

Applied Research Paper

In Favor of Farm to Fork:

An Assessment of the Local Food System in Metropolitan Atlanta

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Abstract

Addressing the issues and complexities of the food system at large and local food systems specifically requires an inherently comprehensive point of view and approach. As such, decision makers interested in supporting and promoting local food systems must first understand the fundamental supply chain relationships between food production, market demands, and supporting infrastructure in order to develop effective policies, plans, and programs. Unfortunately, readily available information related to food systems in a localized context is often limited and disjointed. These gaps in information make it particularly difficult for planners and policymakers to both qualify and quantify the existing conditions of a local food system and establish meaningful and measurable future goals. Thus, the objective of this research is to identify these information gaps and to assess the local food system in Metropolitan Atlanta region, and to determine the viability of establishing a more robust local food system in the metropolitan region of Atlanta. This report focuses on the conditions and characteristics of supply chain relationships in the region's local food system and explores the region's existing agricultural capacity, logistical support, and market dynamics that are shaping its future. Based on these observations, barriers and opportunities to expanding the region's local food system will be identified and strategic recommendations for decision makers made.

Table of Contents

Abstract	2
Introduction.....	6
Literature Review.....	8
Reconnecting Planning to the Food System.....	8
Understanding the Food System at Large.....	10
Progressing Towards Local Food Systems	12
Defining Local Food Concepts & Characteristics.....	13
Examining Local Food System Challenges.....	15
Research Methodology	20
Purpose.....	20
Approach	20
Limitations.....	22
Production Capacity Assessment.....	24
Agricultural Operations	24
Available Operational Assets.....	24
Sales and Profitability.....	27
Scales of Operations.....	29
Food Production	32
Food Commodities.....	32
Food Varieties Grown.....	35
Local Food Operations	37

Infrastructure Inventory	40
Local Food Suppliers.....	40
Supply Chain Outlets.....	40
Direct Marketing Outlets.....	41
Intermediated Marketing Outlets.....	43
Supply Chain Services.....	46
Market Potential Assessment.....	47
Consumer Dietary Needs	47
Consumption Trends.....	47
Available Food Supply.....	49
Purchasing Power.....	51
Food Expenditures.....	51
Consumer Preference.....	53
Wholesale Demand.....	54
Available Food Outlets.....	55
Discussion.....	57
Key Findings.....	57
Production Capacity.....	57
Market Potential.....	59
Overarching Issues.....	61
Recommendations.....	64
Establish a Regional Food Policy Council	64
Practice Food System Planning	65

Incentivize Local Food Support.....	66
Forge Stronger Regional Partnerships	67
Facilitate Supply Chain Networks & Connectivity	67
Provide Meaningful Consumer Education	68
Conduct Future Research & Analysis	69
Conclusion	71
References	72
Appendix A: Producer Profile.....	83
Appendix B: Distributor Profile	86

Introduction

Food systems are a significant component of urban systems and an important concern for planners. In the last decade, decision makers across the United States have increased their focus on food system planning due to the rise of the local food movement, which has garnered support beyond grassroots advocacy to include private sector buy in and public policy attention. Conceptually, local food systems have the capacity to positively impact the public's health, safety, and welfare by addressing issues ranging from improving access to healthy foods to spurring economic development.

However, there are often significant gaps between the assumed benefits of food system planning efforts and the development of legitimate solutions that bear desired outcomes. Failure to consider the complexities of food system dynamics, components, and logistics can pose critical barriers to realizing food system planning goals. As such, food system planning must expand its scope to better understand the influences of food systems in theory, the actual nuts and bolts that sustain them, and the practical application of resources to support them.

Addressing the issues and complexities of the food system at large and local food systems specifically requires an inherently comprehensive point of view and approach. As such, decision makers interested in supporting and promoting local food systems must first understand the fundamental supply chain relationships between food production, market demands, and supporting infrastructure in order to develop effective policies, plans, and programs. Unfortunately, readily available information related to food systems in a localized context is often limited and disjointed. These gaps in

information make it particularly difficult for planners and policymakers to both qualify and quantify the existing conditions of a local food system and establish meaningful and measurable future goals.

Thus, the objective of this research is to identify these information gaps, assess the current state of the local food system in the metropolitan Atlanta region and determine the viability of establishing a more robust local food system in the region. As such, this report focuses on the conditions and characteristics of supply chain relationships in the region's local food system and explores the region's existing agricultural capacity, logistical support, and market dynamics that are shaping its future. Based on these observations, barriers and opportunities to expanding the region's local food system will be identified and inform strategic recommendations for decision makers.

Literature Review

Reconnecting Planning to the Food System

Food is essential to human existence. As such, it is critical to understand that society's relationship to food relies on a very complex food system. The food system is broadly defined to include the foundations for food production, the social aspects of consumption, and relevant government and other policies, as well as the actual growing, processing, and distributing of substances that result in foods that people consume (Gillespie & Gillespie, 2000). As planners we are already in tune with an urban systems perspective, therefore we must view the food system as a significant component in our comprehensive observation of the urban realm.

Historically, consideration of food systems was integral to planning, as seen in the Garden City and City Beautiful movements; yet almost a century later, Pothukuchi and Kaufman aptly described the food system as a stranger in the planning field (Pothukuchi & Kaufman, 2000). Since the industrialization of the American economy, the food system increasingly has been overlooked by planning for several reasons. Generally, the production of food is considered a rural rather than urban issue. Quintessentially urban issues like housing, job creation, transportation, and pollution are seemingly far removed from the agricultural activities more commonly associated with rural culture. Meanwhile, advances in technology cheaply and efficiently deliver an abundant food supply to urban areas and amplified this sense of disconnection. As a result, access to food is often taken for granted. Supermarkets, restaurants, and even emergency food sources like food banks typically abound in urban areas. This offers a sense of security and perpetuates the idea that the food system is not a significant issue

of concern. The misconception that planners need not focus on the food system as long as rural policy maintains a constant supply of food was born from this disconnect over time.

