examines how the policy tools framework can be used to understand the mechanisms that local governments use to manage local food production, food sales, and food access. Since policies concerning local food are generally part of municipal sustainability policy toolkits, I also look at the ways sustainability policy tool bundles have been addressed in the literature.

The policy tools framework views programs and governance initiatives as tools and tool bundles used by governments to achieve objectives based on policy goals (Peters et al. 2018). Ideally, these goals are based on the needs and preferences of residents, taking target populations into account, but this is not always the case (Peters et al. 2018; Howlett 2018). Over the last 50 years, policy tools research has formed and advanced several typologies and methods of analysis to understand the types, targets, mechanisms, and effectiveness of tools and tool bundles (Peters et al. 2018; Howlett 2018; Acciai and Capano 2020; Lowi 1972; C. C. Hood 1983; C. Hood and Margetts 2007). To provide a brief overview of this history, I begin by looking at policy tools and tool bundles; categorization of local food system policy tools in the literature; and how the typology used in local food system literature compares to more mainstream policy tools literature. The comparison of the tool typologies lays the foundation for analyses of individual tool use and use by category. It also provides the basis for my analysis of sustainability policy tool bundles and its applicability to local food systems.

3.1 Policy Tools

From policy typologies to modern methods of policy analysis, attempts to capture the process and products of policymaking have evolved over the last 50 years (Howlett, Mukherjee, and Woo 2015; Lowi 1972). Through this evolution, analyses of policy tools and policy tool bundles, also referredto as policy instrument mixes, have become central to understanding both policy implementation and effectiveness (Acciai and Capano 2020; Capano and Howlett 2020; A. L. Schneider and Ingram 1997). Understanding the policy tools used in local food systems'

governance is particularly important because they are often enacted in response to constituent needs or demands, but they do not necessarily strive to meet either. To aid in determining where governments stand, policy tools can be used to understand some measure of a local government's credibility of commitment to long-termgoals. If a municipal government is willing to commit capital, especially upfront, it may show constituents that they are serious and deserve their buy-in (Brunner, Flachsland, and Marschinski 2012).

Policy tools are commonly defined as mechanisms, using either positive or negative reinforcement, that governments apply to shape constituent behavior towards a desired outcome (Schneider and Ingram 1990). Local policies often have a very aspirational tone, stating goals but rarely including specific timelines or consequences for not hitting them. bridge from those aspirations to the programs in place. Historically, they have served to balance thepolitics/administration dichotomy in policy studies and improved understanding of the effectiveness of different policy implementation options like grants vs. low-interest loans (Howlett 2019). The use of given policy tools are usually dependent on the context of the policy area, local government,constituents, and a variety of other variables (Curley, Feiock, and Xu 2020). They have also been found to interact with each other in a variety of ways, which has spurred an entire literature on policy tool bundles (Howlett 2019; Howlett, Vince, and Río González 2017). This is one of the two aspects of policy tools literature that are most relevant to this inquiry and so are highlighted in the short sections below. Policy tool bundles are now understood to be more accurate representations of theway policy is carried out, tying the written policy to the implementation and governance processesmore strongly than single policy tools (Capano and Howlett 2020; Howlett 2019). This paper looks at what policy tools localgovernments use, both separately and together, in their efforts to create and maintain sustainable, local food systems. The second aspect of policy tools literature that helps lay the foundation for thisanalysis, is the concept of policy tool targets. Policy is written with the intention of changing the behavior of target populations to achieve goals that are ideologically or structurally important to thethe government that enacts it (Howlett 2018). Capano and Howlett

(2020) also note that different fields have developed their own policy tool categories. Although not much has been done in terms of local food systems' policies, some categorizations are highlighted in the next section.

3.2.1 Policy Tool Bundles

Policy tool bundles represent the concept that policy tools are, intentionally or unintentionally, tied together and can have effects on one another (Howlett 2019). The lack of required intentionality is why some prefer the term policy instrument mix. There have been different classifications and iterations of policy tools over the decades, but the understanding that policy tools can contradict and even cancel each other has led to new ways of thinking about them. Even older versions of policy or policies meant to govern a different policy area can change the way a policy tool works (Thelen 2004; Taeihagh, Givoni, and Bañares-Alcántara 2013). In the local food system space, this usually takes the shape of old policies on keeping animals in urban settings preventing people from keeping chickens; or food sanitation rules that disallow community gardens from giving free vegetables to individuals experiencing homelessness. While the analysis here is limited to a chosen set of policy tools included in the data, it is important to understand that these bundles or mixes can extend beyond a particular subject, sector, or time period. It helps to consider how they play a role in the implementation and efficacy of policy at every level of government.

Policy tool bundles are also important extensions of the work to build policy typologies and categorizations, like those used in this paper. Exploratory Factor Analysis (EFA) and Item Response Theory (IRT) have both been used to examine sets of policy tools for latent constructs to improve the way we conceptualize and analyze policy tool interactions (Deslatte and Swann 2016; Swann and Deslatte 2019). Though it is difficult to know, let alone analyze, the totality of policy tools that have effects on a policy area like local food systems, these methods can help point researchers in the right direction, building a more complete template to follow across cities. For this reason, I use EFA to look at the interplay of policy tools in this sample after completing analyses using the categorizations I outline here. I feel the contrast is beneficial to growing policy tools literature, especially for understanding their role in local food systems' governance.

3.2.2 Policy Tool Targets

While policy tools can be inadvertently weakened or contradicted by other policy tools, the greatest threat to their efficacy may be the people crafting them. In the policy process, lawmakers must decide to direct policies toward either the entire population of the jurisdiction or some subset of that population. Constraints like time, budget, and understanding of constituent demands often make the process more challenging. However, this step is critical in shaping things like legal status, eligibility for programs, and, ultimately, the efficacy of those programs (Curley, Feiock, and Xu 2020). Policy tools that assume the worst of a target population or are not targeted at all can be useless or harmful (A. Schneider and Ingram 1993; Howlett 2018). Another criticism of of extant policy tools literature is that it often considers all members of target populations, and so the population as a whole, to be rational actors rather than considering characteristics or variables that may makeindividuals respond in unintended or unexpected ways to policy tool mechanisms (Howlett 2018; Duesberg, Dhubháin, and O'Connor 2014; Weaver 2013). There has been very little work on this topic, partly because it can be difficult to measure what preconceptions or misconceptions policymakers have about their constituents, policies already in place, or any other topic. However,Schneider and Ingram (1993) talk about the way social constructions become part of policies and continue cycles of inequities. In local food systems this becomes apparent in the way hunger and food access have been treated, especially in communities of color.

This leads to another problem with assumptions about target populations. Whether explicitly stated or not, profiles of potential policy tool targets often involve their racial, income, and cultural makeup (Howlett 2018). Differences in policy design and implementation across these demographics can mean different experiences with and attitudes toward government (Wan, Shen, and Yu 2015) leading to unexpected or non-compliant behaviors and requiring local governments to find more innovative and diverse inducements (Howlett 2019). Howlett (2018) discusses the issues with matching tools and target populations at length, noting that the supply and demand of different types of tools must be in balance. For example, providing financial or material incentives to populations

that don't really need or can't use them may result in less than desired compliance. This issue has been documented in cases where local populations have lived for generations with little access to fresh food. When offered produce through voucher programs or community gardens, they either decline or take the food and don't use it because they lack the knowledge and/or tools to prepare it (Landry et al. 2020).

Both the way policy tools are bundled and targeted happen, intentionally or otherwise, happen during the policy process, but the ways those bundles and targets affect constituents may take decades to change or never even make it as feedback into the process. This is where the literature on policytools can serve as a practical guide for policymakers. Testing and improving tool categorizations can lead to stronger evidence and, hopefully, faster turnaround on policy change and innovation. The next section provides a brief history of policy tool typologies, their use in literature on local food systems' governance, and some comparisons across them.

3.2 Policy Tool Categorization

Most of the scholarship on local food systems' policies and governance has come from urban planning, and discussions of policy tools have been limited (Buchan et al. 2015). Even within local sustainability and resilience research, local food systems have been largely ignored until the last 5-10 years, when they were incorporated as part of the food-energy-water (FEW) nexus (Ghodsvali, Krishnamurthy, and de Vries 2019; Karpouzoglou, Pereira, and Doshi 2017). This has created a large gap in testable categorizations of local food systems policy tools, their functions, and tool bundling. While others may exist, an exhaustive literature search found only only piece that categorizes common local food system policy tools. Buchan et al (2015) begins this task by breaking the policy tools into 4 categories: "provide resources"; "undertake projects and programs"; "advocate and facilitate"; and "regulate and establish policy" (Buchan et al. 2015). The full table isincluded here Appendix B. The authors note that while they looked to other, sustainability policy tool frameworks, such as Roseland (2012), they decided to use categories from a District of NorthSaanich (Canada) Agricultural Area Plan Report from 2010 (Buchan et al.

2015; Jacobs 1995; Roseland 2012). Comparing these categories with those in foundational policy tools literature, theymix several previous paradigms and combine traditional categories. I will briefly describe these categorizations of tools and how they compare to the classification used in Buchan et al (2015).

The first category in Buchan et al (2015) is "provide resources." Resources in this typology include sharing knowledge, goods or money "to facilitate others to act (p 10). The inclusion of knowledge or information in this category really causes it to overlap with both the "advocate and facilitate" category in the same typology but with more than one category in each of the other two,which I will detail below. The second category in Buchan et al (2015) is "undertake projects and programs," which includes community gardens, food needs assessments, and festivals (pp 10-11).The main difference between this category and the first is that the resources are being used for the implementation of a program or staging of an event, not to allow or empower others to do so. This distinction is important because a policy tool that creates a community garden can both provide a resource to allow constituents to grow their own food and have program components like sprinkler or faucet maintenance, fence repair, or providing periodic compost deliveries. This category also includes partnerships that local governments enter into for the purpose of local foodsystem governance. The third category is "advocate and facilitate," and the authors see this as a plan B when resources or constituent interest doesn't allow for larger investments (p 14). This category includes encouraging people to have green roofs and attend farmers markets. It can also include policies that give tax credits or other incentives for urban agriculture projects or remove restrictions on these activities. This category can have overlap with the fourth and final category,"regulate and establish policy." This category is straightforward and includes zoning, economic development, and food safety. In a different imagining of this typology, this category could possibly be a hierarchical step above the other three. However, in this typology it represents the punitive vs. compensatory policy tools that are directed at specific groups, individuals, or actions.

