

Scaling-up regional fruit and vegetable distribution: potential for adaptive change in the food system

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Abstract As demand for locally grown food increases there have been calls to ‘scale-up’ local food production to regionally distribute food and to sell into more mainstream grocery and retail venues where consumers are already shopping. Growing research and practice focusing on how to improve, expand and conceptualize regional distribution systems includes strategies such as value chain development using the Agriculture of the Middle (AOTM) framework. When the Ohio Food Policy Advisory Council asked how they could scale-up the distribution of Ohio fresh fruits and vegetables to Ohioans, we decided to use this practical opportunity to not only provide recommendations to this council, but to simultaneously contribute to the literature on AOTM, value-based and spatially-proximate relationships, and conceptualizations of food system hybridity. We do this while examining an entire sub-sector of the Ohio agricultural economy, namely fruit and vegetables and applying the AOTM framework beyond the farm, namely to distributors and retailers. Through interviews with Ohio retailers and a survey of all fresh fruit and vegetable distributors Ohio we: (1) Describe current distribution systems within the state; (2) Identify firms interested in scaling-up distribution, and; (3) Inform state-level policy efforts by identifying opportunities to better target

any state-level policy and program efforts. We demonstrate support for the concept of AOTM applied beyond the farm, for value chain development strategies that can transmit ‘quality’ via spatially proximate supply chains, and support for considering hybrid solutions, such as piggybacking for scaling-up local food systems. This work highlights the role a statewide food policy council can have in facilitating market development and their unique position to provide public sector and institutional support to facilitate meaningful connections in the food system.

Keywords Distribution · Agriculture of the Middle · Hybridity · Food policy council · Food hub · Aggregation

Abbreviations

AOTM	Agriculture of the middle
OFPAC	Ohio Food Policy Advisory Council
SFSC	Short food supply chains
USDA	United States Department of Agriculture

Introduction

A key component of the local foods movement has included connecting farmers and consumers through direct marketing systems. However, as momentum around local foods builds, practitioners and researchers alike are increasingly recognizing the limits of direct marketing. The boundaries of direct marketing are marked by consumers who have limited time or ability to buy directly from farmers, farmers who must juggle both production and marketing demands, and the high transportation costs and energy consumption associated with a diffused distribution

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network (Pirog et al. 2001; Mariola 2008; Day-Farnsworth et al. 2009). As demand for locally grown food increases, there have been calls to ‘scale-up’ the production and distribution systems within local food systems and to sell into more mainstream grocery and retail venues where consumers are already shopping (Inwood et al. 2009; Mount 2012).

Some strategies for scaling-up local foods are the creation of food hubs, midscale value chains, and spatially-proximate short food supply chains. These are all variations of alternative agrifood networks that support small and mid-size farm and food businesses through economic development, while transmitting quality and value across a regional distribution system (Renting et al. 2003; Stevenson and Pirog 2008). These alternative agrifood networks are often hybrids of ‘conventional’ and ‘alternative’ systems, where local food initiatives may rely on conventional inputs, or piggyback on existing infrastructure (Ilbery and Maye 2005; Bloom and Hinrichs 2010). Efforts to address the physical, logistical and relational infrastructure necessary to scale-up a local to a regional food system have been primarily led by actors and institutions within the food system movement, including grassroots community groups, food policy councils, and local planners, who often have little background, expertise or knowledge of food distribution logistics (Fischer et al. 2013). Initiatives such as the United States Department of Agriculture (USDA) Food Atlas have been developed to provide communities and organizations with more local data for planning purposes; however, a lack of data sets and/or distribution trade associations that aggregate information on local distributors is a serious barrier to distribution initiatives.

To fill these data gaps, organizations may partner with local researchers to inventory and analyze production, distribution, and economic opportunities. This paper is the result of research commissioned by the Ohio Food Policy Advisory Council (OFPAC) to examine the potential for scaling-up Ohio fresh fruit and vegetable consumption by Ohioans and our own research interests in community based economic development through food and agriculture. The results of this study are based on interviews with Ohio retailers and surveys of fresh fruit and vegetable distributors throughout the state of Ohio. The Council tasked our research team with the following research objectives: (1) Describe current fresh fruit and vegetable distribution systems within the state; (2) Identify firms interested in efforts to scale-up regional fresh fruit and vegetable distribution, and; (3) Inform state-level policy efforts by identifying opportunities to scale-up the movement of Ohio fresh fruits and vegetables to Ohio retail locations, and to better target any state-level policy and program efforts.

Combining the Council’s objectives and our desire to contribute to the increasing literature on the Agriculture of

the Middle (AOTM) framework (Stevenson et al. 2011) and food value chain development (Renting et al. 2003), our research team asks the question: What is the potential for scaling-up specialty crop distribution via spatially-proximate, value-oriented, hybrid supply chains? We ask this question while extending the concept of AOTM beyond the farm gate to distributors and retailers. We aim to increase scholarly dialogue about how to improve, expand and conceptualize regional distribution systems and compliment the growing number of regional food distribution case studies (Bloom and Hinrichs 2010; Diamond and Barham 2011; Lev and Stevenson 2011) by applying the concepts of spatial-proximity, value-orientation, and hybridity in supply chains to a study of distributors and retailers within an entire state. In addition, we present the approach and methods we used to address these questions as a way to share the research process with other applied researchers partnering with civic-based food system initiatives.

Scaling-up, supply chains, value(s) and hybridity

Scaling-up direct markets to meet growing demand, broadening the impacts of local food system development, and addressing regional economic development are topics of discussion in both research and practice circles (Day-Farnsworth et al. 2009; Clancy and Ruhf 2010; Mount 2012). In part, scaling-up is a conventional strategy to achieve greater efficiencies and reach a broader regional market often through firm growth or vertical integration. But within the alternative food movement, scaling-up is a response to the mainstream distribution system that favors very large growers while by-passing marginalized small and medium producers. In this case vertical integration takes the form of transparent, strategic partnerships where all the businesses in the supply chain cooperate/collaborate, rather than through direct ownership and competition, as is the case in traditional vertical integration. Further, scaling-up is a way to make local goods more accessible to a wider set of consumers. While increasing the overall volume of product distributed, scaling-up also means attention and intention is placed on people and values cultivated through new relationships and networks embedded in place. In the food movement, scaling-up is also about simultaneously increasing the intended social, economic and environmental impacts of the food system, not just economic efficiency. The Agriculture of the Middle and short food supply chains are two frameworks we use to consider and conceptualize how to scale-up Ohio fresh fruit and vegetable distribution.

Short food supply chains (SFSC) are a way to conceptualize alternative supply chain metrics and values where

agrifood networks are scaled-up while still transmitting desired product qualities and achieving the intended impacts. SFSCs operate to short-circuit long, anonymous chains of interchangeable actors (Renting et al. 2003). Marsden, Banks and Bristow (2000) describes three types of SFSCs. The first chain is ‘direct,’ or face-to-face, between the producer and consumer. The second type of chain is ‘spatially proximate,’ operating regionally by producers and consumers in addition to supply chain intermediaries that are still able to transmit such qualities as ‘local.’ This is the type of supply chain we focused on. The third type of chain is ‘spatially extended,’ transmitting qualities of the producers and the place where the food was produced to consumers outside of the region. SFSCs are not always necessarily shorter but are able to transmit qualities of products across time and space because of strategic and socioeconomically-embedded partnerships between the consumer, intermediaries, and the producer (Marsden et al. 2000; Renting et al. 2003; Ilbery and Maye 2005; Little et al. 2010).

For the purposes of the work of OFPAC, spatially proximate SFSCs hold promise to moving greater Ohio product to Ohioans while maintaining the objectives of the Council, which included informing state-level policy efforts by identifying opportunities to scale-up the movement of Ohio fresh fruits and vegetables to Ohio retail locations and to better target any state-level policy and program efforts. Yet for the Council to encourage or develop these types of markets, the question arose as to what types of actors might have the most potential, motivation, and interest to build these markets. In the United States, a research group associated with the AOTM initiative¹ has focused on conceptualizing the explicit relationship between value-based strategic partnerships and mid-size farmers that have high potential to scale-up. While SFSCs were conceptualized out of interest in supporting place-based rural development, the AOTM initiative is primarily interested in the increased vitality of mid-level farms. AOTM is born out of a longstanding tradition in rural sociology of examining the relationship between firm scale and community wellbeing. Starting with studies conducted by Goldschmidt in the 1940’s, there has been a consistent finding that communities characterized by a larger number of small and medium firms have higher overall quality of life and community services compared to those communities who have a smaller number of large firms (Goldschmidt 1978; Lobao 1990; Kirschenmann et al. 2008). However, the dominant trends of concentration

and consolidation in both the farm and retail sector have led to a bifurcation of firm size, with firms either growing very large or very small. The disappearing middle raises concern as research has consistently found small and medium farms are the backbone of many rural and peri-urban areas, increasing socioeconomic vitality to agriculturally dependent communities and are part of a resilient agricultural community (Stevenson et al. 2011). The AOTM initiative and food system practitioners focus on the agriculture of the middle in order to address larger food system goals that simultaneously revolve around social, community, and economic benefits.