More recently, planners have come to understand that the food system is very much an urban issue as it affects the economy, environment, and public health of urban communities. The food system is a significant sector of the national economy. It accounts for nearly 13 percent of the gross national product and employs 17 percent of the labor force (American Planning Association, 2007). It has additional impacts on local economies as households spend between 10 to 40 percent of their income on food purchases (Kaufman & Bailkey, 2000). However, the actual production of food often incurs severe environmental impacts, as aggressive farming techniques increase energy consumption, pollution, waste, and loss of biodiversity. The environmental implications of food production are compounded further by the widespread loss of farmland as traditionally agricultural land uses at the urban fringe are converted to accommodate sprawling development. Meanwhile, despite a seemingly abundant availability of food, issues associated with access to healthy food options are a growing concern in context to the existing food systems that support urban areas.

In the past decade heightened awareness associated with the impacts of the food system has initiated growing interest within the planning community. According to the American Planning Association, the following food system issues and focus areas have emerged in the planning sector:

- Land demand for food system activities,
- Public health implications of hunger and obesity,

- Local economic impacts of food systems,
- Extensive energy use in food system activities,
- Environmental impacts of agricultural techniques,
- Access to healthy foods, and
- General, holistic benefits associated with the local food movement

Public health interests, rise in food activism and awareness, and increasing energy and food costs seem to be the most prominent issues of concern, as the majority of planning research and literature reviewed related to these topics. However, despite increased attention on the comprehensive impacts of how and what people are eating, in depth focus on the logistics of conveying food from producers to consumers is limited within the planning community, particularly in context to local food systems. In response to this gap, this literature review provides an overview of food production and market dynamics that shape the food system at large, introduces corresponding local food system concepts and defining characteristics, and explores key drivers and trends that are advancing the local food movement.

Understanding the Food System at Large

Historically, agriculture and the family farm served as the backbone of American society. It is a traditional, uniquely American identity that is often romanticized. However, these nostalgic notions of agriculture are far removed from present day realities. The industrialization of the American economy created a new American identity, which was also reflected in the agricultural sector. Farming too became more industrialized, as technological innovations were applied to agricultural production efficiencies. By World War II, ongoing advancements in the agricultural sector alleviated

many traditionally labor-intensive farming techniques, while simultaneously providing ample food supply to the United States' growing urban populations. However, by the 1980s the transition to a more global economy created another paradigm shift for American farmers. Agricultural production became more focused on producing commodities rather than food.

To remain economically viable, the practice of agriculture, in the traditional sense, was essentially replaced by industrial agriculture, which is now commonly referred to as conventional agriculture. Efficiency is the new norm, and it dominates American agriculture. The pressure for higher production yields relies on technology, agronomic manipulation, and homogenized crops on large farms. This emphasizes food as a commodity product, with more machines, more production inputs, and more land committed to fewer agricultural products and operated by fewer farmers.

In this new market, the production of food is no longer considered mere farming, but an industrial machine known as agribusiness. Unfortunately, this efficiency comes with significant external costs. Conventional agricultural techniques abuse natural resources and pose significant environmental threats. Limited crop diversity and the corresponding abuse of natural resources is a root cause of environmental degradation connected to conventional agriculture. But these environmental impacts are often overlooked or ignored because the commodity market and its supporting operational input market are extremely profitable (O'Kane, 2012).

Highly efficient operations are required to meet the demands for bigger, faster, and cheaper production. This makes agriculture a very competitive market, one where a traditional farmer struggles to compete. The rise of industrialized agriculture is

significantly correlated to the decline of the traditional American farm. Many farmers have been forced to adopt industrial agriculture to compete and survive. This competition is most evident when observing the change in the size and scale of operating farms and the face of the farmers who cultivate them. Industrial agriculture created a shift from small family farms to fewer and larger farming operations. Many of these are still family owned and operated, but there is also a significant transition to centralized corporate ownership in food production (Thompson, 2001; O'Kane, 2012).

As agribusiness becomes more globalized, economic interest and power controlling the food system becomes more concentrated. Transnational companies with diverse food system interests wield control of the global food supply chain and influence the world market, dictating anything from what commercial farmers are producing to where the brand name food consumers purchase is sourced (O'Kane, 2012). This is a byproduct of vertical integration within the food system, where multiple sectors like production, processing, and distribution, are controlled by single corporate entities. The disproportionate economics of concentrated ownership is yet another example of the difficulty individual farmers face to stay competitive in the food system.

Progressing Towards Local Food Systems

In reaction to the vast disconnect between farm and fork, interest in fostering more alternatives to the conventional food system has risen. Public concern about food quality, safety, security, access, and costs is growing. As a result, communities across the country are embracing “buy local” campaigns, organics, expansion of farmers’ markets, and other initiatives. The momentum of these movements is staggering and suggests a significant paradigm shift from agribusiness as usual. As mentioned before,

planners are responding to issues related to the conventional food system like diet-related public health issues, food supply security and access, and the environmental impacts associated with industrialized and globalized food system methods. However, for the purpose of this research, we are most interested in how this growing support of local and regional food systems as an alternative to the conventional food system considers and addresses the logistics and infrastructure needed in the production, processing, and distribution of food.

Defining Local Food Concepts & Characteristics

The concept of local food systems has evolved primarily from influential movements that focus on ecological issues, food access and security, slow food (in contrast to “fast” or overly processed food products), and local (as in locally produced and consumed) food. Kloppenburg, Hendrickson and Stevenson (1996) introduced their foodshed theory as a philosophical approach to forming truly alternative food systems. Their concept recommends an incremental withdrawal from the conventional food system and draws attention to connections within a food system.

The term local is often used interchangeably with regional or community when describing common alternatives to the conventional food systems. While there may be nuances to each, their collective emphasis on proximity, self-reliance, and relationships is what distinguishes them from the conventional food system (Cornell University, 2010). However, no generally accepted definition of local food exists.

Probably the most useful definition of a community food system was set forth by researchers at Cornell University. Emphasizing the relationships between all components of the food system, they define a community food system as a food system

in which food production, processing, distribution, and consumption are integrated to enhance the environmental, economic, social, and nutritional health of a particular place.

At the same time, the most official definition was adopted by the U.S. Congress in the 2008 Food, Conservation, and Energy Act which states “locally or regionally produced agricultural products” come from within a distance less than 400 miles from its origin, or within the state in which it is produced (Martinez, et al., 2010). The current geographical ambiguity associated with local food can be controversial as the distinction of local insinuates a particular level of integrity expected within specific limits. Recently, the concept of flexible localism has gained traction due to the focus on process-based characteristics as a means of defining local food, such as how food is grown, who grew the food, and how directly food is conveyed from the producer to the consumer (Kloppenborg, Hendrickson, & Stevenson, 1996).