One of the challenges with a typology adapted directly from a practitioner setting, is that the

interpretation can be highly dependent on the tools in use in that area. Institutions existing in other areas can be easily missed or mislabeled. For this reason, I decided to compare the Buchan et al. (2015) typology to two of the most widely recognized and conceptually different policy tool typologies in the literature. The first is one of the most definitive early policy tools papers, Schneider and Ingram (1990). The authors establish "behavioral" policy tools categories: authority, incentive, capacity, symbolic, learning (A. Schneider and Ingram 1990). These tools are meant to help ameliorate the wicked problems of society that are either ignored or inadequately addressed (Schneider and Ingram 1990; Acciai and Capano 2020). The second, while having come before Schneider and Ingram is Hood's (1983) NATO typology, which stands for: nodality, authority, treasure, and organization. While Hood's original typology came first, I am using the expanded definitions from Hood and Margetts (2007) here and so refer to it after Schneider and Ingram (1990). Unlike Schneider and Ingram's (1990) typology, Hood (1983) and Hood and Margetts (2007) focuson the control measures governments use to shape constituent behaviors (Acciai and Capano 2020).While some of the words in these typologies are the same, the definitions can be quite different.

For Schneider and Ingram (1990), authority tools are those used within government to provide rules and guidance among departments and government employees, but they can also extend to the population. The authors place these tools along a continuum from "voluntary" to "compulsory" (Schneider and Ingram 1990). Capacity tools can be either positive or negative reinforcements put in place by governments. These tools roughly match the Buchan et al. (2015) categories of regulating and providing resources, undertaking projects and programs, and establishing policies. Capacity tools also empower organizations and community members through information and help navigating administrative or knowledge barriers (Schneider and Ingram 1990). In the Buchan et al. (2015) classification this would be advocating and facilitating. However, advocating and facilitating can also fit into the symbolic and learning categories of Schneider and Ingram (1990). Symbolic tools are used to get at people's personal beliefs and motivations. These tools aim to shape behavior by aligning policy objectives with constituent values (Schneider and Ingram 1990; Acciai and Capano

2020).

While the behavioral classification of policy tools merges the positive and negative reinforcement tools, other classifications keep them separate (Acciai and Capano 2020; Hood 1983) Hood (1983) introduces the NATO typology, which stands for nodality, authority, treasure, and organization. Nodality is the placement of the government to provide information to their constituents (Hood 1983). Comparing this with the Buchan et al (2015) food policy tool classifications, nodality matches

Table 3.1: Comparison of Policy Tool Categories

Buchan et al (2015)	**Schneider and Ingram (1990)**	**Hood and Margetts (2007)**
Provide **R**esources (**PR**)	**I**ncentive (**I**)	**T**reasure (**T**), **O**rganization (**O**)
Undertake **P**rojects and Programs (**UP**)	**C**apacity (**C**)	**O**rganization(**O**), Treasure(**T**)
Advocate and **F**acilitate (**AF**)	**S**ymbolic or **L**earning (**ST/LT**)	**N**odality (**N**)
Regulate and Establish **P**olicy (**RP**)	**C**apacity (**C**)	**A**uthority (**A**)

most closely with advocating and facilitating policy tools. Authority is different in Hood's (1983) typology than in Schneider and Ingram's (1990), in that it is a more traditional understanding of the term. Authority is the broad power of the government to allow or prohibit behaviors (Hood 1983; Hood and Margetts 2007). This lines up most closely with the tools to regulate and establish policy in Buchan et al (2015). The two tool classifications that match the closest between Hood (1983) and Buchan et al (2015) are the treasure and providing resources tools, respectively. Both of these tool categories focus on fiscal and physical resources that governments can provide to encourage certain behaviors.

The part of Hood's (1983) typology that is hardest to match with the Buchan et al (2015) classification of local food system policy tools is organization, which represents the "human capacity" of a government to use the other three tools in a manner that will achieve the desired outcome. Buchan et al (2015) lumps this in with providing resources, but the case should be made that is stands on its own (Acciai and Capano 2020; Hood 1983; Hood and Margetts 2007). Table 3.1, above, reflects this combination, showing that both the organization and treasure classifications from Hood (1983) and Hood & Margetts (2007) can align with Buchan et al's (2015) categories of

provide resources and undertake projects and programs. Although there have been other typologies of policy tools, Hood (1983) and Hood & Margetts (2007) and Schneider and Ingram (1990) give the most well-rounded picture of the types of classifications out there. Other typologies build on NATO to examine different uses and purposes for each of the tool categories (Hood and Margetts 2007; Howlett 2000, 2019). For further reference, Acciai and Capano (2020) provide a comprehensive meta-review of these typologies and the branches of literature that has grown from them.

One policy area that has developed its own subset of the policy tools literature is sustainability policy, especially at the local government level. As mentioned above, Roseland (1992, 2012) adapts a typology for sustainable development from Jacobs (1995) that includes for categories: voluntary initiatives, financial incentives, expenditure, and regulation (p 34). This typology is not useful for my purposes here because it focuses on sustainability as the object of the action rather than government as the actor, but it is important to note because it shows the difference in the way sustainability policy tool categories evolved and how economic factors like saving money (voluntary initiatives by citizens and groups) and needing inducements to action (providing financial incentives for compliance) became so central to a policy area that seems it should be primarily centered on equitable environmental preservation and resource use. It's no coincidence that one of the most common measures of sustainability commitment by a city is staffing levels and other long-term expenditures. The other is to create additive indices of the policy tool bundles.

Below, I touch briefly on sustainability policy tool indices (SPTI) and their use in making comparisons across cities for two reasons. First, the role of local food system policy tools in sustainability efforts at the local level is well established, so I am highlighting that the exclusion of many local food system tools from SPTI's is problematic. Second, this exclusion would seem like an opportunity to create an index of the policy tools in this sample. However, I specifically avoid doing that here because, as I refer to in an earlier section, scholars are moving away from indices and looking toward EFA and IRT for more precise categorization and better weighting of individual tools. I felt addressing this directly would avoid any confusion about the methods.

3.3 Local Food Systems in Sustainability Policy Tool Bundles

Sustainability policy tool bundles, have been used over the last 20 years to compare and rank municipalities' commitment to sustainable practices (Krause 2011; Opp and Saunders 2013; Portney 2013). Any policy tool that helps achieve more desirable environmental outcomes, e.g. reducing waste, lowering energy use and emissions, or improving water or air quality, can be included in a sustainability policy index. Opp and Saunders (2013), includes a comprehensive list of these tools from both previous literature and the 2010 International County-City Management Association (ICMA) Sustainability Survey of local governments, which is used to build the Opp- Saunders Sustainability Practices Index (OSSPI). As far as tools directed at local food systems, items such as "incentives for using locally grown produce," "program to support a local farmers market," and "program to support community gardens" are included (Opp and Saunders 2013). Conspicuously missing from the OSSPI and all ICMA Sustainability surveys to date, is any mention of urban agriculture or economic development that is specifically focused on food grown within city limits. Both also neglect to discuss policy support for programs designed to train students and adults how to grow and prepare food as a means of income and/or career training, which havebeen identified as common policy tools in local food systems literature (Buchan et al. 2015; Horst, McClintock, and Hoey 2017; Martinez 2010).

The omission of tools like these highlights the difficulty that scholars face when trying to identify and catalog the diverse set of policy tools in a given city's sustainability policy toolbox. They also show how "new" local food system variables are in sustainability research and what that might mean when looking at indices with and without them included. While these indices have been found to be an imperfect measure of sustainability commitment because they generally fail to weigh the opportunity costs of each measure, (Deslatte and Swann 2016) they do provide a general inventory of the environmental and sustainability-focused tools commonly used by local governments. And while I lay all the groundwork for a local food policy index in the sections below, I avoid creating one or ranking the sample cities by tool use because of the general imprecision. However, I do see

the value in continuing to catalog these tools, adding local food system tools, and experimenting with new measures.

3.4 Data and Methods

This analysis uses data from the 2015 Local Food Systems Survey conducted by Michigan State University Center for Regional Food Systems (CFRS) and International City/County Management Association (ICMA). The survey focused on the policies, programs, goals, and stake-holders in the food system at the local level. The full text of the survey can be found in Appendix B.Here I focus on question 4, which asked government respondents to identify what types of policies and/or programs each municipality has and what types of organizations are responsible for oversight.I code the answers to determine how municipalities are using policies, programs, and partnershipsfor local food system governance. With 24 individual policy tools and a sample of roughly 1,100, once narrowed down to cities that answered this question, analyzing combinations of individual policy tools as "bundles" was not possible, so all analyses are done on the tool groups. Table 3.2 gives the number of cities reporting each policy tool by their involvement in the implementation, and Table 3.3 provides the coding for each policy tool across the three typologies discussed above. These two tables show why the typologies can be helpful, but also why indices have been used for so long. When a policy area is complex, there are more potential tools and so more tool choices for policymakers. This can be very difficult to capture or quantify.

In the following subsections, I discuss the coding scheme created by merging the typologies detailed above along with the number and types of policies and programs that cities in the survey sample use. Combining the coded answers with demographics and city-level data from United States Census Bureau, along with institutional data from the Census of Governments, I then highlight how these variables may influence the types of tools and mixes being used. Table 3.2 gives the summary statistics for the variables used. Finally, I perform an exploratoryfactor analysis on the policy tools in this sample to see if there may be different ways to group them for future research.

Table 3.2: Descriptive Statistics for Data of Cities in Sample

Variables	N	mean	sd	min	max
Sustainability Staff	2,214	0.362	0.481	0	1
Climate Change Pol.	2,066	0.256	0.437	0	1
Density	2,161	3,082	2,370	131.2	16,737
Diversity Measure	2,161	0.375	0.161	0.0201	0.664
Per Capita Tax Revenue	2,161	763.4	522.2	0	6,023
Sustainability Priority	2,288	0.569	0.495	0	1
Direct Support for Community Gardens	2,288	0.538	0.499	0	1
Yearly HH Spending on Fresh Produce	2,288	511.2	58.12	391	785
Form of Gov (CM)	2,259	0.761	0.427	0	1
Log Local DTC Farm Sales (2012)	1,380	8.592	1.079	5.545	10.58
Log Med. Home Val.	2,288	11.95	0.552	9.905	14.58
Log Median HH inc.	2,288	10.97	0.322	9.961	12.40
Gini (2014)	2,282	0.444	0.0501	0.271	0.635
% POC	2,124	0.131	0.196	1.55e-05	0.992
% Black	2,288	0.0994	0.145	0	0.984
% W/O access to fresh food	1,416	0.625	0.169	0.0140	0.954
% of HH Occ. by Owner	1,416	0.527	0.111	0.225	0.845
Log Tot. Pop.	2,288	10.84	1.329	7.178	15.22
% Pop. Exper. Pov.	2,130	0.166	0.227	0.000220	0.968
Log of Pop. Bac +	2,288	-1.393	0.503	-2.979	-0.160

3.5.1 Coding

Table 3.3, below, shows the number of each policy or policy tool implementation type. Since cities could choose more than one, this count represents the total for each category rather than total number of cities using each policy tool. This table highlights the differences among tool choices and implementation types but also gives an idea of how difficult it might be to use the individual policies and tool bundles to analyze a sample of this size. This is one of the reasons I chose to match the tools with existing categorizations in the literature. The other reason is that because so little has been done with policy tools in this space, this sample provided an opportunity to test existing typologies with regressions, and then Exploratory Factor Analysis to see how they loaded onto factors "naturally." Because these policy tools and

categories are not specifically aimed at addressing environmental, equity, or economic issues, I use the presence of department responsibilities related directly to local food issues as a measure of commitment in the analyses below rather than sustainability. The other variables are meant to represent potential stakeholder and institutional points of tension as identified in the triangular PMF.