The dominant food system has two structural paths: the global systems dealing with commodities, or local systems dealing with niche products. Mid-scale farms have struggled to fit into either of these paths as they often produce too much for direct markets while generating insufficient production to effectively compete in the larger commodity markets (Lyson et al. 2008; Stevenson et al. 2011). Stahlbrand (2014) expands this concept to include mid-size food-oriented firms, such as distributors and retailers that have a sector also confronting concentration and consolidation. The AOTM research team argues that despite the precarious positioning of the mid-size farms, they are in the best position to scale-up local food systems; they are small enough to be flexible and innovative to respond to highly differentiated markets and large enough to respond to larger supply chain actors’ demands. Further, they are likely to have the motivation and capacity to engage in these new scaling-up needs (Stevenson et al. 2011).

The AOTM team has conceptualized supply chains as food value chains, which are “long-term networks of partnering business enterprises working together to maximize value for the partners and end consumers” (Stevenson and Pirog 2008, p. 120). This is in contrast to conventional commodity chains, where actors along the chain are replaceable, information is not shared with others actors in order to maintain power differentials, and the governance of the system is focused around economic efficiency. Product differentiation and value-added create a competitive advantage for the value chain (Bloom and Hinrichs 2010), but more importantly the value-chain recognizes the ‘value’ and ‘values’ it is creating. A commitment is made to the welfare of *all* participants where the goal is economic viability for all partners. This ethical component to the economic exchanges along the entire chain recognizes that all supply chain actors need to gain in the transactions (Bloom and Hinrichs 2010). Further, actors should have an understanding and appreciation of the barriers that others in the supply chain have and want to contribute to removing those barriers.

In this value chain model, collaborative partnerships are created to increase overall efficiency and adaptability

¹ See www.agofthemiddle.org for a detailed discussion of the national initiative. The sales range for mid-size farms and ranches is \$50,000 to \$500,000, but the team notes that AOTM farms are scale-related but not scale-determined.

(Bloom and Hinrichs 2010). Collaboration of smaller businesses can create the same effect as if one firm grew and vertically integrated, contributing to greater efficiency (Stevenson and Pirog 2008). Flexibility, in part, comes from what economic geographers term ‘untraded interdependencies’—implied collaboration (and in some cases trust) underpinned by shared norms and conventions for ‘how business is done’ (Storper 1995). The informal nature of these relationships affords firms the flexibility to adapt their economic ties as needed to respond to shifting competitive pressures. Partnerships are marked by trust and shared governance that leads to a shared sense of procedural justice (Bloom and Hinrichs 2010). Partners believe that each other’s co-presence and engagement benefits one another, leading to what Yeung (2005) calls relational complementarities in which firms cooperate despite unequal power because of a shared sense of equity. Studies have shown that farms and firms of the middle have the motivation, flexibility, and capacity to collaboratively develop value chain partnerships that scale-up local food systems (Lev and Stevenson 2011; Stevenson et al. 2011).

Studies such as those by Lev and Stevenson (2011) and Stevenson et al. (2011) have yielded significant insights such as the importance of the following: identifying the right partners; developing and maintaining values and trust along the chain; opening information flows and being able to communicate complicated values to partners, in addition to issues such as determining the right branding strategies and the right price for products (Feenstra et al. 2011; Lev and Stevenson 2011; Stevenson et al. 2011).

A common barrier of any alternative supply chain intended to work with small scale actors beyond direct markets is lack of physical and logistical infrastructure (Matson et al. 2013). As such, supply chain collaborators and those interested in food system development (e.g., community groups, food policy councils, nonprofits) have been focusing more and more on aggregation points called ‘food hubs,’ and in turn, local, state, and federal governments have started focusing on supporting these initiatives. A regional food hub “is a business or organization that actively manages the aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand” (Barham et al. 2012, p. 4). A 2014 inventory by the USDA discovered that there are around 300 food hubs in the US.² Categorized by their legal structure, these hubs represent a variety of organizational models such as nonprofit organizations, which are often associated with a grassroots initiative; private food hubs with formal corporate structures,

such as a limited liability corporation; producer and/or consumer owned cooperatives; and publicly held food hubs, which are often public markets or farmers markets that take on the food hub functions. Hubs tend to service consumers directly, large scale buyers (retailers, distributors, institutions), or operate as a hybrid selling to multiple types of buyers (Barham et al. 2012).

Fischer (2013) found that most food hubs are in their infant stages. Given the dearth of physical and logistical infrastructure needed to scale-up, some researchers asked whether potential exists to ‘piggyback’ on existing distribution networks using well-established infrastructure (Bloom and Hinrichs 2010). Additionally, several researchers have argued that true alternatives do not exist in our current food system and policy environment (Ilbery and Maye 2005; Sonnino and Marsden 2006; Holloway et al. 2007), and that producers and consumers may utilize a combination of conventional and alternative resources and practices in their efforts to exert control over the food system (Bloom and Hinrichs 2010). Changing from an adversarial (against conventional) paradigm to one meant to create a market between niche and commodity markets enables actors to broaden the regional resources available for scaling-up. A viable option may be to adapt conventional actors and existing infrastructure to create a hybrid distribution model that can scale-up local food systems, yet is rooted in a value chain as conceptualized by the AOTM (Murdoch 2000; Trabalzi 2007; Mount 2012). Utilizing existing infrastructure through supply chain hybridity is a particularly salient concept for perishable fresh product supply chains, and as a dual approach, can better match supply and demand by evening out inventory ebbs and flows due to seasonality and volume irregularity.³

However, developing and maintaining hybrid value chain relationships for the purposes of scaling-up can be difficult. For example, Sonnino and Marsden’s (2006) work suggests that power differentials matter when negotiating relationship terms and can contribute to success or failure. It is the process of relationship development to serve a regional market, not the product of those supply chain relationships, that determines who benefits and has power (DuPuis and Goodman 2005). Further, Bloom and Hinrichs (2010) find several barriers to scaling-up distribution of local foods to larger markets focused on low price, while attempting to redistribute value along the value chain to ensure farmer viability.

Despite these potential pitfalls, when returning to the practical question at hand, the literature reviewed suggests examining the potential of spatially-proximate, value-oriented, hybrid supply chains as a viable strategy for scaling-

² See <http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELPRDC5091437>.

³ See Day-Farnsworth et al. (2009) for hybrid examples of including Wescott Agri Products and Alsum Produce.

up Ohio fresh fruit and vegetable distribution to Ohioans. Further, when considering how to create long-term viable supply chain relationships embedded in place and with maximization of community and economic benefits for Ohioans, particular attention should be paid to small and mid-size value chain actors. In the next two sections, we describe the study site and methods used to answer our research questions and inform the OFPAC on best practices to scale-up local fresh fruit and vegetable distribution.

Study site and research questions

Housed in the Ohio Department of Agriculture, the OFPAC was created by Ohio's Governor Ted Strickland through executive order in 2007. When a new governor took office in January 2011, the OFPAC failed to be re-authorized through executive order and is no longer a functioning body. While in operation, the Council was charged with maximizing the economic benefit of the food industry by localizing a portion of the food system and increasing the access to fresh and healthy food for all Ohioans (American Farmland Trust n.d.). OFPAC worked to break down barriers and create connections among those engaged in food production, processing, distribution, and consumption. As a public-private partnership, the OFPAC included 21 appointed Council Members representing private food businesses, environmental interests, sustainable agriculture, health, education, urban and rural development, farmers, farming associations, commodity groups, anti-hunger advocates, religious groups, and agricultural non-profits. Ex-Officio members were state agency representatives from the departments of Education, Job and Family Services, Health, Rehabilitation and Correction, Aging, Administrative Services, Faith Based and Community Initiatives and Development. The Council formed four task force areas to address agricultural viability, food system assessment, healthy food access, and market connections.

Ohio is characterized by a rich agricultural heritage with 75,462 farms and over \$11 million in recorded farm sales in 2012 (USDA NASS 2014a). Yet, it is also highly urbanized with the most metropolitan areas of any state. Ohioans consume an estimated 4.65 billion pounds of vegetables and 3.08 billion pounds of fruit annually. Figures 1 and 2 illustrate the total vegetable sales and fruit sales by county for 2012 (USDA NASS 2014b) and the major urban areas in and around Ohio. Vegetable production is primarily located in counties within the coastal Lake Erie climate, along the Ohio River, in the drained Black Swamp region in the Northwestern portion of the state, and near major urban areas. Fruit production is concentrated in the Northeastern portion along the Glaciated Allegheny Plateaus, along the Ohio River, and near urban areas.

Research conducted for the OFPAC found that given current production levels, Ohio farmers could satisfy 26 % of vegetable and 5 % of fruit demand for the state (Webb and Clark 2009). Therefore, the OFPAC viewed fresh fruits and vegetables as a promising sector to increase Ohio's fresh fruit and vegetable consumption by Ohioans. This does not take into account the potential of regional markets just outside of Ohio's borders.

Given that the value of local foods marketed by farms through intermediated markets (e.g., marketed through grocery store) is over three times higher than the value of local foods marketed exclusively through direct-to-consumer channels, and two times higher than the value of local foods marketed by farmers using a combination of these channels (Low and Vogel 2011), intermediated markets became the focus of the OFPAC. Further, national studies suggest that 90 % of food consumed at home is from retail outlets (USDA ERS 2010), and previous research in Ohio found that 90 % of store front retailers surveyed want to work with traditional distributors (Inwood et al. 2009). Yet, beyond the total firm counts offered by the US Economic Census, members of the OFPAC had a limited understanding of the mainstream specialty crop distribution system in Ohio, and therefore had little ability to make recommendations for its expansion. Thus, we were asked to conduct research to assist them with this process.