Meeting the dietary needs of consumers from within a specified distance of a local food system is a prominent goal for many local food advocates. A local food system has the potential to significantly contribute to the local food supply, establish more localized control and economic benefit, and provide better food security and access. Specifying boundaries provide improved accuracy when assessing a local food system’s ability to meet the population’s needs (demand), identify production potential and capacity (supply), and the corresponding systems of conveyance (infrastructure).

All these benefits can arguably be realized as a complement to the conventional food system. However, creating a level of self-sufficiency will rely on how successful the relationship of production structures and distribution to consumer proves to be. Thus,

the best measure of the benefits of a local food system is its ultimate economic success. While there is evidence that local food systems are becoming more economically viable, they are currently operating as niche markets. As a result, significant expansion is necessary to realize local food systems as significant economic forces with the ability to compete among existing conventional food system dynamics.

Examining Local Food System Challenges

While the momentum and support of local food systems are gaining significant traction, there are certainly constraints and challenges to be considered. A fair amount of research focuses on the importance of balanced integration, the magnitude of system changes necessary, and the need for realistic expectations concerning the potential impact of expanding local food systems and providing consumers with an alternative to conventional food systems.

To begin, the perception of local as the opposite of global is misleading. Generally opportunities are available to mitigate some unfavorable impacts and outcomes associated with the conventional food system through the integration of more local food systems. But the claim that local is inherently better than global, is unfounded at this time and requires more research (Hinrichs, 2003). Hinrichs and Allen suggest that such opinions run the risk of polarizing participants of the food system at large. They warn the tone may be interpreted as oppositional, and the alternative stance loses its intention and integrity if hostility is projected toward the conventional system (Allen, Fitzsimmons, Goodman, & Warner, 2003; Hinrichs, 2003; Edwards-Jones, et al., 2008). Realistically, any type of alternative food system will exist in tandem with the conventional food system as a hybridized form in the food system in whole.

Mount describes a hybridized food system as the “new food economy” (Mount, 2012). The author acknowledges the potential challenges of establishing a balanced coexistence, but expresses its necessity for successful alternative food systems to emerge. Considering the overarching concerns that the definitive goals and principles associated with local food systems will be compromised or diluted by a hybrid approach, Mount suggests maintaining the producer/consumer relationship, direct exchange of goods, social and environmental goals, and a desired shift in agricultural methods and scales of operation to ensure successful integration (Mount, 2012; Jarosz, 2008).

The conventional food system is already adopting some components of the local food system to capture a share of its market demands. But the proximity, direct exchange, enhanced relationships, and assumed authenticity associated with local food systems is unique and irreplaceable (Mount, 2012). The ability to maintain this identity essentially creates two competitive brands for consumers to choose from. However, local food systems must scale up to truly compete with the strongest characteristics of the conventional food system: affordability, convenience, and accessible variety.

Competitive scaling up or expansion of any local food system will require a significant shift from small farms and niche markets to successfully accommodate more varied scales of production and market outlets. Balancing factors like labor, volume, processing, conveyance, and market diversity pose substantial challenges. Undoubtedly, producers will assume the most risk in these types of transitions (Mount, 2012; Jarosz, 2008).

Existing agricultural infrastructure is typically geared towards commodities and livestock, while support systems to accommodate locally produced foods are not as

commonly available. Many local producers both work harder to maintain the principles of an alternative food system and are subject to significant greater financial risks. These local producers often count on non-agricultural income streams to make a living, which in turn makes it harder for them to transition into the full-time work needed to scale up operations.

The flux of financial incentives is particularly challenging for mid-sized and larger operations who are too big to survive in a niche market, but too small to compete with comparable conventional producers. While there are opportunities to capture more income from local food sales, shorter supply chains, and internal vertical integration, participating in the local food system does not necessarily result in income advantages for producers. Mount suggests producers may benefit by following consumer behavior patterns (Mount, 2012).

Most consumers that support local food systems also patron conventional food supply sources. This reiterates the reality that alternative food systems will exist in a hybridized format with conventional food systems (Hinrichs, 2000). Producers should mimic consumer behavior, and look to conventional markets eager to get in on the demand for local, and count them as customers.

Mount researched consumer behavior to determine how local food systems are valued. The symbolic nature of direct exchange creates an enhanced consumer experience for the consumer and establishes a sense of trust. The foundations of trust between consumer and producer were also associated with distrust of the conventional system, assumed safety, and nostalgia for ideals warmly associated with the small,

family farm (Mount, 2012). However, character and experience are not viable foundations for producers to base significant expansion.

Producers require more stability to reliably transition operations and expand local food systems that competitively provide affordable, convenient, and accessible variety of food products. This creates an identity crisis of sorts for local food systems, as scaling up may compromise the experience for consumers. The intangible qualities of a local food system are paramount to success. A shift in participatory relationship could potentially violate the experiential dynamic (Mount, 2012; Thompson, 2001).

The demand for alternative food systems and community food relationships is significant and growing. Urbanized areas are particularly supportive of local food systems, which is an ideal arrangement because urbanized influenced agriculture contributes significantly to overall food production and supply (Barnard & Lucier, 1998). The consumers that currently support local food systems are often categorized as elite (Hinrichs, 2000; Jarosz, 2008). A viable market will require a broader spectrum of consumers to incite growth. However, alternative food systems have to be competitive to appeal to a broader purchasing power base. Ultimately changing the system is not as simple as creating an environment for producers to convey to consumers. The complexities of inciting real change pose significant challenges.

One concern expressed throughout the literature review is the perception of local food systems as a silver bullet for a variety of societal and global issues. While the theories and principles promote grand and ambitious goals, the benefits of a local food system are likely best realized in a community-focused scale. Thus, local food systems are capable of instigating significant change in a local sense, but will not necessarily

tackle the larger societal, environmental, or economic issues associated with the conventional food system in a global sense. Local food systems certainly provide an altruistic option for consumers, but expectations that consumers will fully replace or abandon the conventional food system are unrealistic. In a globalized society and economy, an unavoidable reality is the food system is vast and complex, and a complete overhaul is simply not feasible.