Table 3.3: Policy Tool and Program Counts by Type

Policy Tool	Policy or Prog.	Pol.	Gov. Only	Gov. Part.	Not Part.	No Pol.	No Pol. or Imple.
Establish./Manage farmers markets	1047	659	134	426	406	1489	18
Establish. grocery stores in under-served areas	133	78	9	44	57	2049	2
Encourage corner stores to stock healthy food	139	68	7	45	71	2065	0
Expand. acceptance of food assist at farmers markets, stores	443	204	41	145	243	1935	4
Expand. purchasing power of food assistance benefits	207	90	21	59	117	2043	0
Encourage food trucks...and/or pop-up food businesses	480	337	49	139	157	1798	14
Buying local in government facilities	338	287	78	93	52	1835	1
Providing healthy food options in gov facilities	312	249	96	91	65	1882	2
Promoting municipal or backyard composting	648	493	151	239	162	1650	7
Providing land for community gardens	748	559	185	303	194	1583	5
Providing water for community gardens	571	456	164	234	117	1671	2
Keeping chickens, goats.....in residential or non-traditional zones	804	717	94	72	89	1427	2
Encouraging green roofs and/or edible landscaping	243	167	36	64	82	1961	6
Preserving farmland	731	568	77	222	165	1579	2
Selling produce at/from community gardens or farm stands	602	316	34	136	294	1828	8
Encouraging production ...value-added food products	226	137	20	75	94	2002	5
Redeveloping brownfields for food-related activity	118	70	16	37	48	2058	0
Creating/operating food hubs	152	79	8	58	77	2051	4
Creating food jobs	266	172	25	116	97	1959	3
Promoting agri- or food-related tourism	483	309	33	207	179	1824	5
Promoting healthy eating/obesity prevention	647	447	82	305	208	1681	8
Restricting or taxing ... fast food, junk food, or unhealthy food	63	30	5	11	34	2097	1
Providing emergency food to those in need	895	489	52	369	415	1647	9
Donating surplus food ... to food banks or shelters	539	113	11	82	431	2022	5

Most of Table 3.3 is as expected. Governments acting as a partner or having no involvement in implementation of certain policy tools, especially those requiring more upfront investment or long-term resources like "establishing grocery stores in underserved neighborhoods" and "creat-

ing/operating food hubs." Some surprising numbers include the dynamics of policy tools "restricting or taxing...fast food, junk food, or unhealthy food," which includes significantly higher numbers of reported policies in place and programs where the local government is not involved than programs where the government is solely responsible or a partner in implementation. Another area of interest is the last column, showing the number of respondent cities with policies in place but no implemented programs by each policy tool. Overall, this table shows the variety in local food system policy tools and implementation options. It also shows why typologies are both helpful and sometimes inadequate.

Table 3.4, below shows how I coded the individual policy tools from question 4 in each of the three schemes outlined at the beginning of the paper and using the tool examples and category descriptions from Buchan et al. (2015) to match the sample tools as accurately as possible . Some of the policy tool descriptions from the original survey question have been cut down to fit Table 3.4. For the full description, see the complete survey protocol in appendix B. In this table, the overlap discussed in the coding section becomes more clear.

Where policies met the criteria for more than one categories, they are are coded for both in the table. In these cases, I also included the policy in counts for both categories, to analyze them in both groups. While this isn't a perfect fit, it does represent the issues many scholars have had with typologies and categorizing policies with multiple goals. It also stays within the chosen typologies without attempting to alter them or potentially lose insights. To give an idea of how these policy tools breakout in the sample, Table 3.5, in the next section, gives a summary of the policy tools and implementation arrangements by percentage of the respondent cities who answered this question.

3.5.2 Policy Tool Use in Local Food Systems

Roughly 76% of the 2,237 local governments that answered the survey have at least one policy or program in place, or know of one in their community, that encourages local food system endeavors. Just under 10% of the respondent governments reported having no policy or program that fits this

Table 3.4: Local Food System Policy Tool Coding by Typology

Buchan Et al. (2015)	Schneider & Ingram (1990)	Hood & Margetts (2007)	Policy Tool
PR, AF	IT, LT	T,O	Establishing and managing farmers markets
PR, AF	IT	T	Establishing grocery stores in under-served areas
AF	CT	N	Encouraging corner stores to stock healthy food
AF, RP	CT	A	Expand. accept. of food assist...at farmers markets, stores
PR	IT	T	Expand. purch. power of food assist. benefits...
AF	ST	N	Encouraging food trucks...and/or pop-up businesses
PR,RP	AT	T	Buying local in government facilities
PR, AF	AT	T	Providing healthy food options in gov facilities
AF	ST	N	Promoting municipal or backyard composting
PR	IT	T	Providing land for community gardens
PR	IT	T	Providing water for community gardens
RP	IT	A	Keeping chickens, goats..... in residential or non-traditional zones
AF	ST	N	Encouraging green roofs and/or edible landscaping
PR	IT	T	Preserving farmland
AF,UP	IT	O,A	Selling produce at/from community gardens or farm stands
AF	ST	N	Encouraging production...of value-added food products
PR, UP	CT	T,O	Redeveloping brownfields for food-related activity
PR, UP	CT	T,O	Creating/operating food hubs
PR	IT	T,O	Creating food jobs
AF	ST	N	Promoting agri- or food-related tourism
AF	ST	N	Promoting healthy eating/obesity prevention
RP	IT	A	Restricting or taxing ... unhealthy food
PR	IT, LT	T	Providing emergency food to those in need
UP	IT,CT	A,O	Donating surplus food ... to food banks or shelters

description. Of governments with at least one policy or program in their municipality, 37% reported that the local government implements one or more programs alone; 61% identify themselves as partners in implementation in at least one program; and 66% responded that at least one program exists in which the local government is not a partner. Breaking these programs down by the Buchan et al (2015) categorization, some clear differences in policy tool use by category begin to emerge. The tools from the survey sample which fall under "provide resources" category in Buchan et al (2015) includes investments like making fresh food available in government facilities, providing land

Table 3.5: Policy and Tool Implementation by Responsible Actor

	Policy	Local Gov. Alone	Local Gov. Partner	Local Gov. Not Involved
Provide Resources	60%	22%	68%	50%
Undertake Projects, Programs	40%	7%	26%	69%
Advocate and Facilitate	68%	34%	48%	60%
Regulate Establish Policy	72%	12%	24%	30%

or water for community gardens, or by increasing the purchasing power of food vouchers through matching or other means. This category has a high upfront financial burden for local governments , so it is no surprise that, while 60% of the respondents indicate that their municipality has at least one policy that falls into this category, only 22% have a program for which the municipality is solely responsible. This is in contrast to the nearly 68% of respondents which identified at least one program in this category where the government is a partner and 50% implemented without local government support.

Policy tools falling into the second category from Buchan et al (2015), "undertake projects and programs" include redeveloping brownfields for urban agriculture and managing food hubs. The problems of cost over time are evident in lack of local government program support. Of the 40% of local governments in the sample that identify at least one of these types of policies or programs, only about 7% have programs that the government operates by itself. Another 26% identified at least one program in this category where the local government is a partner, but nearly 69% had at least one program that operates without any local government involvement.

The third category of "advocate and facilitate" includes tools like encouraging and permitting composting programs, green roofs, and local food businesses. Just under 68% of survey respondents identified at least one policy or program in this category, but only 34% of those are implemented by the local government alone. This is a larger percentage than the first two categories because these programs do not require large or long-term financial commitments (Buchan et al. 2015), but 60% still identify programs where the government has no role.

The final category from Buchan et al (2015) is "regulate and establish policy," which includes

zoning for keeping livestock, inspection of urban farms, and taxing "unhealthy" foods. While 39% of municipalities in the sample reported having at least one policy or program in this category, only about 17% of those handle the implementation of these programs alone. Similar to policy tools in the "undertake projects and programs" category, about 24% identify at least one program where the local government is a partner. A surprising number from this category is that 30% of local governments with at least one of these policies or programs identify programs where they have no role.

Like Table 3.3, which shows the breakdown by individual policy tool, Table 3.5 shows the portions of local food systems governance that are largely managed by partnerships or nongovernmental agencies. The data does not show the nature of these implementation relationships, especially in terms of the role of public-private partnerships (PPP's) and/or contracts but it does raise questions about the nature of these arrangements. The criticisms of contracting out (Warner and Hebdon 2001; Warner 2010; Boyne 1998) and debates around PPP's (Carpintero and Petersen 2016) are well established in public administration literature but these numbers seem to point to continued trends in both directions, at least for local food system programs. Table 3.6, below, shows the descriptive statistics. The section belowreports the results of this analysis.