Based on the objectives of the OFPAC listed in the introduction, our literature review, and the study site description, we ask the following research question: What is the potential for scaling-up specialty crop distribution via spatially-proximate, value-oriented, hybrid supply chains? Our research objectives are to: (1) Describe the state of fresh fruit and vegetable distribution within Ohio; (2) Establish whether or not Ohio fresh fruit and vegetable distributors are motivated to create new markets with supply chain actors; and (3) Determine if distributors are motivated to create these markets via a values-based approach. Given previous research, we expect that the types of businesses that have the capacity to move greater volumes of product while also having the motivation to create new markets via value-based relationships are mid-size intermediaries. It should be noted that our research takes a state-based approach, rather than a regionally-based approach, which is dominant in the literature. This is a practical result of the objectives and jurisdiction of the OFPAC.

Methods

The research project was conducted in two phases. The first phase of the research focused on retailers. We conducted in-depth in-person interviews with fruit and vegetable

Fig. 1 Vegetable sales by county (2012)

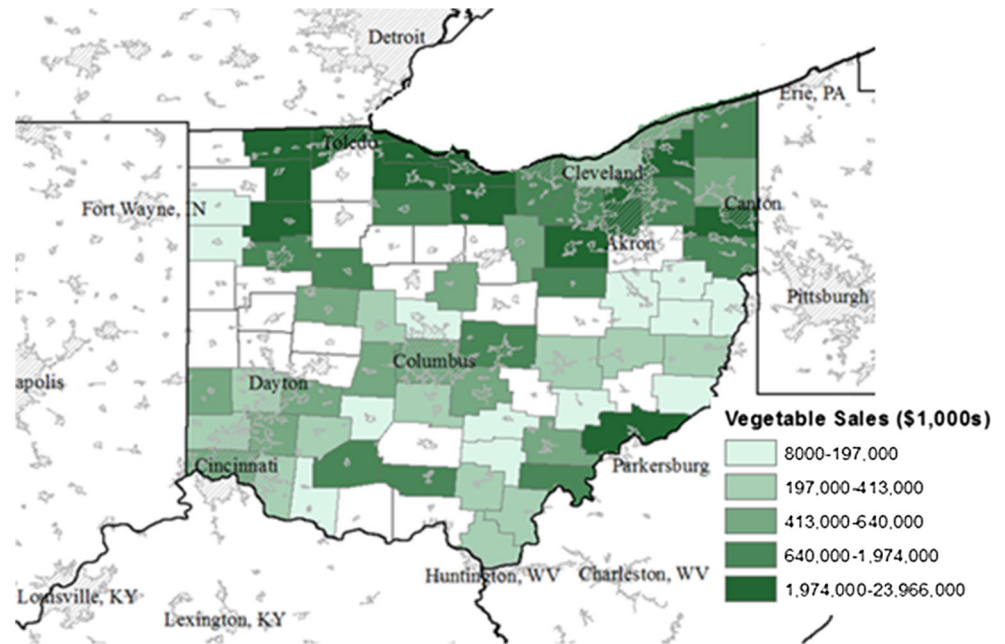
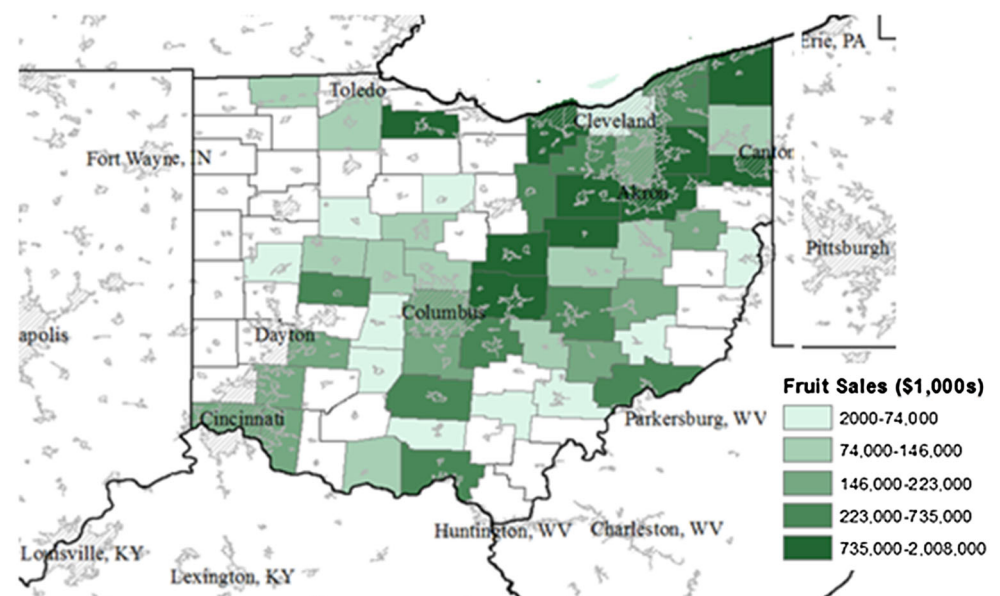


Fig. 2 Fruit sales by county (2012)



buyers in six retail outlets to gain a broad picture of fruit and vegetable supply chains in Ohio. These retailers included an urban small co-op, a suburban independent store with three rural branch stores, a mid-size regional chain that locates in small towns, an urban large national natural food chain, an urban large regional chain with some franchises, and an urban large national chain. These stores were selected to represent the variety of existing store types and capture the perspectives of buyers from a diversity of retail outlet types. At each retail outlet, semi-structured interviews were conducted with either the produce buyer or

store manager. Interview questions were designed to understand fruit and vegetable procurement and distribution from the retailer perspective; understand different models of distribution and relationships between the retailers, distributors, and Ohio farmers; and identify and characterize current local food distribution streams.

The second phase of the research consisted of a mail survey sent to fruit and vegetable distributors in Ohio. Distributors are food system intermediaries who arrange for the movement and transportation of food products. Fresh fruits and vegetables generally move primarily

through one of three primary marketing channels: grower-shippers, wholesalers, or self-distributing retailers. Grower-shippers distribute their own (and sometimes other farmers') product to others (retailers, wholesalers, food service companies, and self-distributing retailers) (Perrett 2007). Merchant wholesalers are those that take title of the produce. When distributors do not take title of the produce they are referred to as brokers. Overall, retailers continue to purchase 25 % of their produce through intermediaries, and smaller stores rely more on intermediaries than larger stores do (Perosio et al. 2001). Additionally, distributors often source from farms of varying sizes and deliver produce throughout the season, in contrast to a grower-shipper. Our sample included all three types of distributors.

While growers are represented by the Ohio Produce and Management Association and retailers are represented by the Ohio Grocers Association, there is no central group or association representing fruit and vegetable distributors in Ohio. Therefore, to construct a sampling frame we had to develop a process for identifying potential survey respondents. The 2010 County Business Patterns reported 88 wholesale fruit and vegetable distributors operating in Ohio (NAICS code 42248). To identify businesses and addresses, firms were identified through a list of distributors operating in Ohio, identified by the NAICS codes, which we purchased through InfoUSA. In addition, we utilized the Blue Book, a directory of produce sellers, buyers, transportation, and supply firms operating in the US (Blue Book Services n.d.). Together, these two lists resulted in 215 distributors, more than contained in the economic census. We used telephone calls and web searches to validate the sample. We eliminated 46 cases, determining they were no longer in business or did not have current contact information. Of the remaining 169 distributors, 28 were immediately disqualified because they did not consider themselves distributors. That left 141 potential respondents. Fifty-seven responded, resulting in a 40.4 % response rate for fruit and vegetable distributors. Of the 57, only 39 (27.7 %) distributed to Ohio retailers and were included in the analysis.

The survey questions included the geography of current sourcing and distributing of product to retail storefronts, economic and value-based motivations of Ohio fruit and vegetable distributors when purchasing fruits and vegetables, level of commitment to Ohio-grown fruits and vegetables and the growers that supply these products, types of relationships distributors have with these Ohio growers, and, finally, willingness to work with other supply chain actors to create regional markets and infrastructure. We also asked about basic demographics of the firm, such as size (classified by sales) and location, so we could examine the above question areas by firm size to determine if the middle is indeed the place of opportunity. Data was statistically analyzed using SPSS.

As our central research question is rooted within the AOTM framework we created firm size categories based on sales in order to analyze responses by firm size. Table 1 provides the distribution of respondent by very small (sales < \$1 million), small (sales of \$1-5 million), medium (sales between \$5 and \$15 million), and large (sales > \$15 million). There is a fairly even distribution of firms across sale volume categories.

To examine response bias by firm size, we compared the distribution of our responses to the overall distribution of firm size nationally. We could not compare our responses to the overall distribution of Ohio firm size because firm sales are not provided in the United States Census Bureau Economic Census for Ohio. We categorized our firms (Table 1) to match the sales ranges provided in the national census result (see Fig. 3 sales categories). The comparison of the national distribution of firm size (left bar) compared to our sample (right bar), illustrated in Fig. 3, suggests that our responses are comparable to the distribution of firms nationally.

Results

Retailer interviews

The purpose of the retailer interviews was to understand the varying ways different types of retailers in Ohio procure fresh fruits and vegetables, and how the distributors they work with obtain and deliver fresh fruits and vegetables. The following two sections map retailers' sources and cover retailer relationships with Ohio growers.