Research Methodology

Purpose

The intention of this research is to inform decision makers interested in the local food system in Metro Atlanta. A current state analysis was conducted to quantify and qualify the existing conditions of the region's local food system in context to the supply chain relationships that ultimately get locally produced food from farm to fork. The assessment focused specifically on determining the production capacity and market potential of the region's local food system and developing a corresponding infrastructure inventory that captures the system's connectivity and logistical support. Through this assessment, the research identified key challenges and opportunities the Atlanta region faces in context to the current state and potential future state of the local food system.

Approach

The analytical approach this research utilized was inspired by the "County Snapshot Methodology" established by the Appalachian Sustainable Agriculture Project (ASAP). ASAP's methodology employs county-level food system information to provide valuable context that assists stakeholders in local food system planning. The methodology identifies data that directly relates to local food system development, is readily available to the public, comes from reliable, credible sources, and informs the social, economic, and environmental responsibilities of the local food system. The process focuses on quantifying the production, retail infrastructure, and consumption and health components of the local food system as a foundation for stakeholders to understand the unique dynamics of their respective food systems. Thus, using the

ASAP methodology as a baseline framework, this assessment analyzed the region's production capacity, market potential, and infrastructure support as follows.

The assessment focused first on the region's agricultural production capacity at large compared to local food production. Based on available data from the 2012 and 2007 USDA Census of Agriculture, the assessment observed the region's agricultural operations and available resources, appraised the sales and profitability of those operations, and evaluated their characteristics in context to scales of operation. From there, the assessment utilized data from the Georgia Extension Farm Gate Value report for 2012 as a cross reference to analyze operations involved in food production and determine the volume and variety of food products produced in the region. The assessment also utilized the USDA Census of Agriculture data to determine the proportion of farms in region engaged in local food production and sales and compare how the region measured up against local food trends at the state and national level.

An infrastructure inventory was compiled in an attempt to capture the logistical components that connect the producer to the consumer within the local food system. Unfortunately, quantitative infrastructure data was limited. However, based on available data sourced from the USDA Census of Agriculture, baseline estimates concerning local food suppliers and local food supply chain outlets were evaluated and compared to findings from similar local food system studies and guides that provided information specific to the Atlanta region. To offer additional qualitative insight to the current state of the region's local food system, the assessment also includes stakeholder profiles highlighting some of the nuanced dynamics associated with the production and distribution focus areas outlined above. These profiles align local food system

participants with each of the focus areas in context to their specific roles and experiences as active producers and distributors in the Metro Atlanta region.

Finally, in order to determine the region's capacity for supporting the local food system, this research estimated market potential by assessing consumer dietary needs and purchasing power in the region. Findings from USDA research pertaining to the average dietary intake of consumers and per capita availability of specific food products were utilized to estimate consumption trends and necessary local food supply in the region. Analysis of the purchasing power of consumers in the region was based on food expenditure data gathered from Bureau of Labor Statistics reports and information gathered from consumer preference studies, including consideration of customers representing wholesale demand. To complete the market potential assessment, data from the USDA Census of Agriculture was used to compare the current availability of conventional and local food system marketing outlets.

Limitations

Because this assessment relied heavily on county level census data to analyze the study area, it is worth noting that there were limitations in the available census data that correlate the characteristics of food producing operations and operators in the region with those that are specifically engaged in local food system production and marketing. Further, the available county level data did not convey the full scope or nuances of local food activities in relation to both direct-to-consumer and intermediated marketing channels or correlate the connectivity of production to supporting infrastructure and market demand.

As such, a combination of census and survey data from the Bureau of Labor Statistics and USDA was compared to supplemental information gathered from other reputable research organizations. Existing conditions were further qualified through information collected from prominent local food system stakeholders, who as active participants in the Metro Atlanta local food scene, provided more nuanced insights to the challenges consumers, producers, and distributors are facing today. In short, there are gaps in the research's ability to fully quantify and qualify the current conditions of the region's local food system. However, despite these limitations, the assessment was able to feasibly infer significant indicators as to whether the region exhibits viable opportunities to expand the local food system.

Production Capacity Assessment

This research generated a snapshot of agricultural activities in Metropolitan Atlanta to show the existing production capacity for food in the region. The methodology relied on high-level quantitative data from USDA census surveys and CAES Farm Gate Value reports to establish a baseline understanding of the conditions that impact the region's food production. To complement the quantitative assessment of local food operations in the region, the producer's perspective on operating a local food farm in region is also considered to provide more qualitative insight to their experience.

Agricultural Operations

To determine the region's production capacity for local food products, this research assesses activities of existing agricultural operations at large. The availability of operational resources including farms, farmland, and operators, the economic value of those agricultural enterprises, and their respective scales of operations were compared to establish a baseline for analyzing how existing agricultural operations may be leveraged to support local food production and supply chains in the region.

Available Operational Assets.

Active farming operations and available farmland are two of the most fundamental indicators of agricultural capacity. According to the 2012 USDA Census of Agriculture there are more 7,000 farms in the Metropolitan Atlanta region consisting of over 750,000 acres of farmland. Analysis of census data shows that the metropolitan region lost 16 percent of its farms between 2007 and 2012. Loss of farming operations is a consistent trend at the state and national level, but the region's proportional loss was notably higher than Georgia overall and significantly higher than the United States

as a whole. Similarly, the census data reveals that the region lost over 100,000 acres of farmland. This aligns with state and national trends, which both reflect losses in farmland, but again the region's proportional loss was significantly higher. Table 1 compares the proportional loss of farms and farmlands reported in 2007 and 2012 at the regional, state, and national level. Generally, loss of farming operations and farmland in the region is concerning as these relatively finite resources are essential to providing and potentially expanding the region's production capacity to supply locally grown food to local consumers.