3.5 Results

Looking at local food system policy tools in a triangular PMF is particularly useful, especially with a sample like this because it runs the gamut of environmental, equity, and economic goals that also cross all four tool categories from the Buchan et al. (2015) typology. Table 3.7, below,

Table 3.6: Descriptive Statistics for Tool Use Data

Variables	N	mean	sd	min	max
Prop. of Families in Pov.	1,052	10.32	7.248	0	46.22
Pop. Density	910	2,355	2,561	108.6	51,810
Diversity (Pr.)	910	0.279	0.173	0.0135	0.662
Log Per Cap. Tax Rev.	910	6.273	0.732	0	8.707
Log Med. Home Val.	1,052	11.84	0.562	9.935	14.57
Log Med. HH Inc.	1,052	10.91	0.363	9.961	12.40
Policy, Any Cat.	2,169	0.694	0.461	0	1
Local Gov. Only Imp.	2,169	0.285	0.452	0	1
Local Gov. Part Imp.	2,169	0.476	0.500	0	1
No Gov. Imp.	2,169	0.515	0.500	0	1
Policy, AF	2,166	0.545	0.498	0	1
Policy, PR	2,169	0.615	0.487	0	1
Policy, RP	2,158	0.446	0.497	0	1
Policy, UP	2,157	0.202	0.401	0	1
Policy or Prog., Any Cat.	2,169	0.780	0.415	0	1
Policy or Prog., AF	2,169	0.676	0.468	0	1
Policy or Prog.,PR	2,169	0.728	0.445	0	1
Policy or Prog.,RP	2,169	0.560	0.497	0	1
Policy or Prog.,UP	2,169	0.410	0.492	0	1
Local Gov. Only Imp. PR	2,169	0.223	0.416	0	1
Local Gov. Part Imp. PR	2,169	0.416	0.493	0	1
No Gov. Imp. PR	2,169	0.416	0.493	0	1
Local Gov. Only Imp. AF	2,168	0.188	0.391	0	1
Local Gov. Part Imp. AF	2,166	0.377	0.485	0	1
No Gov. Imp. AF	2,169	0.408	0.492	0	1
Local Gov. Only Imp. RP	2,167	0.0886	0.284	0	1
Local Gov. Part Imp. RP	2,165	0.146	0.353	0	1
No Gov. Imp. RP	2,169	0.277	0.447	0	1
Local Gov. Only Imp. UP	2,167	0.0277	0.164	0	1
Local Gov. Part Imp. UP	2,165	0.109	0.311	0	1
No Gov. Imp. UP	2,169	0.281	0.449	0	1
Log Pop.	1,052	9.546	1.117	4.977	15.22
Form of Gov. (CM)	1,267	0.638	0.481	0	1
Prop. Owner Occ. HU's	1,052	0.596	0.128	0.142	0.920
Depart. Food Pol/Prog	2,237	0.451	0.498	0	1
Prop. of Pop. POC	1,052	0.290	0.311	0	1.660

shows the logistic regression results for cities reporting either a policy or program. Column 1 includes all policies and programs in the survey. Columns 2-5 give the results for each of the policy tool categories: advocate/facilitate; provide resources; regulate and establish policy; and undertake projects or programs. The corresponding Odds Ratios are in table B.1 in Appendix B.

The results show that stakeholder and institutional difference have varying relationships with the presence and implementation of different policy tool categories. For example, council-manager (CM) forms of government seem to be more likely to report having any policy or program related to local food systems than mayor-council (MC) governments. CM governments are also more likely to have policies or programs in the advocate/facilitate category. This fits with both the assumption made by Buchan et al. (2015), that the AF category is something of a plan B for municipalities that do not want to commit funds to a policy object while keeping the policy goals, and previous findings (CITE Wassel 2022), that CM governments appear to prefer to target spending towards development efforts.Unsurprisingly, having local food policy or program goals as part of the official responsibilities of at least one department increases the likelihood of policies and programs across the board. However,the difference between the categories shows that effect is dampened significantly for regulating and establishing policies as well as undertaking projects and programs. The effect of owner occupancylevels reduce the likelihood of programs and policies, especially those providing resources, but is not significant in all the models. Increases in household incomes also seem to decrease the likelihood of RP and UP policies and programs.

Looking at the presence of local food system policies and tool use across categories helps establish that there are similarities and differences across these groups when considering important demographic, economic, and institutional variables. However, to gain more insight, on tool use within the categories, they need to be broken out more. I begin with a broad look at the implementation responsibilities for all the tools then breakdown each tool by tool category.

As I mentioned in the previous section, there is an extensive literature on the pros and cons of both PPP's and the practice of local governments contracting out service delivery that goes back

Table 3.7: Logistic Regression Results for Sample Cities with Reported Policy or Tool Existence by Across Categories

Variables	Pol/Prog	AF	PR	RP	UP
Form of Gov. (CM)	0.480**	0.419**	0.318	0.214	0.138
	(0.224)	(0.199)	(0.204)	(0.167)	(0.171)
Depart. Food Pol/Prog	2.883***	2.557***	2.252***	1.494***	1.285***
	(0.365)	(0.244)	(0.247)	(0.166)	(0.163)
Pop. Density	-0.000175***	-0.000191***	-0.000242***	-0.000121**	-0.000161***
	(6.42e-05)	(5.98e-05)	(6.26e-05)	(4.76e-05)	(5.04e-05)
Log Pop.	0.537***	0.627***	0.718***	0.224**	0.581***
	(0.146)	(0.127)	(0.134)	(0.0917)	(0.0928)
Prop. Owner Occ. HU's	-2.273*	-1.793*	-4.102***	-0.0961	-1.090
	(1.217)	(1.043)	(1.136)	(0.860)	(0.874)
Log Med. Home Val.	-0.0199	0.410*	0.256	0.299	0.693***
	(0.276)	(0.245)	(0.252)	(0.199)	(0.206)
Log Med. HH Inc.	0.270	-0.179	-0.0783	-0.724*	-1.271***
	(0.551)	(0.488)	(0.505)	(0.409)	(0.427)
Log Per Cap. Tax Rev.	0.111	0.114	0.00957	0.131	0.130
	(0.156)	(0.140)	(0.144)	(0.118)	(0.127)
Prop. of Pop. POC	-0.284	-0.280	0.350	-0.155	0.110
	(0.683)	(0.595)	(0.632)	(0.444)	(0.427)
Prop. of Families in Pov.	-0.0317	-0.000907	-0.0312	-0.0184	-0.0255
	(0.0254)	(0.0232)	(0.0241)	(0.0191)	(0.0196)
Diversity (Pr.)	0.451	-0.321	-1.051	0.408	-1.125
	(1.086)	(0.943)	(0.985)	(0.753)	(0.755)
Constant	-5.763	-7.863*	-5.113	1.593	-0.277
	(5.003)	(4.483)	(4.543)	(3.707)	(3.791)
Observations	863	863	863	863	863

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

over thirty years. With the continued popularity of both modes of delivery (Warner, Aldag, and Kim 2020), confirming their use in local food systems was expected. However, given the debate and the inefficiencies (Hefetz, Warner, and Vigoda-Gadot 2012), it is important to note the use of partnerships and private implementation responsibilities, even if the nature of the agreements is not stated explicitly in the data. It shows that local food systems' policies and programs have followed the same general trend as other local government services. To give more context to these trends, Table 3.8 shows the results of logistic regressions, including odds ratios, on the presence of any

policy and each of the tool implementation strategies.

The form of government is only mildly significant in the exclusion of government from implementation but is consistent with the findings above. CM governments appear to favor privatization. The results for departments with policy or program responsibilities are generally consistent except for a notable decrease in likelihood of having no government involvement in implementation. The proportion of owner occupied homes decreases the likelihood of any policy and nearly all implementation types. Interestingly, this effect is much stronger for existence of a policy itself and government partnerships than the other categories. This may be because areas with higher levels of home ownership have less need for some of the programs in the sample or constituents do not want to pay for them, even though higher median home values increase both the likelihood of partnerships and implementation without government involvement.

In both of these models, none of the variables representing race or diversity are significant. The proportion of families in poverty slightly decreases the likelihood of a policy, but otherwise is not significant either. I suspect some of this is because the sample tools are so wide-ranging that looking at the group of policy tools as a whole might not pick up these kinds of differences. In order to really understand what grouping policy tools based on this typology adds to the conversation, my final set of models looks at the policies, separately, by category (AF, PR, RP, UP), presence of a policy, and each implementation type. The full set of tables can be found in Appendix B. I will walk through highlights of the results by category here and refer to them throughout.

Table B.2 in Appendix B shows the results for the AF category. In addition to some of the same patterns in form of government and department responsibilities that emerged in the analyses above, the proportion of the population that consists of people of color decreases the likelihood of government-only implementation of tools in this category, which includes encouraging corner stores to stock healthy food and promoting food trucks and other mobile food options. In Table B.3, are the results of the analysis of tools in the PR category. Notably here there is lack of significance in several areas that might be as telling as the significant findings. Median home value and per

Table 3.8: Logistic Regression Results for Sample Cities of Policy Presence and Policy Tool Use Across Categories

Variables	Policy	O.R.	Gov. Only	O.R.	Gov. Part.	O.R.	No Gov.	O.R.
Form of Gov. (CM)	0.300	1.350	-0.213	0.808	-0.111	0.895	0.290*	1.336*
	(0.211)	(0.285)	(0.175)	(0.141)	(0.175)	(0.157)	(0.157)	(0.210)
Depart. Food Pol/Prog	3.179***	24.02***	1.368***	3.928***	1.324***	3.758***	0.652***	1.920***
	(0.321)	(7.716)	(0.172)	(0.675)	(0.164)	(0.616)	(0.153)	(0.293)
Pop. Density	-0.000147**	1.000**	-3.43e-06	1.000	-0.000113**	1.000**	-0.000143***	1.000***
	(6.38e-05)	(6.38e-05)	(4.80e-05)	(4.80e-05)	(5.23e-05)	(5.23e-05)	(4.59e-05)	(4.59e-05)
Log Pop.	0.636***	1.889***	0.419***	1.520***	0.747***	2.111***	0.267***	1.306***
	(0.137)	(0.259)	(0.0883)	(0.134)	(0.103)	(0.217)	(0.0840)	(0.110)
Prop. Owner Occ. HU's	-2.765**	0.0630**	-0.480	0.619	-3.785***	0.0227***	-1.572*	0.208*
	(1.131)	(0.0713)	(0.891)	(0.551)	(0.904)	(0.0205)	(0.819)	(0.170)
Log Med. Home Val.	-0.0605	0.941	0.183	1.201	0.449**	1.567**	0.462**	1.587**
	(0.256)	(0.241)	(0.202)	(0.242)	(0.207)	(0.325)	(0.187)	(0.296)
Log Med. HH Inc.	-0.0831	0.920	-0.197	0.822	0.193	1.213	-0.812**	0.444**
	(0.516)	(0.475)	(0.428)	(0.351)	(0.420)	(0.509)	(0.387)	(0.172)
Log Per Cap. Tax Rev.	0.123	1.130	0.0938	1.098	0.0759	1.079	0.141	1.152
	(0.150)	(0.170)	(0.128)	(0.141)	(0.122)	(0.132)	(0.115)	(0.133)
Prop. of Pop. POC	-0.00680	0.993	-0.511	0.600	0.177	1.194	-0.0560	0.946
	(0.652)	(0.648)	(0.432)	(0.259)	(0.459)	(0.548)	(0.406)	(0.384)
Prop. of Families in Pov.	-0.0580**	0.944**	-0.0175	0.983	-0.0295	0.971	-0.0175	0.983
	(0.0248)	(0.0234)	(0.0202)	(0.0198)	(0.0199)	(0.0194)	(0.0179)	(0.0176)
Diversity (Pr.)	-0.437	0.646	0.172	1.188	-0.857	0.425	-0.248	0.781
	(1.014)	(0.655)	(0.774)	(0.919)	(0.778)	(0.330)	(0.701)	(0.548)
Constant	-2.248	0.106	-5.416	0.00445	-12.44***	3.96e-06***	1.182	3.260
	(4.700)	(0.496)	(3.860)	(0.0172)	(3.871)	(1.53e-05)	(3.488)	(11.37)
Observations	863	863	863	863	863	863	863	863

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

capita tax revenue both increase the likelihood of implementation without government involvement. However, median income and proportion of owner-occupied homes decrease it. This may be due to the fact that providing land and water for community gardens are in this category along with programs that traditionally serve low-income areas like establishing grocery stores in underserved areas and providing emergency food. This mix of tools may also explain why the proportion of families in poverty as a slightly negative effect on both existence of a policy and the likelihood of government-only implementation.