Mapping retailer fresh fruit and vegetable supply chains

All of the retailers carried local fresh fruits and vegetables, primarily defining local as Ohio-grown (although the large chain did not share their definition of local). A key part of the interviews included mapping the supply chains of fresh fruit and vegetables for each of the six stores. The results of these discussions are visualized in figures: Small co-op (Fig. 4); Mid-size independent (Fig. 5); Mid-size regional chain (Fig. 6); Large natural food chain (Fig. 7); Large chain (some franchise) (Fig. 8); and Large chain (Fig. 9).

Table 1 Classification of respondents (N = 39)

Size firm	N	Sales volume in '09
Very small	8	<1 million
Small	9	1–5 million
Med	8	5–15 million
Large	7	15+ million

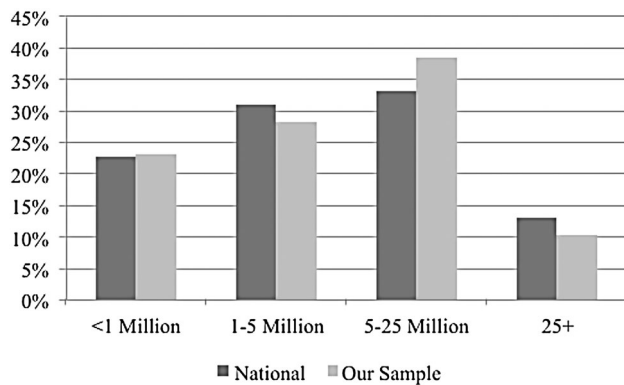


Fig. 3 Comparison of the percent of national firms size by size (left bar) compared to the percent of our sample by size (right bar)

To communicate these complex supply chains to the OFPAC, we developed these simplified conceptual graphics that illustrate the fruit and vegetable supply chain relationships between growers on the left (local, Ohio, out-of state), intermediaries in the middle (auction houses, brokers, farmers markets, co-op) and retailers on the right. Together, these figures were intended to generate discussion about the differences between supply chains and the associated potential for moving greater amounts of state-grown fruits and vegetables to retail outlets.

The interviews and figures demonstrated that as retailers grow in size, distribution channels become increasingly concentrated, formalized, and vertically-integrated. As

retailers grow in size, so does the scale of the suppliers with which they tend to work. With this increase in size and scale goes an increase in the volume of product that can be moved efficiently through long-standing infrastructure. The regional and national chains interviewed have longstanding direct relationships with larger farms, grower-shippers, and co-ops, able to supply the quantity and quality of products desired. In some cases, the distributors working with regional and national retail chains were already working with local farmers and are increasingly highlighting the local aspect of these pre-existing relationships in response to consumer demand for more local foods.

A consistent pattern emerged from the graphics and interviews; there is more opportunity for small and medium-size Ohio farmers to develop relationships with smaller scale retailers compared to large-scale retailers. Small, medium, and independent retailers in particular have incredibly complex and varied procurement streams. These retailers were also highly flexible, working with a range of distributors, particularly small and medium distributors, and were also willing to work with farmers across aggregation systems. This complexity creates multiple access and entry points. Opportunities for access decrease with firm size. A number of retailers identified auction houses as important aggregation hubs for purchasing local fresh fruits and vegetables. Ohio is home to a large Amish population, which has led the development of community

Fig. 4 Small co-op distribution network

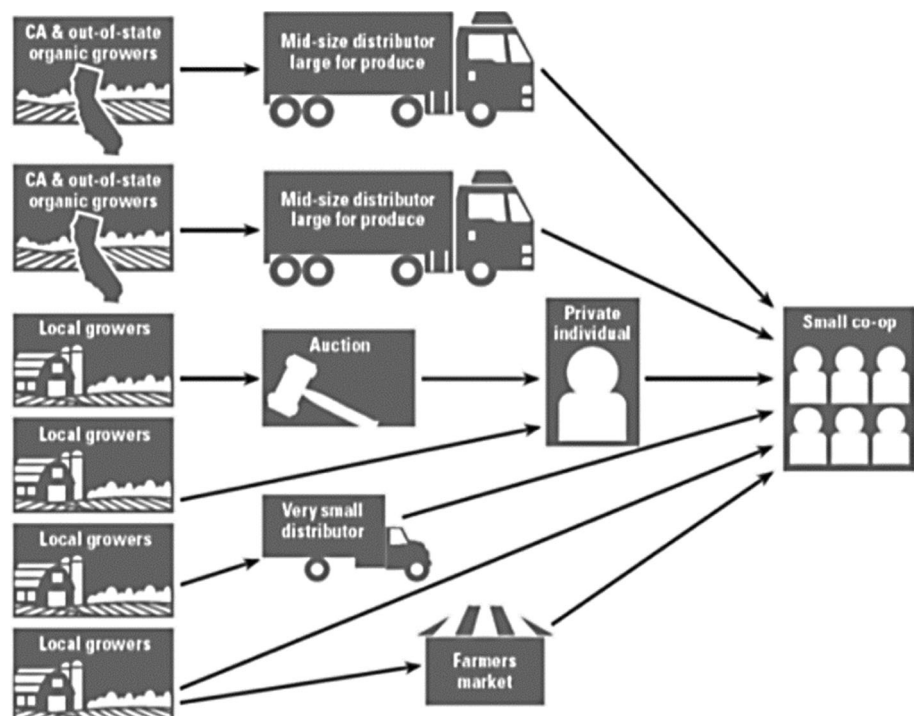
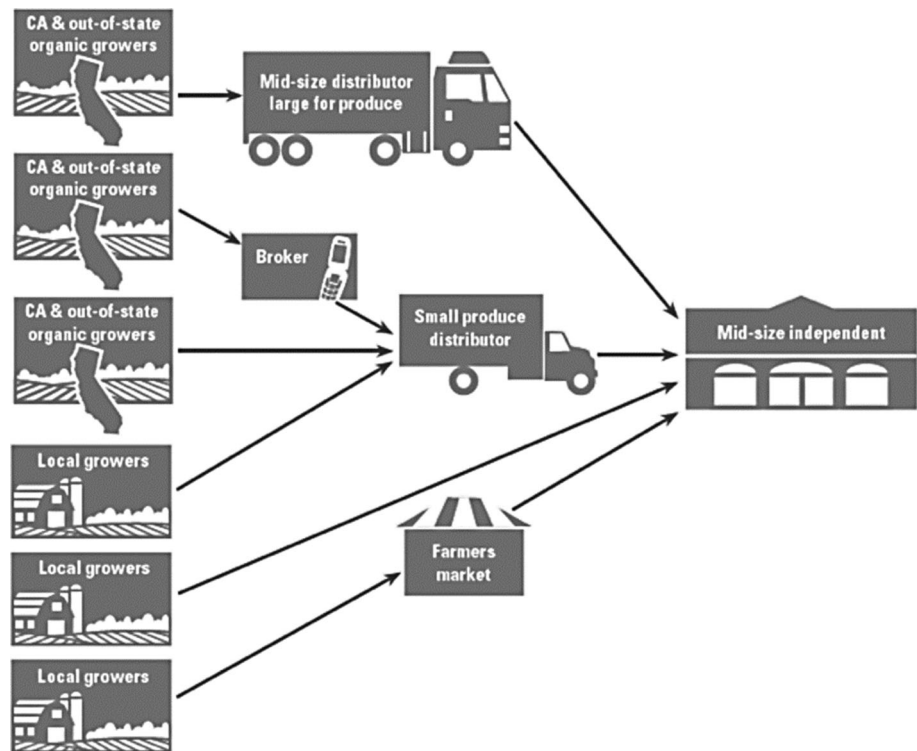
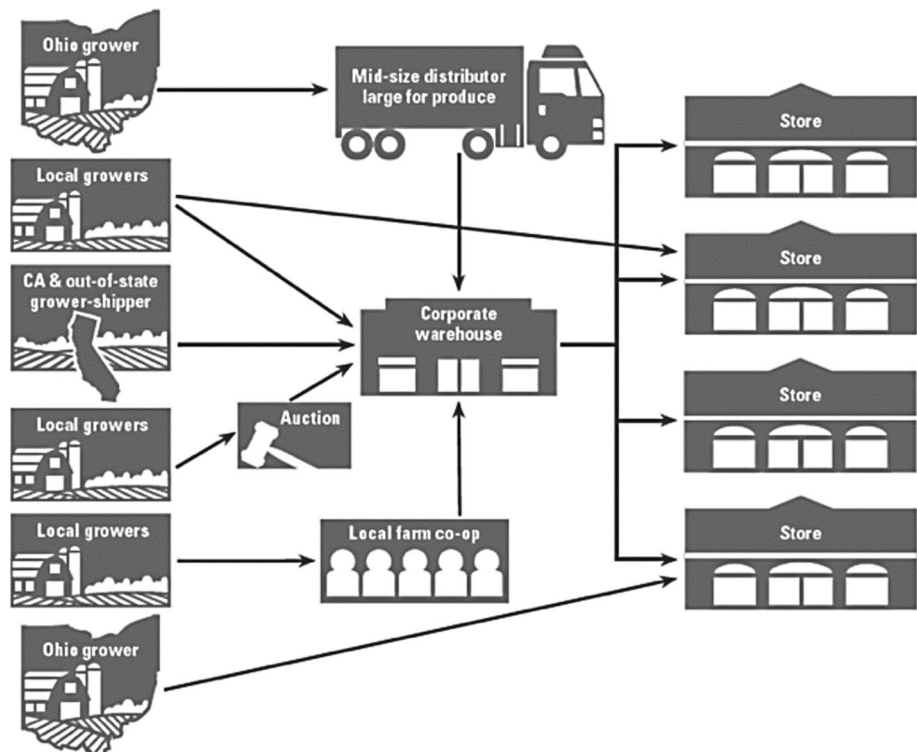


Fig. 5 Mid-size independent distribution network**Fig. 6** Mid-size regional chain distribution network

based fruit and vegetable auction houses as a way to draw in large buyers. Increasingly both Amish and non-Amish communities are pursuing auction houses as aggregation

centers for buyers, and as farmer meeting places, with grower meetings focused on growing, marketing, and cooperative purchasing of supplies.