Table 1: Comparison of Farms, Farmland, and Farmers in the Region, Georgia, and the United States between 2007 and 2012

	<i>Number of Farms</i>			
	<i>2007</i>	<i>2012</i>	<i>Net Change</i>	<i>% of Change</i>
Region	8,518	7,188	(1,330)	-16%
Georgia	47,846	42,257	(5,589)	-12%
United States	2,204,792	2,109,303	(95,489)	-4%

	<i>Acres of Farmland</i>			
	<i>2007</i>	<i>2012</i>	<i>Net Change</i>	<i>% of Change</i>
Region	871,259	761,225	(110,034)	-13%
Georgia	10,150,539	9,620,836	(529,703)	-5%
United States	922,095,840	914,527,657	(7,568,183)	-1%

	<i>Number of Farmers</i>			
	<i>2007</i>	<i>2012</i>	<i>Net Change</i>	<i>% of Change</i>
Region	12,788	10,893	(1,895)	-15%
Georgia	69,060	61,859	(7,201)	-10%
United States	3,281,534	3,180,074	(101,460)	-3%

Source: 2007 and 2012 U.S. Censuses of Agriculture

Much like the availability of farmland, the number of farmers dedicated to producing food products is essential to ensuring the region can provide an adequate local food supply and meet market demands. There are nearly 11,000 farmers in the

region according to the 2012 Census of Agriculture. This reflects a 15 percent loss in the number of farmers between 2007 and 2012, which Table 1 shows is higher than the reported losses of operators in the state and across the nation. However, among the principal operator characteristics reported in 2012, 81 percent of the farmers in the region have been active for ten years or more on their current farm. This particular statistic provides insight into the stability of farming operations in the region, based on the assumption that these operators are vested in their farms and have successfully managed some level of long-term sustainability.

A contributing factor to the declining number of farmers in the agricultural sector is due to its aging labor force, which is significantly older than workers in other industry sectors. According to 2012 census data, the average age of principal operators in the region (60.3 years old) reflects the state (57.8 years old) and national (56.3 years old) trends of an older workforce. Considering that the majority of principal operators are nearing retirement age, securing the next generation of farmers needed to sustain farming operations is a concern.

Furthermore, while the older population of principal operators boasts an average of 23 years in experience as farmers, there are far fewer young and/or beginner farmers in the region to replace these operators as they age out of the agricultural labor force. Nearly 1,500 beginner farmers were reported in 2012 (those with less than ten years of experience as a farmer) and accounted for 21 percent of the region's principal operators, but only 4 percent of the region's principal operators were under the age of 35. This is significant because studies have shown that younger and/or beginner farmers are more likely to commit to local food farms, particularly at the scale of

operations that are most compatible with the dynamics of local food systems (Low & Vogel , 2011).

Sales and Profitability.

Understanding the basic economic viability of farming operations is critical to food system planning. Despite decreases in available farmland, number of farms, and active principal labor force in the region, the gross market value of agricultural sales grew. According to census data, the value of sales for farming operations in the region was reportedly \$760 million in 2012. As shown on Table 2, this reflects a 2 percent increase overall compared to the value of sales in 2007. The average value of sales per farm also exhibited an increase between 2007 and 2012, which was significantly higher at 25 percent, but this particular statistic can be misleading. In both census years the average value of sales does not reflect the fact that the majority of farms in the region reported much lower sales figures.

Table 2: Value of Sales and Net Cash Farm Income between 2007 and 2012

	<i>Value of Sales</i>			
	<i>2007</i>	<i>2012</i>	<i>Net Change</i>	<i>% of Change</i>
All Farms	\$ 744,418,000	\$ 760,193,000	\$ 15,775,000	2%
Average per Farm	\$ 93,331	\$ 116,485	\$ 23,154	25%

	<i>Net Cash Farm Income</i>			
	<i>2007</i>	<i>2012</i>	<i>Net Change</i>	<i>% of Change</i>
All Farms	\$ 114,825,000	\$ 121,862,000	\$ 7,037,000	6%
Average per Farm	\$ 12,702	\$ 16,390	\$ 3,688	29%

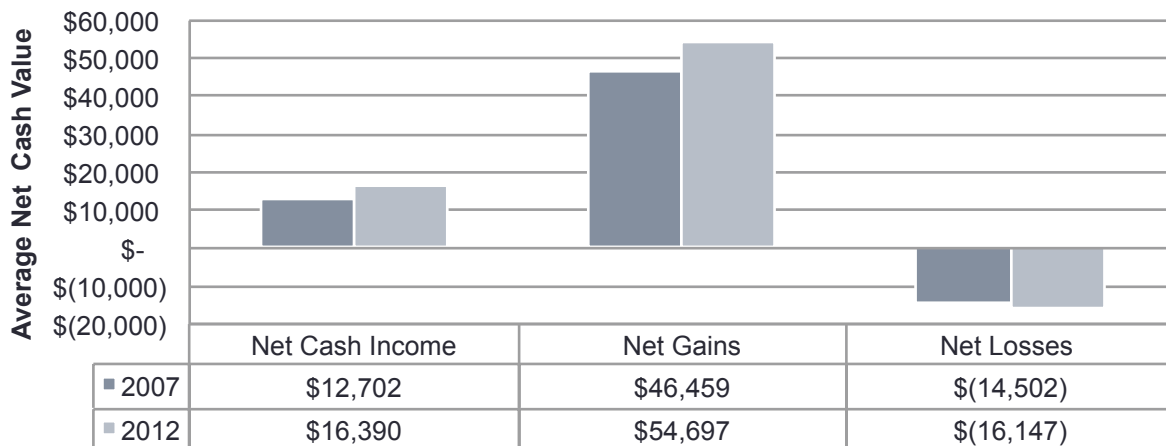
Source: 2007 and 2012 U.S. Censuses of Agriculture

Comparatively, the net cash income for farming operations in the region (which factors in operational expenses to calculate profit margins) was reportedly over \$121 million. Table 2 shows a 6 percent increase from the 2007 census data, which reported

less than \$115 million in net cash farm income. On average farms in the region netted about \$16,000 in 2012, which is a 29 percent increase from the 2007 average of less than \$13,000. However, the average net income of farms is not necessarily an accurate indicator of actual profit margins that most farming operations realize in the region.