While local government departments with food policy and program responsibilities remain significant for the PR category and RP, form of government is not significant for either one. As with the other categories, the population and tax revenue both increase the likelihood that implementation

is done through partnerships or without government involvement. The RP category, which includes expanding acceptance of food stamps at farmers markets, allowing chickens in residential areas, and preserving farmland is also the only category where the diversity measure, probability of picking people of two different races in two random draws, increases the likelihood that programs will be implemented without government involvement. In the final category, UP, this diversity measure and the proportion of families in poverty both decrease this likelihood. Median home value also increases utilization of partnerships and implementation without government involvement.

Overall, the mix of programs in each of these categories provides a cross-section of local food governance tools, and the analyses show some clear patterns in the way capacity, population, tax revenue, income, and home values potentially influence tool use and governance arrangements at the local level. While I use the Buchan et al. (2015) typology as the example for the coding, the cross-coding with Schneider and Ingram (1990) and Hood and Margetts (2007) give two other options for future analyses. Another option for looking at sets of policy tools is exploratory factor analysis (EFA), which collapses longer lists of variables into latent factors. I finish this section with the results of an EFA, using iterated principal factor analysis (IPF) and Varimax rotation in Stata. IPF is the preferred method for EFA models because repeated iterations provide more precise estimates of items' communalities (common variance measured between 0 and 1). Varimax rotation is a form of orthogonal rotation, which assumes the underlying factors are independent of one another, that also maximizes the factor loadings to provide greater differentiation among the factor loading scores. In other words, this method should provide the most accurate outline of the latent concepts by finding the policy tools that group closely together and to each factor.

3.6.1 Exploratory Factor Analysis and Existing Typologies

The challenges of finding and testing underlying concepts effect may aspects of research. From designing measurement tools to analyzing structures in place, as this paper does, ensuring measurement reliability and validity are crucial to getting accurate results. Adding this analysis,

especially of local food system policy tools, adds one more category to those already examined here, opening up possibilities for additional or reclassification of tools. Three factors were retained from the EFA. Tables 3.9-3.11 show the tools, typology codings, factor loadings, and uniqueness for each. The full table of factor loading results and Scree plot can be found in Appendix B, for reference. While all the policy tools loaded at or above statistical significance (.3), the lines in bold were above the threshold for practical significance (.5).

Local food system governance goes beyond providing resources and regulating activities. It, undoubtedly, reaches beyond the bounds of the policy tool sample here too, so our conception of what a tool category may need to expand. At first blush, the policy tools in the first factor seem to be a bit disconnected, but these policy tools all point to local economic and workforce aspects of governance in local food systems. Aside from the tools regarding economic activities, like markets, tourism, and job creation, promoting healthy eating is often done with the promotion of buying local produce. Preserving farmland and giving restaurants an outlet, and possible tax break, for donating excess food are both ways to help secure the local food economy without direct investment. Another aspect of this factor is that many lean heavily toward program implementation without government involvement, speaking to the influence of private interests in them.

Table 3.9: Factor 1

Variable	Buchan	Schn. & Ing.	Hood & Marg.	F1	F2	F3	Uniq.
Establishing and managing farmers markets	PR, AF	IT, LT	T,O	**0.5564**	0.1939	0.0934	0.6441
Buying local in government facilities	PR,RP	AT	T	0.4313	0.0285	-0.0641	0.8091
Preserving farmland	PR	IT	T	0.4421	0.0155	-0.2487	0.7425
Selling produce at/from community gardens or farm stands	AF,UP	IT	O,A	**0.5595**	-0.0467	-0.1741	0.6545
Creating food jobs	PR	IT	T,O	**0.556**	0.18	-0.0893	0.6505
Promoting agri- or food-related tourism	AF	ST	N	**0.5699**	0.1504	-0.3013	0.5618
Promoting healthy eating/obesity prevention	AF	ST	N	**0.6562**	-0.0587	-0.0992	0.5562
Providing emergency food to those in need	PR	IT, LT	T	**0.6194**	-0.1179	-0.2009	0.5621
Donating surplus food from restaurants or stores to food banks or shelters	RP, UP	IT,CT	A,O	**0.6124**	-0.0848	-0.1735	0.5877

Factor 2 seems to speak directly to community livability concerns. While equity is a component here, I do not see it as the driving force. Looking back at Table 3.3, the lack of government involvement in most of these programs gives me pause. Many of these tools have been the subject of public debates and fights between constituents and local governments, with constituents fighting

for these options and local governments resisting change (CITE Wassel 2022). Livability has become something of a "fourth e" in sustainability. It often encompassesculture, health, safety, and social variables people look for in a place to live. Livability is a tricky concept because it sounds like it should be deeply tied to community equity. Unfortunately, we know that attractiveness of livability without government intervention or oversight can lead to gentrification and pushing out lower-income populations (Keleg, Abdel Latif, and Salheen 2017). Future research is needed to dive deeper into this concept in the local food system policy space, butthe way this factor came together illustrates the fine line between policy that improves spaces andpolicy that improves lives.

Table 3.10: Factor 2

Variable	Buchan	Schn. & Ing.	Hood & Marg.	F1	F2	F3	Uniq.
Establishing grocery stores in under-served areas	PR, AF	IT	T	0.4258	0.2553	0.2504	0.6908
Encouraging corner stores to stock healthy food	AF	CT	N	**0.515**	0.3259	0.2678	0.5568
Expanding acceptance of food assistance benefits at farmers markets, stores	AF, RP	CT	A	**0.6033**	0.1156	0.0005	0.6226
Expanding purchasing power of food assistance benefits (e.g., bonus vouchers)	PR	IT	T	**0.5061**	0.2247	0.1498	0.6709
Providing healthy food options in gov facilities	PR, AF	AT	T	**0.5026**	0.0136	0.017	0.7469
Keeping chickens, goats..... in residential or non-traditional zones	RP	IT	A	0.3969	-0.1577	-0.0809	0.811
Encouraging production and/or processing of value-added food products	AF	ST	N	**0.5759**	0.2355	-0.073	0.6076
Redeveloping brownfields for food-related activity	PR, UP	CT	T,O	0.4502	0.2729	0.17	0.6939
Creating/operating food hubs	PR, UP	CT	T,O	**0.5257**	0.2738	0.1175	0.6349
Restricting or taxing the location or sale of fast food, junk food, or unhealthy food	RP	IT	A	0.3159	0.1548	0.0685	0.8715

Factor 3 is the weakest of the three factors, both in terms of number of items and share of the total variance. However, it is interesting because it speaks, mostly, to the environmental aspects of local food systems. With the exception of food trucks, the rest of the tools here deal with programs commonly used for purposes like storm water management, heat island mitigation, and achieving other environmental goals. Further, the three items of practical significance, providing resources that encourage community gardens; green roofs; and composting speak to a commitment to a culture of sustainability. The nature of the programs, with 3 of 5 requiring some investment by the municipality is noteworthy as well. There were not many tools in this sample that spoke directly to sustainability efforts, so future research into those dynamics is warranted.

All three factors had a mix of programs from the three typologies used in the initial coding and the latent concepts generally accepted in sustainability. This is not a surprise, but it does reinforce the

Table 3.11: Factor 3

Variable	Buchan	Schn. & Ing.	Hood & Marg.	F1	F2	F3	Uniq.
Encouraging food trucks, mobile food vending, and/or pop-up food businesses	AF	ST	N	0.492	-0.0744	0.0996	0.7425
Promoting municipal or backyard composting	AF	ST	N	**0.5221**	-0.2215	0.0285	0.6776
Providing land for community gardens	PR	IT	T	**0.6103**	-0.5177	0.251	0.2965
Providing water for community gardens	PR	IT	T	**0.5335**	-0.5065	0.2458	0.3985
Encouraging green roofs and/or edible landscaping	AF	ST	N	0.4458	-0.0553	0.0917	0.7898

difficulty in grouping and analyzing policy tools. These three factors do, however, provide a starting point for amending or appending current tool conceptions for both local food systems, in general, and those focused on livability, economic development, and local environmental management efforts.

3.6 Discussion

Local food system governance tools are a diverse set instruments with a range of policy and implementation schemes across cities and program areas. This paper begins the work of categorizing and analyzing these tools using both existing typologies, both in local food systems literature and policy tools literature generally, and EFA to examine a sample of local food system policy tools. The categorizations and comparisons here serves two main purposes: 1. To see how the policy tool definitions in existing local food system literature fit with general policy tool typologies. 2. To see what comes of grouping and analyzing a sample of tools according to the scheme and how the EFA results compare to the categories. The analyses look at potential institutional and demographic variables that may come influence when and how they are used.

I have discussed some of the challenges that arise from this type of analysis throughout the paper, which include tools fitting into multiple categories and ambiguity in categories that may lead to coding differences. Since I was coding this alone, it is possible that other coders would have formed the original groups differently. Even EFA can have very different results depending on the options used.

One of the clear findings of this paper is that policy tools for local food system governance appearto have followed the same trends as others at the local government level, pushing implementationto private entities and government partners. This is important for future research on the types of institutional relationships, partnerships, and stakeholders in local food systems governance. It also validates some of the findings here showing that the effects of wealthy individuals 'voting with their feet' and demanding things of local governments that do not necessarily match the needs of the greater population (Banzhaf H. Spencer and Walsh Randall P. 2008).

Another important finding here is that institutional and demographic variables have varying effects across tool groups and implementation types. Context matters in policy presence and tool implementation types. This is important because it shows both the broad range of policy areas involved in local food systems governance and that these policies do not all bundle together and work the same way in all contexts. Practically, this can also help local governments looking to shape or change their local food systems in different ways by looking at the metrics of example cities andadapting strategies that work in different contexts.

Finally, this paper shows that the latent concepts of current policy tool typologies may need to be adapted, especially for local governments. This is something that has been discussed throughoutthe history of typologies but is worth repeating. Local governments are like multipurpose tools. They handle wicked problems with limited jurisdiction and funds. Their policies are written in ways that reflect this often-tenuous position, which can make them difficult to interpret and implement.