Fig. 7 Large natural food chain distribution network

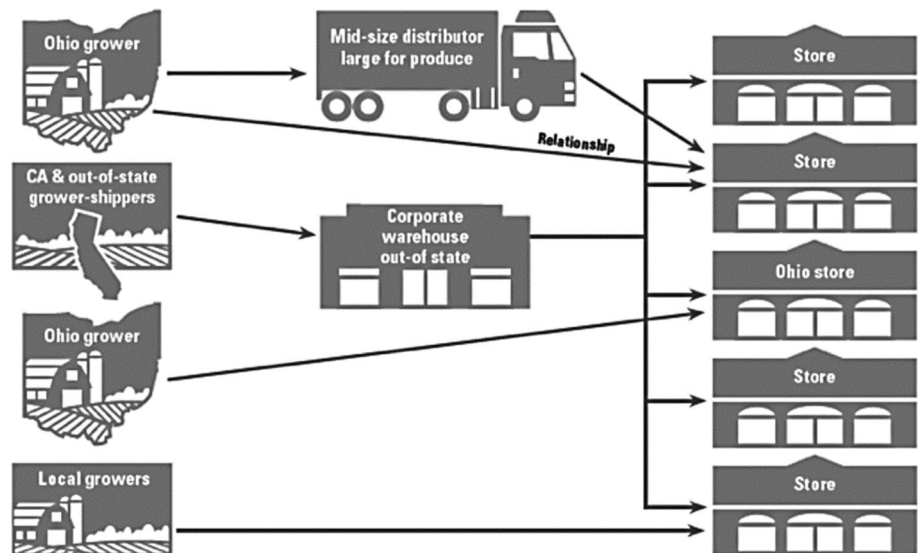
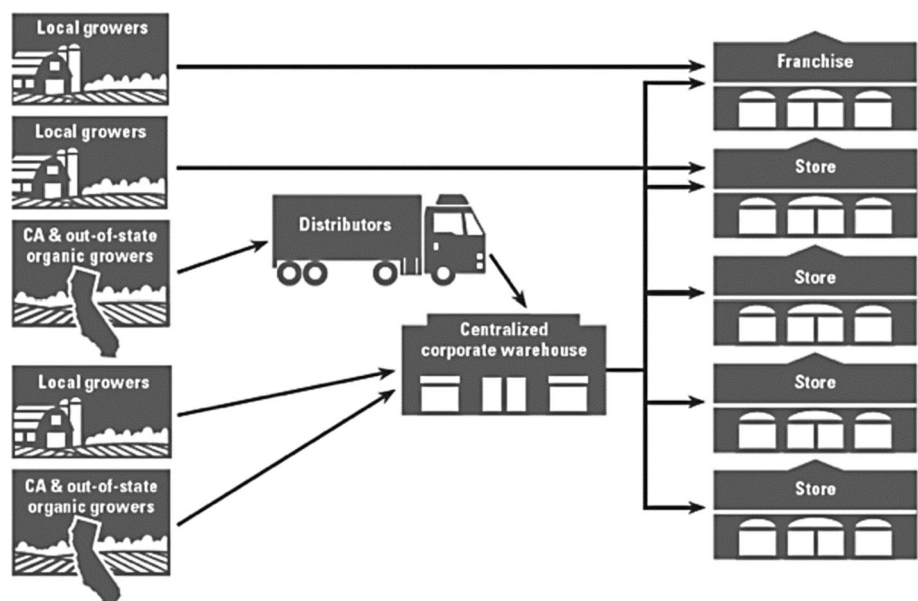


Fig. 8 Large chain (some franchise) distribution network



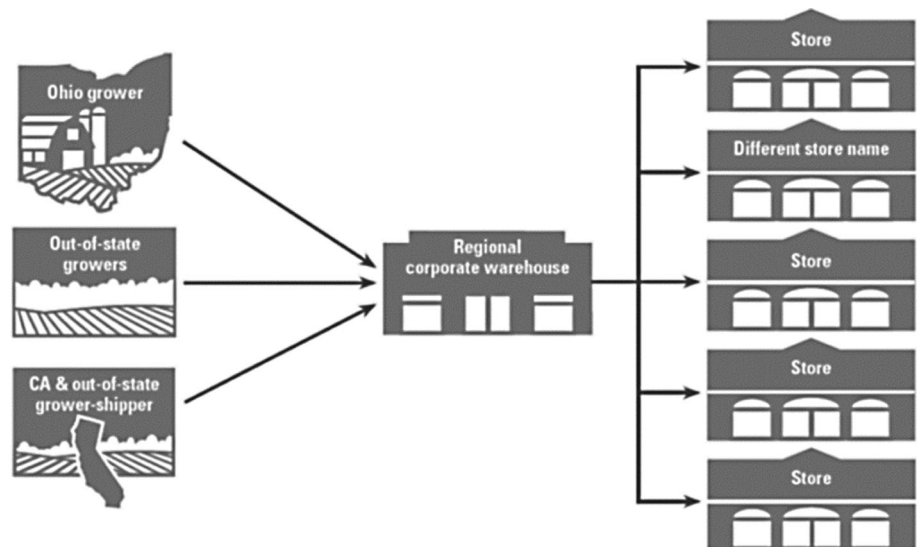
The multiple types of aggregation and distribution firms vary across distributor size, include aggregation hubs like auction houses, and demonstrate the multiple types of distribution streams Ohio fruit and vegetable farmers can enter through.

Retailer relationships with growers

As retailers increased in scale and distribution channels became more streamlined and formalized, so did their relationships with growers. For example, while food safety is a concern for all retailers, larger retailers generally tended to seek formalized certifications, especially those purchasing from large-scale farmers or companies they did

not have relationships with or who were not in close proximity. The greater physical and social distance from the actual producers created the need for extra security, often achieved via third-party certification. The largest retailers own their own distribution system and mostly work through contracts with growers. At the opposite end of the spectrum, smaller scale co-op retailers purchase product in the spot market (meaning they buy direct from the grower with no pre-planning, on-the-spot). A consistent theme throughout the interviews was that the retailers with a stronger commitment to local fresh fruits and vegetables that went beyond just marketing tactics were more likely to develop social relationships with growers and collectively develop distribution streams. The small, mid-size

Fig. 9 Large chain distribution network



independent and chain, and national natural chain were more willing to make relationships with new growers as the produce buyers and store managers tended to have more autonomy and flexibility in making purchasing decisions, and reported a greater willingness to purchase from local small and medium-sized farms.

Retailers also reported they were able to expand their purchasing power and increase their local fruit and vegetable inventory when common aggregation points are available, such as an auction house or a distributor who carries local fresh fruits and vegetables. Further, these mid-size and small retailers identified that they liked to work with distributors who carry local product because the distributors can even out the flow between seasons. However, even the retailers who were committed to purchasing from local growers and supporting the local community identified purchasing from multiple farmers and managing too many vendor accounts is a challenge and creates frustration. Retailers emphasized the desire to have a relationship with and know the farmers they are purchasing from, but have a consistent and efficient ordering, aggregation, and distribution system. The regional mid-size chains and independent retailers were also the retailers that expressed an interest in working with farmers to develop a product list and planting schedule.

The retailer interviewees revealed that while larger retailers can move much more product, Ohio farmers and existing distributors have more entry points with small and mid-size retailers. These retailers are more flexible and informal with supply chain relationships. Yet, all retailers are frustrated by the lack of aggregation and absence of a consistent and efficient ordering system in the existing Ohio fruit and vegetable distribution system.

Distributor surveys

In the following sections, we present the results of the distributor survey. We address the geography of distributor sourcing and distribution, their motivations and considerations when purchasing fresh fruits and vegetables, and the existing and potential new relationships with Ohio specialty crop growers. We present these results and then analyze them using the AOTM framework by illustrating responses by distributor size.

Distributor sourcing and market geography

The first series of distributor survey questions focused on their current market and sourcing geography. Distributors were asked what proportion of their sales fell in three distance categories: within 100, 100–500, and 500 or more miles of their headquarters. Figure 10 presents the findings, with the full bar representing total fresh fruits and vegetables distributed, and the variations in shading representing increasing distance from the bottom of the bar to the top. For comparison purposes, we note that the 2008 Farm Bill definition of local/regional is within 400 miles (GPO 2008). The majority of product moved by all Ohio fruit and vegetable distributors to retail storefronts is done within 100 miles from the producers' warehouse. As one might expect, the distribution radius becomes larger as the size of distributor increases (although differences between firm size were not statistically significant).