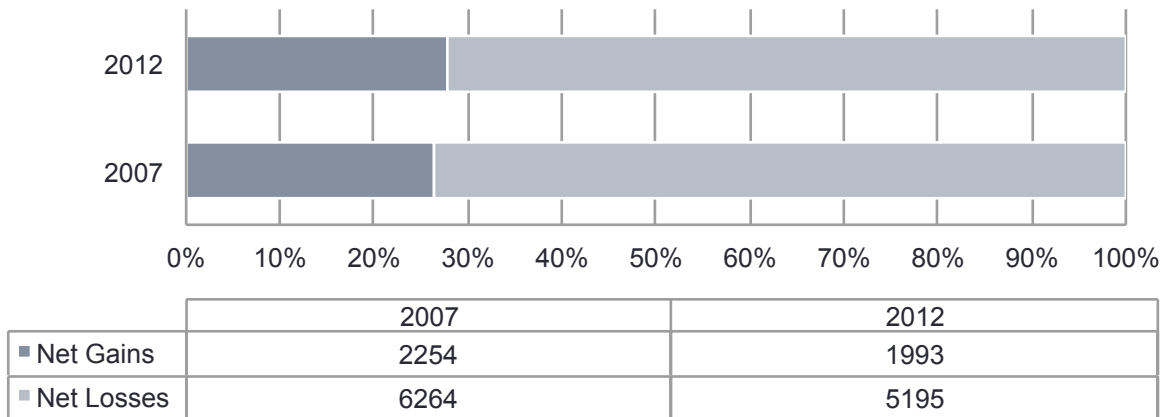
There is vast difference between average net cash income of all farms compared to the average net cash income of profitable farms as evident in Figure 1. This implies that there is a small number of farms in the region that earn significantly larger profits than the large number of farms in the region that net much smaller profit margins and/or net income losses. This pattern is consistent in the analysis of census data from both 2012 and 2007. Figure 2 illustrates the proportion of farms reporting net profits in 2012 and 2007 compared to the number of farms reporting net losses and shows the total number of farms reporting net losses in the region was nearly three times the number of farms reporting net gains in both census years.

Figure 1: Comparison of Average Net Cash Income to Average Cash Value of Farms Reporting Gains and Farms Reporting Losses between 2007 and 2012



Source: 2007 and 2012 U.S. Censuses of Agriculture

Figure 2: Proportion of Farms Reporting Net Gains and Net Losses between 2007 and 2012



Source: 2007 and 2012 U.S. Censuses of Agriculture

While this perspective of profitability does not paint a complete picture of the economic success of farming operations (as it does not account for incidents like tax breaks or off farm income), it does provide insight to the economic viability of operators relying on their farms as a primary source of income. The region’s proportional pattern of more farms facing economic hardship aligns with national trends. The pervasiveness of income instability only exacerbates the problem. This is particularly relevant to the local food movement, as farmers who operate local food farms are 30 percent more likely to list farming as their primary occupation (Low & Vogel , 2011; Low, et al., 2015). Thus the economic stability of their farming operations is critical to their livelihood.

Scales of Operations.

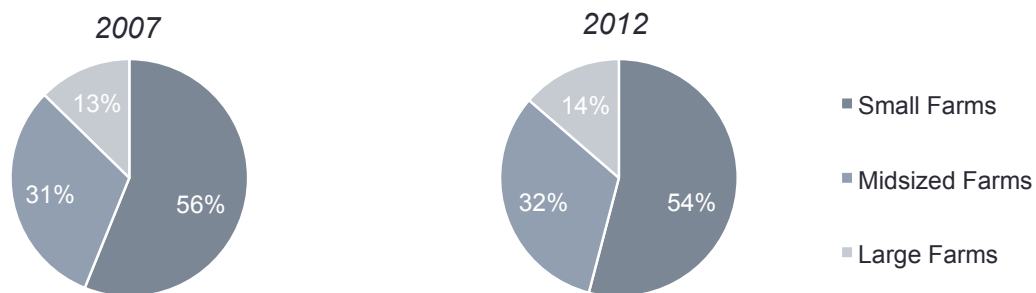
Small and midsized farms are the most common scales of operations in local food systems. The scales of operations are typically defined one of two ways: spatially in acreage and/or by market value of sales. For the purpose of this research both metrics were analyzed to determine the number of small and midsized farms in the

region. Table 3 and Figure 3 compares farm sizes by acreage and shows how the acreage of farming operations changed between 2007 and 2012. Table 4 and Figure 4 uses gross value of sales to compare the size of farms during the same time period.

For this research a small farm is spatially defined as 1-49 acres and mid-sized farming operations are described as 50-179 acres. All farms with 180 acres or more are defined as large. Based on those spatial parameters, small farms in the region accounted for 54 percent of all farming operations reported in the 2012 census. This shows a decline of 19 percent since the 2007 census. Mid-sized farms accounted for 32 percent of all farms in 2012, which is a 13 percent decrease compared to the 2007 data. Small to mid-sized farms were the most common farming operations by size in the 2007 and 2012 census data, and consistently accounted for around 85 percent of all farms in the region. However, small to mid-sized farms also accounted for 93 percent of the total farms that were lost between 2007 and 2012.

TABLE 3 & Figure 3: Scale of Operations by Size in Acres (2007 and 2012)

	2007	2012	Change	% of Change
Small Farms	4,781	3,887	(894)	67.22%
Mid-sized Farms	2,657	2,319	(338)	25%
Large Farms	1,080	982	(98)	7%
Total Farms	8,518	7,188	(1,330)	100%



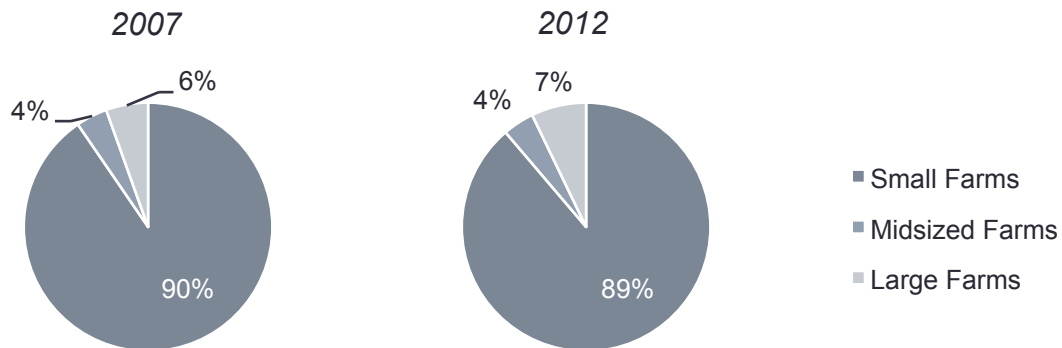
Note: Small Farms are defined as up to 49 acres, Mid-sized Farms are defined as 50 to 179 acres, and Large Farms are defined as 180 acres or more. Source: 2007 and 2012 U.S. Censuses of Agriculture