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APPENDIX

Table B.1: Odds Ratio for Sample Cities with Reported Policy or Tool Existence by Across Categories

Variables	Pol/Prog O.R.	AF O.R.	PR O.R.	RP O.R.	UP O.R.
Form of Gov. (CM)	1.616**	1.520**	1.374	1.238	1.148
	(0.362)	(0.303)	(0.280)	(0.207)	(0.196)
Depart. Food Pol/Prog	17.87***	12.90***	9.509***	4.457***	3.615***
	(6.520)	(3.147)	(2.347)	(0.738)	(0.588)
Pop. Density	1.000***	1.000***	1.000***	1.000**	1.000***
	(6.42e-05)	(5.98e-05)	(6.26e-05)	(4.76e-05)	(5.04e-05)
Log Pop.	1.712***	1.872***	2.050***	1.251**	1.789***
	(0.250)	(0.238)	(0.274)	(0.115)	(0.166)
Prop. Owner Occ. HU's	0.103*	0.166*	0.0165***	0.908	0.336
	(0.125)	(0.174)	(0.0188)	(0.781)	(0.294)
Log Med. Home Val.	0.980	1.507*	1.292	1.348	1.999***
	(0.271)	(0.370)	(0.325)	(0.268)	(0.413)
Log Med. HH Inc.	1.310	0.836	0.925	0.485*	0.280***
	(0.722)	(0.408)	(0.467)	(0.198)	(0.120)
Log Per Cap. Tax Rev.	1.118	1.121	1.010	1.140	1.139
	(0.175)	(0.157)	(0.146)	(0.135)	(0.144)
Prop. of Pop. POC	0.753	0.756	1.419	0.856	1.116
	(0.514)	(0.450)	(0.897)	(0.380)	(0.476)
Prop. of Families in Pov.	0.969	0.999	0.969	0.982	0.975
	(0.0246)	(0.0232)	(0.0234)	(0.0187)	(0.0191)
Diversity (Pr.)	1.570	0.725	0.350	1.504	0.325
	(1.705)	(0.684)	(0.344)	(1.133)	(0.245)
Constant	0.00314	0.000385*	0.00602	4.920	0.758
	(0.0157)	(0.00173)	(0.0274)	(18.24)	(2.874)
Observations	863	863	863	863	863

Stanadard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table B.2: Results of Logistic Regression, with Odds Ratios, for Sample Cities with Reported Policy or Tool in the "Advocate and Facilitate" Category

Variables	Policy AF	O.R.	Gov. Only AF	O.R.	Gov. Part. AF	O.R.	No Gov. AF	O.R.
Form of Gov. (CM)	0.379**	1.461**	-0.137	0.872	0.0601	1.062	0.273*	1.314*
	(0.187)	(0.273)	(0.200)	(0.174)	(0.174)	(0.185)	(0.161)	(0.211)
Depart. Food Pol/Prog	2.185***	8.887***	1.406***	4.078***	1.229***	3.417***	0.649***	1.913***
	(0.186)	(1.654)	(0.211)	(0.859)	(0.163)	(0.556)	(0.155)	(0.297)
Pop. Density	-7.50e-05	1.000	-7.63e-06	1.000	-3.95e-05	1.000	-0.000150***	1.000***
	(5.57e-05)	(5.57e-05)	(5.44e-05)	(5.44e-05)	(5.00e-05)	(5.00e-05)	(4.85e-05)	(4.85e-05)
Log Pop.	0.760***	2.137***	0.510***	1.664***	0.685***	1.983***	0.280***	1.323***
	(0.116)	(0.247)	(0.0975)	(0.162)	(0.0965)	(0.191)	(0.0823)	(0.109)
Prop. Owner Occ. HU's	-1.123	0.325	-0.682	0.506	-2.164**	0.115**	-1.879**	0.153**
	(0.948)	(0.308)	(1.034)	(0.523)	(0.877)	(0.101)	(0.822)	(0.126)
Log Med. Home Val.	0.498**	1.645**	0.250	1.284	0.442**	1.556**	0.421**	1.524**
	(0.227)	(0.373)	(0.231)	(0.296)	(0.203)	(0.315)	(0.190)	(0.290)
Log Med. HH Inc.	-0.129	0.879	0.0795	1.083	0.166	1.181	-0.747*	0.474*
	(0.455)	(0.400)	(0.497)	(0.538)	(0.419)	(0.495)	(0.396)	(0.188)
Log Per Cap. Tax Rev.	0.0495	1.051	0.00212	1.002	0.107	1.113	0.0189	1.019
	(0.129)	(0.136)	(0.147)	(0.147)	(0.126)	(0.140)	(0.115)	(0.117)
Prop. of Pop. POC	-0.494	0.610	-1.163**	0.312**	0.139	1.149	0.223	1.250
	(0.511)	(0.312)	(0.501)	(0.156)	(0.437)	(0.503)	(0.402)	(0.503)
Prop. of Families in Pov.	0.00300	1.003	0.00950	1.010	-0.00576	0.994	-0.0211	0.979
	(0.0212)	(0.0213)	(0.0230)	(0.0232)	(0.0196)	(0.0194)	(0.0183)	(0.0180)
Diversity (Pr.)	-0.325	0.723	0.723	2.061	-0.886	0.412	-1.007	0.365
	(0.843)	(0.609)	(0.892)	(1.838)	(0.765)	(0.315)	(0.708)	(0.259)
Constant	-11.58***	9.39e-06***	-10.43**	2.96e-05**	-13.59***	1.25e-06***	1.363	3.907
	(4.199)	(3.94e-05)	(4.451)	(0.000132)	(3.841)	(4.79e-06)	(3.565)	(13.93)
Observations	862	862	863	863	862	862	863	863

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B.3: Results of Logistic Regression, with Odds Ratios, for Sample Cities with Reported Policy or Tool in the "Provide Resources" Category

Variables	Policy_PR	O.R.	Gov. Only_PR	O.R.	Gov. Part._PR	O.R.	No Gov._PR	O.R.
Form of Gov. (CM)	-0.0178	0.982	-0.172	0.842	-0.213	0.808	0.133	1.142
	(0.188)	(0.184)	(0.184)	(0.155)	(0.174)	(0.141)	(0.158)	(0.181)
Depart. Food Pol/Prog	2.005***	7.426***	1.347***	3.847***	1.200***	3.321***	0.470***	1.600***
	(0.189)	(1.405)	(0.189)	(0.728)	(0.162)	(0.537)	(0.153)	(0.245)
Pop. Density	-0.000188***	1.000***	8.28e-06	1.000	-8.01e-05	1.000	-0.000122***	1.000***
	(5.71e-05)	(5.71e-05)	(4.92e-05)	(4.92e-05)	(4.99e-05)	(4.99e-05)	(4.62e-05)	(4.61e-05)
Log Pop.	0.652***	1.919***	0.265***	1.303***	0.712***	2.037***	0.233***	1.262***
	(0.115)	(0.220)	(0.0887)	(0.116)	(0.0976)	(0.199)	(0.0813)	(0.103)
Prop. Owner Occ. HU's	-3.888***	0.0205***	-0.428	0.652	-3.623***	0.0267***	-1.496*	0.224*
	(1.002)	(0.0205)	(0.944)	(0.616)	(0.882)	(0.0235)	(0.816)	(0.183)
Log Med. Home Val.	0.0200	1.020	-0.0760	0.927	0.252	1.287	0.364*	1.439*
	(0.228)	(0.232)	(0.210)	(0.195)	(0.201)	(0.258)	(0.188)	(0.271)
Log Med. HH Inc.	0.522	1.686	-0.229	0.796	0.152	1.165	-1.142***	0.319***
	(0.456)	(0.768)	(0.454)	(0.361)	(0.415)	(0.484)	(0.394)	(0.126)
Log Per Cap. Tax Rev.	0.123	1.131	0.214	1.239	0.0431	1.044	0.256**	1.292**
	(0.134)	(0.151)	(0.145)	(0.180)	(0.122)	(0.128)	(0.125)	(0.162)
Prop. of Pop. POC	0.352	1.421	-0.298	0.743	0.0750	1.078	0.214	1.239
	(0.534)	(0.760)	(0.454)	(0.337)	(0.438)	(0.472)	(0.398)	(0.493)
Prop. of Families in Pov.	-0.0367*	0.964*	-0.0366*	0.964*	-0.00860	0.991	-0.0217	0.978
	(0.0217)	(0.0209)	(0.0221)	(0.0213)	(0.0195)	(0.0194)	(0.0180)	(0.0176)
Diversity (Pr.)	-0.302	0.739	0.475	1.609	-0.821	0.440	-0.750	0.472
	(0.861)	(0.636)	(0.821)	(1.320)	(0.759)	(0.334)	(0.698)	(0.330)
Constant	-9.875**	5.14e-05**	-1.712	0.180	-9.719**	6.01e-05**	5.265	193.5
	(4.151)	(0.000213)	(4.136)	(0.746)	(3.813)	(0.000229)	(3.547)	(686.4)
Observations	863	863	863	863	863	863	863	863

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B.4: Results of Logistic Regression, with Odds Ratios, for Sample Cities with Reported Policy or Tool in the "Regulate and Establish Policy" Category

Variables	Policy_RP	O.R.R	Gov. Only_RP	O.R.	Gov. Part._RP	O.R.	No Gov._RP	O.R.
Form of Gov. (CM)	0.0823	1.086	-0.0674	0.935	0.176	1.192	0.257	1.293
	(0.163)	(0.177)	(0.250)	(0.233)	(0.174)	(0.208)	(0.234)	(0.303)
Depart. Food Pol/Prog	1.496***	4.464***	1.290***	3.633***	0.349**	1.417**	0.812***	2.253***
	(0.158)	(0.706)	(0.277)	(1.008)	(0.167)	(0.237)	(0.233)	(0.526)
Pop. Density	-8.31e-05*	1.000*	-6.39e-06	1.000	-0.000144***	1.000***	-3.68e-05	1.000
	(4.65e-05)	(4.65e-05)	(7.15e-05)	(7.15e-05)	(5.23e-05)	(5.23e-05)	(6.07e-05)	(6.07e-05)
Log Pop.	0.177**	1.193**	0.289**	1.336**	0.419***	1.520***	0.420***	1.522***
	(0.0858)	(0.102)	(0.121)	(0.161)	(0.0879)	(0.134)	(0.105)	(0.159)
Prop. Owner Occ. HU's	-0.579	0.560	0.860	2.364	-1.335	0.263	-0.468	0.626
	(0.841)	(0.471)	(1.346)	(3.182)	(0.888)	(0.234)	(1.187)	(0.743)
Log Med. Home Val.	0.0555	1.057	0.440	1.553	0.678***	1.970***	0.334	1.397
	(0.192)	(0.203)	(0.309)	(0.480)	(0.209)	(0.412)	(0.268)	(0.375)
Log Med. HH Inc.	-0.497	0.609	-1.266*	0.282*	-0.922**	0.398**	-0.534	0.586
	(0.401)	(0.244)	(0.653)	(0.184)	(0.437)	(0.174)	(0.582)	(0.341)
Log Per Cap. Tax Rev.	0.0612	1.063	-0.0836	0.920	0.269*	1.309*	-0.0707	0.932
	(0.116)	(0.124)	(0.173)	(0.159)	(0.142)	(0.186)	(0.170)	(0.158)
Prop. of Pop. POC	-0.173	0.841	0.0148	1.015	-0.283	0.753	-0.470	0.625
	(0.418)	(0.351)	(0.633)	(0.643)	(0.432)	(0.325)	(0.507)	(0.317)
Prop. of Families in Pov.	-0.0291	0.971	-0.0443	0.957	-0.0116	0.988	0.00736	1.007
	(0.0187)	(0.0182)	(0.0316)	(0.0302)	(0.0198)	(0.0196)	(0.0251)	(0.0253)
Diversity (Pr.)	0.753	2.123	-1.189	0.305	-0.160	0.852	1.658*	5.250*
	(0.727)	(1.543)	(1.172)	(0.357)	(0.765)	(0.652)	(0.960)	(5.041)
Constant	2.663	14.34	3.687	39.91	-3.484	0.0307	-4.304	0.0135
	(3.637)	(52.16)	(5.656)	(225.7)	(3.823)	(0.117)	(5.267)	(0.0712)
Observations	860	860	863	863	863	863	861	861