Distributors were also asked to identify the range of miles they travel to source Ohio grown fresh fruits and vegetables during the height of the growing season (spring through fall) (Fig. 11). Firms were asked to identify the

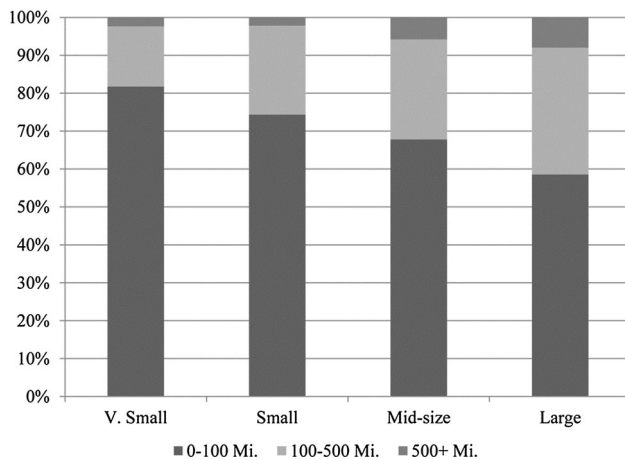


Fig. 10 Average proportion of fruit and vegetable distribution within radii by firm size

percent of fresh fruits and vegetables sourced during the height of the season by radial distance of 0–100, 100–500, and 500+ miles. As with the previous figure, for each firm size category in Fig. 11, the full bar represents total produce sourced, and the variations in color represent increasing distance from the bottom of the bar to the top. Very small distributors source the greatest amount of local and regional product as a percentage of their total sourcing. Mid-size distributors source the greatest amount of regional product. Large distributors source the least local and regional product as a percentage of their total sourcing. These differences in sourcing between firm size are statistically significant (at the $0.05 < p < 0.10$; $p = 0.061$). Examining distribution and sourcing geography together, the distribution radius, on average, is smaller than the sourcing radius for all firms.

Motivations and factors considered when purchasing product

Recognizing that distributors have a variety of factors they consider in purchasing decisions, survey questions examined

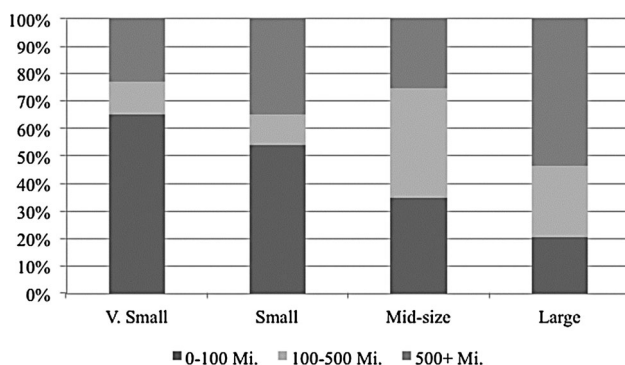


Fig. 11 Average proportion of fruits and vegetables sourced within radii by firm size at the height of the Ohio season (spring through fall)

both general motivations for purchasing any type of fresh fruits and vegetables (local or not) and factors specifically associated with local fruit and vegetable purchasing. Distributors were asked what factors are important to *all* fruit and vegetable purchasing to assess the motivation for purchases. We asked about price, location of source (grown in Ohio), and type of grower (grown on a family farm). The responses of all three questions were on a five-point scale, with a '1' being not important and a '5' being very important. Figure 12 illustrates the average response by distributor size to each of these factors, in addition to the overall average response across all distributors. With increase of firm size, the importance of price, on average, increases: very small, 3.40; small, 3.89; mid-size, 4.00; and, large, 4.71. With an increase in firm size, the attribute of 'grown in Ohio' is less of a factor, with average response by firm size decreasing: very small, 3.60; small, 3.56; mid-size, 2.75; and, large, 2.29. This finding is statistically significant (at the $0.05 < p < 0.10$; $p = 0.063$). Finally, the attribute of 'grown on a family farm' is most important for very small firms and decreases with firm size: very small, 3.40; small, 3.22; mid-size, 2.38; and, large, 1.71. This finding is significant (at the $p < 0.05$; $p = 0.026$). On average, Ohio products and products grown by family farms play a greater role in purchasing for smaller distributors than larger distributors. Yet, price is still relatively more important, on average, for all firm sizes.

To better understand motivations and current commitment to Ohio growers, we asked distributors questions about important factors for sourcing Ohio products. Specifically, distributors were asked if they believe that Ohio grown products are better, if they are committed to Ohio growers, and if they believe that Ohio grown fruits and vegetables are fresher when in season. For each of these three factors, distributors could respond whether they disagree, are neutral, or agree with the statement. Figure 13

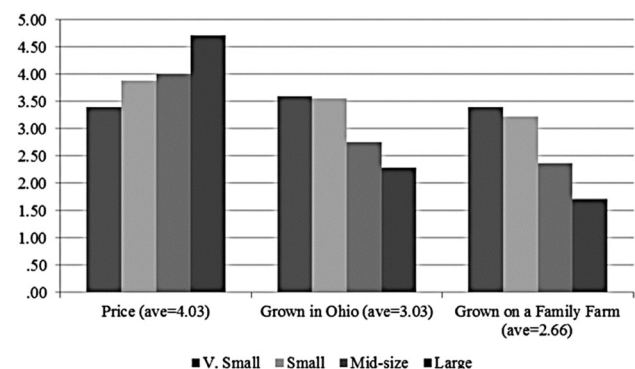


Fig. 12 Average response by distributor size to the importance of price and other factors, in addition to the overall average response across all distributors ('1' being not important and a '5' being very important)

presents the percentage of distributors that agree with each of the statements. The percentage of distributors that agree that Ohio grown is better generally decreased with an increase in firm size: very small, 100 %; small, 75 %; mid-size, 86 %; and, large, 43 %. Small and mid-size distributors were more likely to agree that they are committed to their Ohio growers when sourcing product: very small, 25 %; small, 50 %; mid-size, 57 %; and, large, 17 %. Similarly, small and mid-size distributors were more likely to agree that Ohio grown products are fresher when in season; very small, 20 %; small, 88 %; mid-size, 71 %; and, large, 14 %. Large distributors were the least likely to agree to any of the three statements.

Relationships with growers

According to the literature, the strategies for scaling-up local food systems are relationship-based. As such, it is important to know how distributors currently manage relationships. As with retailers, distributors were also asked if they employ contracts to formalize relationships and if they require third party certification for quality assurance. For each question, respondents could choose whether they ‘always,’ ‘sometimes,’ or ‘never’ engaged in the practice. Table 2 presents responses to these questions by firm size. Results generally vary by firm size, with very small firms never engaging in contracting, Large distributors using contracting more often, and the majority of mid-size and smaller distributors using contracting less often than large distributors (statistically significant at the $0.05 < p < 0.10$; $p = 0.069$). Likewise, large distributors most often use third party certification/quality assurance (not significant). The very small distributors do not use contracting and about half use 3rd party certification. The small and mid-size distributors fall in between.

Even more critical to scaling-up via a spatially-proximate, value-oriented, hybrid supply chain approach is gaining an understanding of the interest and willingness of

distributors to co-create the relational and physical infrastructure to address existing distribution barriers. We inquired about distributors’ interest in using new infrastructure and their willingness to partner to create new markets (Table 3). Respondents could answer ‘yes’ or ‘no’ to these questions. When asked if they would be interested in utilizing new, regional fruit and vegetable aggregation hubs, where Ohio farmers could bring fresh product to aggregate, cool, and package with other farmers to increase the quality, quantity, and flow of product for distribution, the majority of respondents said yes. One-hundred percent of the largest distributors are interested in having the infrastructure (statistically significant at the $0.05 < p < 0.10$; $p = 0.085$). When asked if they would be willing to partner with growers in developing infrastructure, the majority of distributors said yes. While differences in willingness to partner to develop infrastructure across distributor size were not statistically significant, it is worthwhile to note that the greatest positive response to partnering to create infrastructure was from mid-size distributors at 89 %, while the larger distributors were least likely to indicate a willingness to participate at 63 %.

Additionally, respondents were asked if they would be willing to participate in educational programming to increase the capacity of growers to meet distributor standards. Responses were on a scale of one to seven, with a ‘1’ indicating they were not likely to participate and a ‘7’ indicating that they would be very likely to participate. On average, mid-size distributors were most likely to participate with a mean of 5.56, followed by large distributors average of 4.86, small distributors with an average of 4.64, and the very small firms averaging last at 4.33. Finally, among those distributors willing to partner with state efforts to create distribution infrastructure ($N = 36$), all but one provided their name and contact information in the survey to be shared with the food council for partnership development.

Discussion

We began our research with a request from a state food council asking for recommendations on scaling-up Ohio fresh fruit and vegetable consumption by Ohioans to meet their objective of maximizing the economic benefit of the food industry by localizing a portion of the food system and increasing the access to fresh and healthy food for all Ohioans. In scaling-up local foods, product aggregation and distribution are commonly cited problems, and our work confirms this for Ohio. Given that the majority of fruit and vegetables are purchased through existing retail outlets, our attention was turned toward existing infrastructure on which efforts to scale-up could ‘piggyback.’ The crux of our research was to identify opportunities to

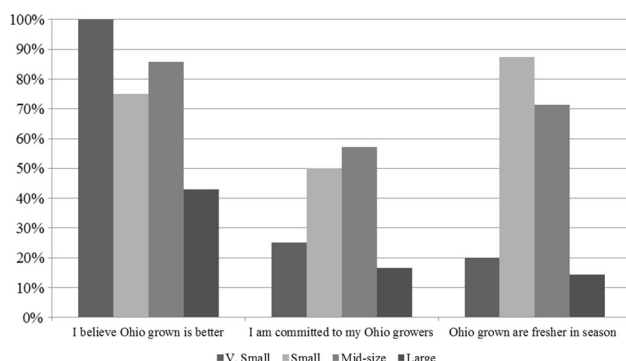


Fig. 13 Percent of distributors that agree with the statement by firm size

Table 2 Percent of distributors who engage in contracting and third party certification, by firm size

Size firm	Contracting			3rd party certification		
	Always (%)	Sometimes (%)	Never (%)	Always (%)	Sometimes (%)	Never (%)
Very small	0	0	100	25	25	50
Small	0	17	83	38	25	38
Mid-size	0	14	86	14	43	43
Large	17	33	50	57	43	0

Table 3 Percent of distributors who utilize and partner to infrastructure and new market development, by firm size

Size firm	Utilize a hub (%)	Partner to develop infrastructure (%)
Very small	67	75
Small	64	73
Mid-size	75	89
Large	100	63

overcome these barriers by identifying existing retailers and distributors and gauging their interest and willingness to develop value-based relationships and needed infrastructure. We use the AOTM framework both in the design of our inquiry and as a guide for our analysis.