Comparatively, farm sizes based on market values are defined by their gross sales values. As such, a small farm is defined as an operation with less than \$50,000 in gross farm sales and a midsized farm is defined as an operation with \$50,000 to \$249,999 in gross farm sales. All farms with gross farm sales of \$250,000 or more are defined as large. Based on those values, small farms reported in 2012 accounted for 89 percent of all farms. The data shows a 17 percent decrease in the number of small farms by gross sales values between 2007 and 2012. Midsized farms accounted for 4 percent of all farms in 2012, which shows a 16 percent decrease in the number of farms compared to 2007 data. Conversely there was a 10 percent increase of large farming operations in the region between 2007 and 2012.

As mentioned before, the average value of sales is significantly higher than the actual value of sales that most farms reported to the census in 2007 and 2012. The vast majority of farms reported sales values of less than \$10,000 in 2007 (77 percent) and 2012 (72 percent). In fact, over half of the farms reported sales of less than \$2,500 for both census years. This observation reiterates that a very small number of farms account for the majority of gross market values of sales in the region. Further, this finding aligns with state and national trends in relation to the proportional distribution of sales across the agricultural sector. To that point, the 2012 census data shows that a mere 6 percent of all farms (those with sales values of \$500,000 or more) accounted for 93 percent of the region's total gross market value of sales, and only 4 percent of all farms in the region accounted for 89 percent of total gross market value of sales in 2007.

TABLE 4 & Figure 4: Scale of Operations by Size in Value of Sales (2007 and 2012)

	2007	2012	Change	% of Change
Small Farms	7,704	6,381	(1,323)	99%
Midsized Farms	348	293	(55)	4%
Large Farms	466	514	48	-4%
Total Farms	8,518	7,188	(1,330)	100%



Note: Small Farms are defined by value of sales less than \$50,000, Midsized Farms are defined by value of sales between \$50,000-\$249,999, and Large Farms are defined by value of sales of \$250,000 or more. Source: 2007 and 2012 Censuses of Agriculture

Food Production

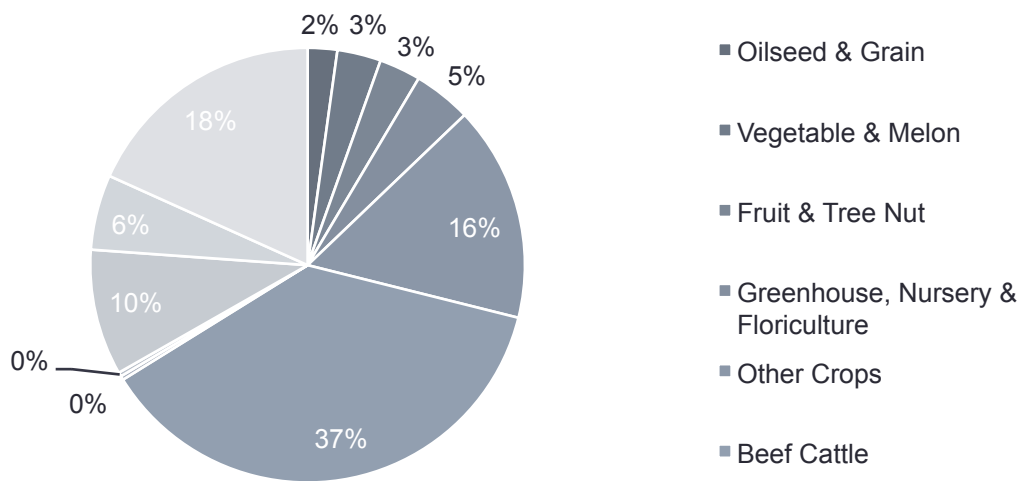
Fresh produce farms are often considered the backbone of local food systems, and according to USDA reports, nearly half of the farms that produce food products for local food systems are classified as fruit, nut, and vegetable farms (Low & Vogel , 2011; Martinez, et al., 2010). Thus overall food production in the Atlanta region was observed, but the primary focus of this research was to determine the potential volume, value, and variety of fresh produce that local food producers can grow.

Food Commodities.

Based on 2012 census data classifying farms according to the North American Industry Classification System (NAICS), about 80 percent of farming operations in the

region produce food products. However, over two thirds of those farms are classified as livestock producers. As evident in Figure 5 raising beef cattle is the leading classification and accounts for 36 percent of all farms in the region. The majority of farms that are producing crops are likely growing feed crops to support the region’s dominant livestock production. Reportedly 29 percent of farms are classified as operations that grow crops of any kind, and only 7 percent of all farms are classified as fruit, nut, and vegetable producers.

Figure 5: Farms per NAICS Classification (2012)



Note: NAICS=North American Industry Classification System. Source: 2012 U.S. Census of Agriculture

Table 6 shows that between 2007 and 2012 farming operations that grow fruit, nuts, and vegetables increased of 24 percent. This is particularly significant as state and national trends were substantially lower with only 2 percent growth in Georgia produce farms and a 2 percent loss in the United States (comparison of trends can be found in Table 7. There was also a slight uptick in the proportion of fruit, nut, and vegetable producers, which accounted for 7 percent of all farms in 2012, but less than 5 percent of

all farms in 2007. However, while the number of vegetable and melon producers increased by 70 percent between 2007 and 2012, fruit and tree nut producers decreased by 9 percent. Furthermore, despite comprehensive growth in production, the estimated market value of sales for fruit, nut, and vegetable producers decreased by 20 percent during the same time period. This differs significantly from state and national trends, which showed an increased value of sales of 9 and 28 percent respectively.