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B.5: Results of Logistic Regression, with Odds Ratios, for Sample Cities with Reported Policy or Tool in the "Undertake Projects and Programs " Category

Variables	Policy_UP	O.R.	Gov. Only_UP	O.R.	Gov. Part._UP	O.R.	No Gov._UP	O.R.
Form of Gov. (CM)	0.0381	1.039	0.142	1.152	-0.303	0.738	0.0905	1.095
	(0.214)	(0.223)	(0.465)	(0.536)	(0.268)	(0.198)	(0.179)	(0.196)
Depart. Food Pol/Prog	1.805***	6.078***	1.431**	4.181**	1.921***	6.825***	0.687***	1.987***
	(0.250)	(1.519)	(0.566)	(2.367)	(0.371)	(2.530)	(0.172)	(0.342)
Pop. Density	-2.01e-05	1.000	-0.000136	1.000	-1.76e-05	1.000	-0.000216***	1.000***
	(5.61e-05)	(5.61e-05)	(0.000164)	(0.000164)	(6.75e-05)	(6.75e-05)	(5.74e-05)	(5.74e-05)
Log Pop.	0.334***	1.397***	0.503**	1.654**	0.454***	1.574***	0.523***	1.687***
	(0.0984)	(0.138)	(0.200)	(0.331)	(0.121)	(0.190)	(0.0919)	(0.155)
Prop. Owner Occ. HU's	-0.769	0.464	0.475	1.609	-2.200	0.111	-1.633*	0.195*
	(1.103)	(0.512)	(2.521)	(4.055)	(1.413)	(0.157)	(0.915)	(0.179)
Log Med. Home Val.	0.427*	1.532*	-0.135	0.873	0.781**	2.185**	0.681***	1.975***
	(0.249)	(0.381)	(0.589)	(0.514)	(0.325)	(0.709)	(0.217)	(0.429)
Log Med. HH Inc.	-0.123	0.884	-1.163	0.313	-0.101	0.904	-1.463***	0.232***
	(0.533)	(0.472)	(1.218)	(0.381)	(0.704)	(0.636)	(0.454)	(0.105)
Log Per Cap. Tax Rev.	-0.0536	0.948	0.281	1.324	-0.300*	0.741*	0.295**	1.344**
	(0.154)	(0.146)	(0.408)	(0.541)	(0.174)	(0.129)	(0.146)	(0.196)
Prop. of Pop. POC	-0.618	0.539	-1.148	0.317	-0.686	0.504	0.273	1.314
	(0.473)	(0.255)	(1.126)	(0.357)	(0.600)	(0.302)	(0.442)	(0.580)
Prop. of Families in Pov.	0.0250	1.025	0.0115	1.012	0.0164	1.017	-0.0425**	0.958**
	(0.0231)	(0.0237)	(0.0520)	(0.0526)	(0.0303)	(0.0308)	(0.0210)	(0.0201)
Diversity (Pr.)	1.340	3.820	0.757	2.133	1.075	2.929	-1.389*	0.249*
	(0.897)	(3.425)	(1.953)	(4.166)	(1.171)	(3.431)	(0.797)	(0.199)
Constant	-9.303*	9.11e-05*	2.988	19.84	-13.09**	2.06e-06**	1.884	6.578
	(4.747)	(0.000433)	(12.03)	(238.6)	(6.095)	(1.25e-05)	(3.998)	(26.30)
Observations	860	860	863	863	861	861	863	863

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B.6: Exploratory Factor Analysis Results on Sample Policies and Programs

Factor analysis/correlation			Number of obs = 2,237	
Method: principal-component factors			Retained factors = 5	
Rotation: (unrotated)			Number of params = 110	
Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	6.58502	5.39339	0.7821	0.7821
Factor2	1.19163	0.54858	0.1415	0.9236
Factor3	0.64305	0.27061	0.0764	1
Factor4	0.37244	0.04077	0.0442	1.0442
Factor5	0.33167	0.10234	0.0394	1.0836
Factor6	0.22933	0.04798	0.0272	1.1109
Factor7	0.18134	0.02724	0.0215	1.1324
Factor8	0.15410	0.02593	0.0183	1.1507
Factor9	0.12817	0.07854	0.0152	1.1659
Factor10	0.04963	0.02033	0.0059	1.1718
Factor11	0.02930	0.02062	0.0035	1.1753
Factor12	0.00868	0.03697	0.001	1.1763
Factor13	-0.02829	0.01845	-0.0034	1.173
Factor14	-0.04674	0.00880	-0.0056	1.1674
Factor15	-0.05554	0.02409	-0.0066	1.1608
Factor16	-0.07963	0.02200	-0.0095	1.1514
Factor17	-0.10163	0.00607	-0.0121	1.1393
Factor18	-0.10770	0.00893	-0.0128	1.1265
Factor19	-0.11663	0.03521	-0.0139	1.1127
Factor20	-0.15184	0.00380	-0.018	1.0946
Factor21	-0.15565	0.01700	-0.0185	1.0761
Factor22	-0.17265	0.04137	-0.0205	1.0556
Factor23	-0.21402	0.04037	-0.0254	1.0302
Factor24	-0.25438	.	-0.0302	1
LR test: independent vs. saturated: chi2(276)= 1.60E+04 Prob>chi2= 0.000				

Table B.7: Full Rotated Table Showing How Individual Policy Tools Load onto Factors

	Factor1	Factor2	Factor3	Uniqueness
Establishing and managing farmers markets	.5563894	-.193877	-.0933962	.6441197
Establishing grocery stores in under-served areas	.4258142	.2552513	.250396	.6908309
Encouraging corner stores to stock healthy food	.5149818	.3259231	.2678139	.5568437
Expanding acceptance of food assistance benefits at farmers markets, stores	.6033494	.1155528	.0004576	.6226168
Expanding purchasing power of food assistance benefits	.506102	.2246775	.1498284	.6709323
Encouraging food trucks, mobile food vending, and/or pop-up food businesses	.4920071	-.0744218	.0995592	.7424783
Buying local in government facilities	.4312614	.0284882	-.0641074	.8090922
Providing healthy food options in gov facilities	.5026371	.0136341	.0169903	.7468814
Promoting municipal or backyard composting	.522054	-.2214721	.0285035	.6775973
Providing land for community gardens	.6103126	-.5176921	.2510464	.2964891
Providing water for community gardens	.5334782	-.5064522	.2458432	.3984684
Keeping chickens, goats. .... in residential or non-traditional zones	.3969125	-.1577322	-.0808706	.811041
Encouraging green roofs and/or edible landscaping	.4458105	-.0552897	.0916754	.7897916
Preserving farmland	.4420803	.0154542	-.2486601	.7424943
Selling produce at/from community gardens or farm stands	.559518	-.0466565	-.1740901	.6544554
Encouraging production and/or processing of value-added food products	.5758924	.2354819	-.0729565	.6075735
Redeveloping brownfields for food-related activity	.4502495	.2728773	.1699866	.693918
Creating/operating food hubs	.5257112	.2737864	.1174922	.6348644
Creating food jobs	.5559722	.1800333	-.089323	.6505043
Promoting agri- or food-related tourism	.5699003	.1503699	-.3013198	.5618089
Promoting healthy eating/obesity prevention	.6561608	-.0586978	-.0992075	.5561655
Restricting or taxing the location or sale of fast food, junk food, or unhealthy food	.315937	.1548267	.0684768	.8715234
Providing emergency food to those in need	.6193805	-.1179004	-.2008625	.5621216
Donating surplus food from restaurants or stores to food banks or shelters	.6123901	-.0847547	-.1735448	.5876772

Figure B.1: International City/County Management Association and Michigan State University, Local Food System Survey

ICMA Leaders at the Core of Better Communities
777 North Capitol Street, NE ■ Suite 500 ■ Washington, DC 20002-4201

MICHIGAN STATE UNIVERSITY

CRFS MSU CENTER for REGIONAL FOOD SYSTEMS

CODE SHEET

All yes/no questions are Yes (1) and No (2). All "check all applicable" questions are (1) for each response. All "check only one" questions are in numeric order (i.e. 1, 2, 3, etc.) Certain questions were removed to protect the privacy of the respondent.

2015 Food Systems Survey

Dear Chief Administrative Officer:

This survey of local government activity around food system development is a joint project between ICMA and the Michigan State University Center for Regional Food Systems. **We seek to understand how local government policies, programs, plans, and other activities support food production, processing, distribution, access, or disposal.** The aggregated results will be made public to local officials. We provide this survey to you on paper because we find the response rate is higher and more statistically significant. Please help insure the success of this survey by completing it by May 29th. You many also complete the survey online at http://icma.org/foodsecurity2015

Thank you in advance for your time.

Robert J. O'Neill, Jr.
Executive Director, ICMA

Michael W. Hamm, PhD
Director, MSU Center for Regional Food Systems

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1. Does your community address any aspects of food systems (such as food production, processing, aggregation, distribution, access, consumption, recovery, disposal, etc.) in any official plan or strategy?

☐ 1. Yes ☐ 2. No (please continue on to next page)

2. If "yes," please check which type(s) of plans addresses food topics. (Check all applicable. – 1)

☐ a. Comprehensive/Master/General Plan
☐ b. Sustainability Plan
☐ c. Economic Development Plan
☐ d. Strategic Plan
☐ e. Food-specific Plan
☐ f. Other (Please describe.) _____

3. If your local government addresses food in a type of plan other than those listed above or in a standalone plan please briefly describe it in the space below.