We first mapped the channels with retailers through which Ohio fresh fruits and vegetables moved to existing Ohio retail locations to provide us with an overall understanding of distribution systems. All the retailers we interviewed carried Ohio products, but the greatest access, and opportunity to piggyback on existing infrastructure, was with smaller cooperative, independent retailers and mid-size regional chain retailers. Aside from having a greater number and more flexible entry points, these retailers are already engaged in the practices that contribute to further value-based relationship building. Further, these retailers have the interest to partner with other supply chain actors to develop and access aggregation and distribution infrastructure to more effectively work with small and mid-size growers that produce the quality of product they are looking to purchase.

Working upstream in existing fruit and vegetable supply chains, the challenge was identifying, and then communicating with, fresh fruit and vegetable distributors in the state of Ohio. We took several steps, including utilizing multiple business lists and directly contacting firms to develop a comprehensive list of Ohio fruit and vegetable distributors. Once identified, we surveyed these distributors, focusing on those already working with Ohio retailers. The results were promising for the OFPAC because distributors are already sourcing Ohio product and distributing regionally, although their sourcing radius, on average, is larger than their distribution radius.

To better target state-level programming and policy efforts, we sought to identify which types of distributors are most likely to be motivated to co-create scaled-up markets.

Our results almost universally indicate that retail and distribution opportunities are greatest with mid-scale and small firms. Mid-size distributors are sourcing the most regional product. While these distributors likely have to keep procuring outside of the region for seasonal consistency, the possibility may exist to shift some of the regional procurement to local procurement. Mid-size distributors are moving much more product than very small or small firms, and sourcing more locally and regionally than large firms.

Aside from having a high-quality differentiated product, value-based relationships are fundamentally about having a commitment to other supply chain actors. While all respondents indicated price is an important consideration, for factors outside of price, distributor opinions and attitudes diverged along scale. Large distributors were more likely than any other size distributor to have more arms-length relationships with farmers through contracting and third party certification. Compared to large distributors, smaller and mid-size distributors were more likely to emphasize qualities such as grown in Ohio, grown on a family farm, and consider Ohio products to be better and fresher when in season. Of most significance is that small and mid-size distributors say they are committed to their Ohio growers, and demonstrated a preference for creating connections. This set of distributors offers a flexible supply chain structure and provides a floor for strengthening current supply relationships. Additionally, these distributors are able to handle higher volumes of produce with very little upgrading and infrastructure investment. By applying the AOTM framework focused on mid-size actors and the SFCs focus on transmitting quality, these findings provide evidence that there is indeed potential for scaling-up specialty crop distribution via spatially-proximate, value-oriented, hybrid supply chains specifically with mid-size distributors.

When distributors were asked if they would utilize an aggregation hub, the majority of all distributors said they would utilize new regional hubs. The majority of all distributors also said they were willing to partner on infrastructure development and educational programming designed to help growers meet the needs of distributors, but a higher percentage of mid-size distributors said they were willing to do so. Part of value-chain development rests on parties' understanding of other supply chain actor barriers and interest in helping to remove those barriers. Very small and small distributors generally have tighter time constraints, fewer staff resources, and less available capital, which can limit their capacity to partner on projects and may explain why fewer small distributors affirmatively responded to wanting to play a role in food hub development or educational sessions for Ohio growers.

These research findings were used to develop three specific recommendations for the OFPAC. First, because both retailers and distributors showed interest in participating in new supply chain relationships, our recommendations to the OFPAC primarily focused on the facilitation role they could play in building relationships across the supply chain. We suggested the OFPAC make connections between retailers, distributors, and growers to facilitate value-chain development, with a particular focus on mid-size actors. Using insights from the literature on value-based supply chains, the recommendations to the OFPAC rest on the premise that the process by which new relationships are built and maintained is more critical than the scale of the outcome. Ohio agencies and organizations that were members of the OFPAC were in a position to facilitate growth in this sector. For example, state level agencies and Cooperative Extension could direct financial and programming resources into developing farmer-distributor-retailer relationships. Focusing on the distributors that self-identified as wanting to work further with the Council to develop strategic relationships, but lack the resources to start, is a critical and low-risk starting point. The greatest points of leverage for growing local fruit and vegetable distribution in Ohio are not in the logistics or flow of the product itself, but are in the business practices that focus on trust and relationships. Retailer, distributor, and farmer networking and planning sessions could create new opportunities for Ohio's small and medium-size fresh fruit and vegetable farmers. Examples include 'meet the buyer' gatherings, which operate like speed dating between farmers and distributors, and other facilitated events that create room for meaningful networking and planning. Another opportunity is to include distributors and retailers as partners in the delivery of curricula like Ohio Extension-based Retail Ready, which addresses such things as packaging and quality assurance, both noted as barriers to distributors.

Our second recommendation was for the OFPAC to focus existing economic development programs on facilities to aggregate product, working with distributors that self-identified as wanting to work in this area. If individual growers are not able to scale-up their own production because of time or capital constraints, then it is possible to provide technical assistance and infrastructure so that growers, together, can look big and 'jump' scales, reaching larger markets and moving more product. Current aggregation points, such as auction houses, often do not have the cooling or storage capacity to even out the flow of product, and there are areas of the state where growers do not have access to existing aggregation points. In response, Ohio's economic development agency could determine a package of financial products, incentives, and grants to increase the capacity of current aggregations points, or food hubs. Ideal locations for new facilities could be identified and partnerships pursued.

Finally, a focus of the OFPAC, albeit a different one, should be on capacity-building efforts for smaller growers and distributors that have the potential for participating in new producer-distributor relationships, but lack the time and capital to participate. While mid-size distributors may be best positioned to move more Ohio fresh fruits and vegetables through existing infrastructure in the short-term, there are also longer term growth opportunities associated with working with smaller or new distributors who are already committed to local products and who could potentially grow and increase their sales volume and fill niche market segments.

As noted in "[Study site and research questions](#)" section, the OFPAC was not reauthorized when the state administration changed in January 2011. Our report and recommendation were released later in 2011. While there is no longer a statewide food council to shepherd our findings through a comprehensive statewide effort, local, regional, and statewide non-profits and agencies have been able to utilize the recommendations. One example is a series of capacity building workshops for specialty crop growers focused on the business and production skills required to move to intermediated markets led by the Ohio Ecological Food and Farm Association (OEFFA) and the Cuyahoga Valley Countryside Conservancy (OEFFA 2012).

Conclusion

The research presented here was both an academic and practical endeavor to contribute to larger AOTM and value chain research questions while simultaneously assisting the OFPAC in their efforts to scale-up local fresh fruit and vegetable production and distribution in the Ohio. At the most basic level this project was able to validate that

existing supply chain actors are interested in pursuing regional market development. Given the lack of an industry association of specialty crop distributors in Ohio, the OFPAC was unsure how to assess and identify potential interest and partners. Using both qualitative and quantitative data collection methods, we were able to systematically assess interest among retailers and distributors, identify strategic partners, and develop a database of distributors for OFPAC's use.⁴ More specifically, we were able to identify which types of distributors and retailers are most likely to collaborate, demonstrate how scaling-up strategies could be realized by incorporating more marginalized mid-scale market intermediaries, and show the broader benefits of value chain development. Recognizing the limited financial and human resources organizations like the OFPAC have, we focused our recommendations around relatively low-cost, concrete methods for facilitating social relationships, investing in physical infrastructure, and cultivating growth along the fresh fruit and vegetables supply chain in Ohio.

As researchers we were interested in how to jump-start efforts to scale-up fresh fruit and vegetable distribution in Ohio by combining SFSC research focused on place-based economic development, the AOTM framework, and the associated concept of food value chains. Our review of previous studies, in concert with the research presented in this article, indicates there is room to develop and grow local and regional food markets within the current mainstream distribution system, with increased attention to strategic alliances among mid-scale businesses while building on existing infrastructure. Interviews with Ohio food retailers and a survey of Ohio fresh fruit and vegetable distributors support using the AOTM and value chain framework for the fresh fruit and vegetable retail supply chain, and reinforce the importance of considering hybrid solutions, such as piggybacking for scaling-up local food systems. By focusing on an entire sector, this research compliments the individual business case studies that support the concept of AOTM and contributes to the growing body of knowledge regarding value-based and spatially-proximate relationship building, and conceptualizations of food system hybridity.