Figure B.1: International City/County Management Association and Michigan State University, Local Food System Survey

1. Does your community have policies or programs that support the following local food system activities? (Check all applicable. – 1)

Note: by ***policy***, we mean an official regulation, ordinance or statement adopted by your governing board. ***Programs*** can include activities undertaken as matters of practice in addition to formally recognized and/or funded efforts. Some activities may be supported by **BOTH** policy and programming.

Topic	Local govt. has a **policy** **(1)**	**Program** exists; local govt. alone implements **(2)**	**Program** exists; local govt. is a partner **(3)**	**Program** exists; local govt. not involved **(4)**	No policy or program in place **(5)**
a. Establishing and managing farmers markets					
b. Establishing grocery stores in under-served areas					
c. Encouraging corner stores to stock healthy food					
d. Expanding acceptance of food assistance benefits (e.g., SNAP, WIC) at farmers markets, stores, etc.					
e. Expanding purchasing power of food assistance benefits (e.g., bonus vouchers)					
f. Encouraging food trucks, mobile food vending, and/or pop-up food businesses					
g. Buying local in government facilities					
h. Providing healthy food options in government facilities					
i. Promoting municipal or backyard composting					
j. Providing land for community gardens					
k. Providing water for community gardens					
l. Keeping chickens, goats, bees, etc., in residential or other non-traditional zones					
m. Encouraging green roofs and/or edible landscaping					
n. Preserving farmland					
o. Selling produce at/from community gardens or farm stands					
p. Encouraging production and/or processing of value-added food products					
q. Redeveloping brownfields for food-related activity					
r. Creating/operating food hubs					
s. Creating food jobs (in food production, retail, service, etc.)					
t. Promoting agri- or food-related tourism					
u. Promoting healthy eating/obesity prevention					
v. Restricting or taxing the location or sale of fast food, junk food, or unhealthy food					
w. Providing emergency food to those in need					
x. Donating surplus food from restaurants or stores to food banks or shelters					

Figure B.1: International City/County Management Association and Michigan State University, Local Food System Survey - Continued

1. If your community has other food-related policies or programs not listed above, please briefly describe them here:

2. What priorities motivate your local government's food-related plans, policies, and/or programs? (Check all that apply. – 1)

- ☐ a. Not applicable
- ☐ b. Agricultural land preservation
- ☐ c. Environmental stewardship
- ☐ d. Food access/security
- ☐ e. Economic and workforce development
- ☐ f. Community development
- ☐ g. Public health
- ☐ h. Public safety
- ☐ i. Social equity
- ☐ j. Transportation
- ☐ k. Other: (Please describe.) _____

3. What departments have food programs or policies within their scope of responsibility? (Check all that apply. – 1)

- ☐ a. None
- ☐ b. Public Health/Environmental Health
- ☐ c. Planning
- ☐ d. Economic Development
- ☐ e. Public Works
- ☐ f. Parks & Recreation
- ☐ g. Manager's Office
- ☐ h. Elected Official's Office
- ☐ i. Board of Education
- ☐ j. Other (Please describe.) _____

4. **Does your government collaborate or coordinate on any food-related projects or programs with surrounding communities/regions?** ☐ 1. Yes ☐ 2. No

5. If "yes," please describe:

6. Has your community conducted any food assessment or mapping exercises?

- ☐ 1. Yes, by local government staff
- ☐ 2. Yes, by external consultants or partners
- ☐ 3. No

7. In what other ways does your government staff provide support to local food efforts in your community or region? (Check all that apply. - 1)

- ☐ a. Staff serves as a liaison to or coordinator of an official governmental body on food issues (food policy council, commission, etc.)
- ☐ b. Staff represents the local government on an externally-coordinated food council or coalition
- ☐ c. Staff provides informal support (sharing information, facilitating connections, etc.) to community stakeholders on an ad-hoc basis
- ☐ d. Other (Please describe.) _____

Figure B.1: International City/County Management Association and Michigan State University, Local Food System Survey - Continued

1. To what extent do the following serve as drivers to continue and enhance your community's local food system efforts?

	Primary driver (1)	Some influence (2)	Not at all (3)
a. Local elected officials	☐	☐	☐
b. Local government staff	☐	☐	☐
c. Citizen commissions or advisory boards	☐	☐	☐
d. Other residents or resident groups	☐	☐	
e. Local or national non-profits	☐	☐	
f. Business community	☐	☐	☐
g. Philanthropy	☐	☐	☐
h. Regional planning commissions or councils of governments	☐	☐	☐
i. State government policies or programs	☐	☐	☐
j. Federal government policies or programs	☐	☐	☐
k. Universities			

2. Please indicate your awareness of the following federal program examples AND whether your local government has utilized them to fund food system activities. (Check all applicable. – 1)

Program	I am aware of this program (1)	I am not aware of this program (2)	We have used this program (3)	We have not used this program but would be interested (4)	We have not used the program and/or the program is not applicable (5)
a. Know Your Farmer, Know Your Food (USDA)	☐	☐	☐	☐	☐
1. Marketing assistance, e.g., Farmers Market or Local Food Promotion Program	☐	☐	☐	☐	☐
2. Rural Business Enterprise or Opportunity Grants	☐	☐	☐	☐	☐
3. Community Facilities Grants	☐	☐	☐	☐	☐
4. Urban & community forestry programs	☐	☐	☐	☐	☐
5. Conservation & working land programs	☐	☐	☐	☐	☐
6. Hunger & nutrition programs	☐	☐	☐	☐	☐
b. Community Development Block Grants (HUD)	☐	☐	☐	☐	☐
c. Sustainable Communities Grants (HUD/DOT/EPA)	☐	☐	☐	☐	☐
d. Brownfields Grants (EPA)	☐	☐	☐	☐	☐
e. Communities Putting Prevention to Work, Community Transformation or Partnership to Improve Community Health Grants (CDC)	☐	☐	☐	☐	☐

3. Please share additional comments related to food system activities in your community. Feel free to mention an activity about which you are proud, a challenge you are working to overcome, or any other thoughts.

Thank you for taking the time to complete this survey!

Figure B.1: International City/County Management Association and Michigan State University, Local Food System Survey - Continued

Table 1: Local Food Production Tools and Roles

Tool Category	Local Government Tools and Roles for supporting Local Food Production
1. Provide Resources (Funds, land, facilities and support staff)	• Food Policy Council • Rent subsidies [for land or facilities] • Provide land for community gardens and other urban agriculture • Food Hubs • Farmers Markets • Farmer Forums • Farmland Trust
2. Undertake Projects and Programs	• Community Gardens • Agricultural Development Commissions • Food Waste recovery and composting • Demonstration Gardens • Food Mapping/Community Food Assessments • Farmland Trust • Food/agricultural festivals • Agricultural extension (for conventional and urban farming) • Wildlife management
3. Advocate and facilitate	• Roof top gardens • Education and Promotion • Municipal Agricultural web site • Development of a Local Food market • Agri-tourism development • Food access considerations • Good Food Box programs • Community Supported Agriculture • Edible School Gardens • Vertical Gardening • Back Yard Aquaculture • Farmers Markets • Senior Government funding
4. Regulate and establish policy	• Zoning/land use Bylaws (urban agriculture) • Progressive agricultural zoning (value added farm activities) • Animal Control Bylaws • Density Bonus Bylaws • Development Permit Areas and Guidelines • Food Security Bylaw • Right to farm legislation • Food Security Assessments and Strategies • Food and Agriculture Strategies Agricultural Economic Development Strategies • Food Procurement Policies • Business License Bylaws [for selling produce] • Farm friendly sign Bylaws • Consult with knowledgeable people during plan and policy research • Farmland Preservation • Comprehensive Plans [Official Plans, Agricultural Area Plans, Neighbourhood Plans] • Agricultural Economic Development Strategies • Tax Break/Incentive Bylaws • Food Charters

Figure B.2: Local Food Production Tools and Roles from Buchan et al. (2015)

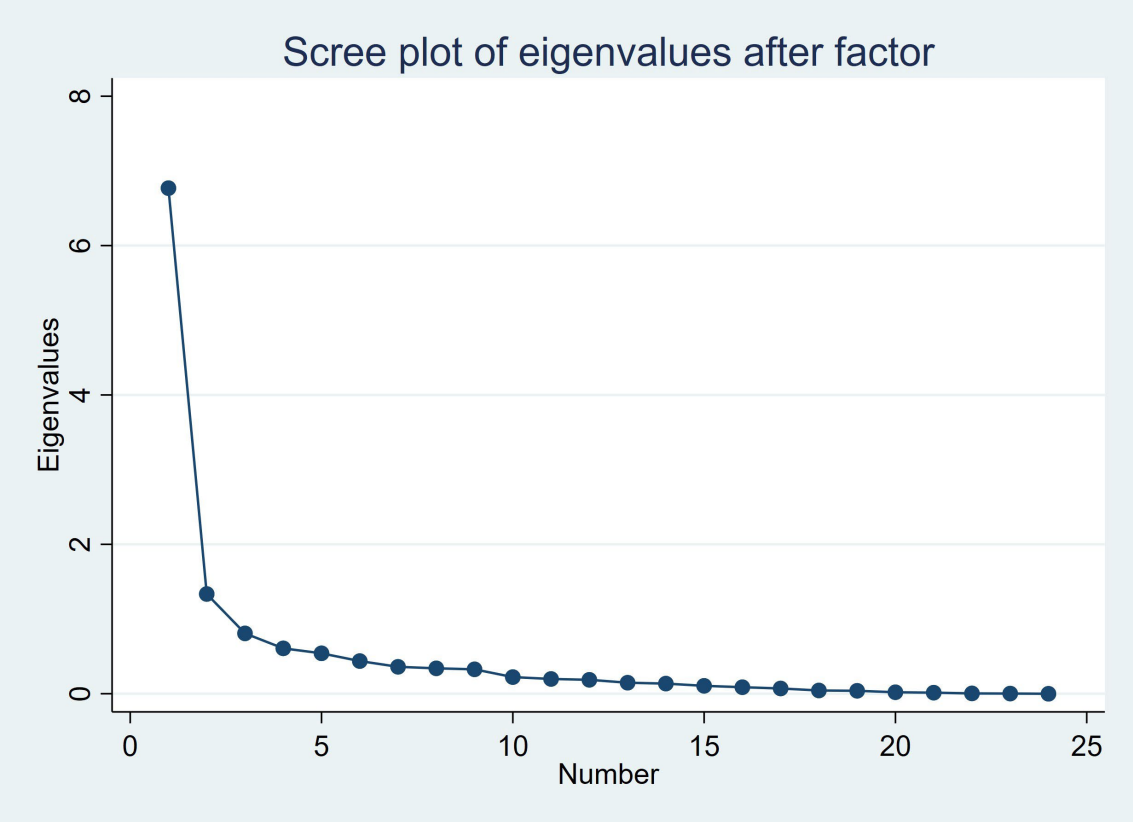

Figure B.3: Scree Plot for Exploratory Factor Analysis