Finally, the most significant recommendation we made to the OFPAC was to internalize lessons from previous studies that have demonstrated the fragile and precarious nature of this work, and the importance of creating not only the conditions for partnerships to emerge but also the need for long term active management of supply chain actor

relationships (Sonnino and Marsden 2006; Bloom and Hinrichs 2010; Lev and Stevenson 2011). Changes in state leadership and the closure of the OFPAC have shifted efforts to scale-up fresh fruit and vegetable distribution in Ohio from the state to the non-profit sector. It is currently unclear how these shifts will influence the strategies pursued and ultimate ability to scale-up fresh fruit and vegetable distribution in Ohio. However, these changes provoke important new questions for AOTM, SFSCs, and value chain relationship researchers: Does it matter who organizes these types of efforts and what types of resources different groups have access to? How does the paradigm of the organizational institution influence the types of coalitions, partnerships, and governance of supply chain relationships, and how do these differences influence the myriad of possible outcomes?

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References

- American Farmland Trust. n.d. *Ohio Creates New Food Policy Council*. Washington, DC: American Farmland Trust. <http://162.242.222.244/programs/states/oh/ohioFoodPolicyCouncil.asp>. Accessed 18 June 2015.
- Barham, J., D. Tropp, K. Enterline, J. Farbman, J. Fisk, and S. Kiraly. 2012. *Regional food hub resource guide*. Washington, DC: AMS, USDA.
- Bloom, J.D., and C.C. Hinrichs. 2010. Moving local food through conventional food system infrastructure: Value chain framework comparisons and insights. *Renewable Agriculture and Food Systems* 26(1): 13–23.
- Blue Book Services. n.d. Blue Book Services. <https://www.producebluebook.com/>. Accessed 30 July 2014.
- Clancy, K., and K. Ruhf. 2010. Is local enough? Some arguments for regional food systems. *Choices* 25(1). <http://www.choicesmagazine.org/magazine/article.php?article=114>. Accessed 25 May 2015.
- Day-Farnsworth, L., B. McCown, M. Miller, and A. Pfeiffer. 2009. *Scaling up: Meeting the demand for local food*. Madison, WI: Ag Innovation Center & Center for Integrated Agricultural Systems, University of Wisconsin.
- Diamond, A., and J. Barham. 2011. Money and mission: Moving food with value and values. *Journal of Agriculture, Food Systems, and Community Development* 1(4): 101–117.
- DuPuis, E.M., and D. Goodman. 2005. Should we go “home” to eat?: Toward a reflexive politics of localism. *Journal of Rural Studies* 21(3): 359–371.
- Feenstra, G., P. Allen, S.D. Hardesty, J. Ohmart, and J. Perez. 2011. Using a supply chain analysis to assess the sustainability of farm-to-institution programs. *Journal of Agriculture, Food Systems, and Community Development* 1(4): 69–84.
- Fischer, M., M. Hamm, R. Pirog, J. Fisk, J. Farbman, and S. Kiraly. 2013. *Findings of the 2013 national food hub survey*. Lansing,

⁴ While the OFPAC was unable to use this database because of it was dissolved, the Ohio Department of Agriculture's Ohio Proud program has been able to use the list to invite distributors to 'meet the buyer' events.

- MI: Center for Regional Food Systems, Michigan State University & The Wallace Center at Winrock International.
- Goldschmidt, W. 1978. Large-scale farming and rural social-structure. *Rural Sociology* 43(3): 362–366.
- GPO. 2008. Food, Conservation, and Energy Act of 2008, PL 110–246, HR 6124. Washington, DC: Government Publishing Office. <http://www.gpo.gov/fdsys/pkg/PLAW-110publ246/html/PLAW-110publ246.htm>. Accessed 25 May 2015.
- Holloway, L., M. Kneafsey, L. Venn, R. Cox, E. Dowler, and H. Tuomainen. 2007. Possible food economies: A methodological framework for exploring food production–consumption relationships. *Sociologia Ruralis* 47(1): 1–19.
- Ilbery, B., and D. Maye. 2005. Alternative (shorter) food supply chains and specialist livestock products in the Scottish-English borders. *Environment & Planning A* 37(5): 823–844.
- Inwood, S., J.S. Sharp, R.H. Moore, and D.H. Stinner. 2009. Restaurants, chefs and local foods: Insights drawn from application of a diffusion of innovation framework. *Agriculture and Human Values* 26(3): 177–191.
- Kirschenmann, F., G.W. Stevenson, F.H. Buttel, T.A. Lyson, and M. Duffy. 2008. Why worry about the agriculture of the middle. In *Food and the mid-level farm*, ed. T.A. Lyson, G.W. Stevenson, and R. Welsh, 3–22. Cambridge, MA: The MIT Press.
- Lev, L., and G.W. Stevenson. 2011. Acting collectively to develop midscale food value chains. *Journal of Agriculture, Food Systems, and Community Development* 1(4): 119–128.
- Little, R., D. Maye, and B. Ilbery. 2010. Collective purchase: Moving local and organic foods beyond the niche market. *Environment and Planning A* 42(8): 1797–1813.
- Lobao, L.M. 1990. *Locality and inequality: Farm and industry structure and socioeconomic conditions*. Albany, NY: State University of New York Press.
- Low, S.A., and S. Vogel. 2011. *Direct and intermediated marketing of local foods in the United States*. Washington, DC: ERS, USDA.
- Lyson, T. A., G.W. Stevenson, and R. Welsh. 2008. *Food and the mid-level farm: Renewing an agriculture of the middle. food, health and environment*. Cambridge, MA: The MIT Press.
- Mariola, M.J. 2008. The local industrial complex? Questioning the link between local foods and energy use. *Agriculture and Human Values* 25(2): 193–196.
- Marsden, T., J. Banks, and G. Bristow. 2000. Food supply chains approaches: Exploring their role in rural development. *Sociologia Ruralis* 40(4): 424–438.
- Matson, J., M. Sullins, and C. Cook. 2013. *The role of food hubs in local food marketing*. Washington, DC: USDA.
- Mount, P. 2012. Growing local food: Scale and local food systems governance. *Agriculture and Human Values* 29(1): 107–121.
- Murdoch, J. 2000. Networks—A new paradigm of rural development? *Journal of Rural Studies* 16(4): 407–419.
- OEFFA. 2012. *OEFFA and Countryside conservancy partner to help farmers scale up and expand availability of local produce*. Columbus, OH: OEFFA. <http://www.oeffa.org/news/?p=933>. Accessed 5 June 2015.
- Perosio, D. J., E. W. McLaughlin, S. Cuellar, and K. Park. 2001. *Supply chain management in the produce industry*. R.B. 01-05. Ithaca, NY: Department of Agricultural, Resource, and Managerial Economics, Cornell University.
- Perrett, A. 2007. *The infrastructure of food procurement and distribution: Implications for famers in Western North Carolina*. Asheville, NC: Appalachian Sustainable Agriculture Project.
- Pirog, R., T. Van Pelt, K. Enshayan, and E. Cook. 2001. *Food, fuel, and freeways: An Iowa perspective on how far food travels, fuel usage, and greenhouse gas emissions*. Ames, IA: Leopold Center for Sustainable Agriculture, Iowa State University.
- Renting, H., T.K. Marsden, and J. Banks. 2003. Understanding alternative food networks: Exploring the role of short food supply chains in rural development. *Environment and Planning A* 35: 393–411.
- Sonnino, R., and T. Marsden. 2006. Beyond the divide: Rethinking relationships between alternative and conventional food networks in Europe. *Journal of Economic Geography* 6(2): 181–199.
- Stahlbrand, L. 2014. Institutional local sustainable food procurement: Building capacity. In *Paper presented at the sustainable regional food systems workshop: Theory, practice and policy*. Waterloo, ON: Wilfred Laurier University.
- Stevenson, G.W., K. Clancy, R. King, L. Lev, M. Ostrom, and S. Smith. 2011. Midscale food value chains: An introduction. *Journal of Agriculture, Food Systems, and Community Development* 1(4): 27–34.
- Stevenson, G.W., and R. Pirog. 2008. Value-based supply chains: Strategies for agrifood enterprises of the middle. In *Food and the mid-level farm*, ed. T.A. Lyson, G.W. Stevenson, and R. Welsh, 119–146. Cambridge, MA: The MIT Press.
- Storper, M. 1995. The resurgence of regional economies, ten years later the region as a nexus of untraded interdependencies. *European Urban and Regional Studies* 2(3): 191–221.
- Trabalzi, F. 2007. Crossing conventions in localized food networks: Insights from southern Italy. *Environment and Planning A* 39(2): 283.
- USDA ERS. 2010. *Food CPI and expenditures: Table 2*. Washington, DC: ERS, USDA. http://www.ers.usda.gov/briefing/cpi/foodanddexpenditures/Data/Expenditures_tables/table2.htm. Accessed 22 Jul 2011.
- USDA NASS. 2014a. *2012 Census of Agriculture, United States Summary and State Data*. Washington, DC: ERS, USDA. http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1_Chapter_1_US/usv1.pdf. Accessed 2 Aug 2014.
- USDA NASS. 2014b. *Quick Stats*. http://quickstats.nass.usda.gov/?source_desc=CENSUS. Accessed 6 Mar 2015.
- Webb, M., and J.K. Clark. 2009. *Local foods: Estimating capacity for Ohio Food Policy Council—Food Assessment Task Force*. Columbus, OH: Center for Farmland Policy Innovation, Ohio State University.
- Yeung, H.W. 2005. Rethinking relational economic geography. *Transactions of the Institute of British Geographers* 30: 37–51.

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