Table 6: Fruit & Vegetable Farms and Values of Sales (2007 and 2012)

	<i>Fruit & Vegetable Farms</i>			
	<i>2007</i>	<i>2012</i>	<i>Net Change</i>	<i>% of Change</i>
Vegetable & Melon	176	300	124	70%
Fruit & Tree Nut	246	224	(22)	-9%
Total Produce	422	524	102	24%

	<i>Fruit & Vegetable Value of Sales</i>			
	<i>2007</i>	<i>2012</i>	<i>Net Change</i>	<i>% of Change</i>
Vegetable & Melon	\$ 1,068,000	\$ 3,202,000	\$ 2,134,000	200%
Fruit & Tree Nut	\$ 3,605,000	\$ 537,000	\$ (3,068,000)	-85%
Total Produce	\$ 4,673,000	\$ 3,739,000	\$ (934,000)	-20%

Source: 2007 and 2012 U.S. Censuses of Agriculture

Table 7: Comparison of Fruit & Vegetable Farms and Values of Sales in the Region, Georgia, and United States between 2007 and 2012

	<i>Fruit & Vegetable Farms</i>			
	<i>2007</i>	<i>2012</i>	<i>Net Change</i>	<i>% of Change</i>
Region	422	524	102	24%
Georgia	4,743	4,818	75	2%
United States	181,790	178,004	(3,786)	-2%

	<i>Fruit & Vegetable Value of Sales</i>			
	<i>2007</i>	<i>2012</i>	<i>Net Change</i>	<i>% of Change</i>
Region	\$ 4,673,000	\$ 3,739,000	\$ (934,000)	-20%
Georgia	\$ 661,116,000	\$ 720,767,000	\$ 59,651,000	9%
United States	\$ 33,308,517,000	\$ 42,720,935,000	\$ 9,412,418,000	28%

Source: 2007 and 2012 U.S. Censuses of Agriculture

Unfortunately, census data at the county level does not directly correlate how many producers sell their food products through local marketing channels by commodity groups; however the general assumption is that most farms sell produce to conventional or mainstream wholesale markets. Regardless of this gap in available data, the number of fruit, nut, and vegetable farms in the region is typically a good indicator of the region's viability for adequately supplying locally grown food products to consumers.

Food Varieties Grown.

The volume and variety of fruits and vegetables produced in a region is also a good indicator of the potential supply and availability of consumer food options. According to data from the 2012 Georgia Farm Gate Value Report, 12 varieties of fruits and nuts and 29 varieties of vegetables (and melons) were grown in the counties that make up the Metropolitan Atlanta region. With reportedly over 3,500 acres of fresh produce commodities, roughly 80 percent of the region's produce crops were dedicated to fruits and nuts operations and 20 percent was dedicated to vegetable production (see Table 8 for exact values). Fruits and nuts accounted for 85 percent of the collective farm gate value for fresh produce commodities, while vegetables accounted for 15 percent. However, in terms of volume, fruit and nuts yields made up 98 percent of the estimated 182.8 million pounds of fresh produce grown in region.

Table 8: Estimated Fruit & Vegetable Production Yield, Value, and Volume (2012)

	<i>Volume in Acres</i>	<i>Farm Gate Value</i>	<i>Estimated Weight (lbs.)</i>
Fruit & Nuts	2,858	\$ 11,413,298	124,735,636
Vegetables & Melons	661	\$ 2,048,507	58,086,716
Total Produce	3,519	\$ 13,461,804	182,822,352

Source: 2012 Farm Gate Value Report, compiled and published by the University of Georgia, Center for Agribusiness & Economic Development

Fruit and nut producers harvested nearly 3,000 acres of farmland and yielded an estimated 124.7 million pounds of fresh produce. Of the reported 23 counties with fruit and nut operations, berries and pecans were grown in the most counties. However, peach producers accounted for over half of the farmland dedicated to fruit and nut operations and nearly half of the total farm gate value for all fruit and nut commodities. Vegetable producers harvested an estimated 2.2 million pounds of fresh produce. Of the reported 17 counties with vegetable growing operations, sweet corn and tomatoes were the most commonly grown crops in most counties and sweet corn producers accounted for the highest percentage of the total farmland and farm gate value for all vegetable commodities grown in the region (refer to Tables 9 and 10 for more details about specific crops).

Table 9: Estimated Fruit Production Yield, Value, and Volume (2012)

	Volume in Acres	Pounds per Acre	Farm Gate Value	Estimated Weight
Apples	19	1,150	\$ 198,450	21,850
Blackberries	49	43,801	\$ 429,326	2,146,249
Blueberries	188	70,915	\$ 1,093,189	13,332,020
Grapes	147	47,360	\$ 504,778	6,961,920
Figs	5	650	\$ 3,063	3,250
Muscadines	7	36,600	\$ 29,250	256,200
Nectarines	-	150	\$ 188	38
Pears	-	150	\$ 188	38
Plums	-	100	\$ 125	25
Peaches	1,457	46,500	\$ 5,799,608	67,750,500
Pecans	852	12,500	\$ 1,153,400	10,650,000
Strawberries	134	176,221	\$ 2,201,735	23,613,547
Total Fruit	2,858	-	\$ 11,413,298	124,735,636

Source: 2012 Farm Gate Value Report, compiled and published by the University of Georgia, Center for Agribusiness & Economic Development

Table 10: Estimated Vegetable Production Yield, Value, and Volume (2012)

	Volume in Acres	Yield* per Acre	Farm Gate Value	Estimated Weight
Banana Peppers	4	515	\$ 10,908	30,900
Bell Peppers	11	2,798	\$ 45,761	769,450
Broccoli	3	1,540	\$ 16,700	106,260
Cabbage	8	1,600	\$ 28,950	640,000
Cantaloupe	6	10,550	\$ 19,748	63,300
Carrots	2	19,350	\$ 107,811	1,857,600
Collards	46	2,240	\$ 100,210	2,576,000
Cucumbers	15	1,605	\$ 92,664	1,155,600
Eggplant	1	500	\$ 2,250	16,500
Hot Peppers	-	750	\$ 1,688	18,750
Potatoes	13	1,660	\$ 102,440	1,079,000
Kale	9	700	\$ 14,400	157,500
Lettuce	13	1,377	\$ 46,428	895,050
Mustard Greens	-	400	\$ 725	10,000
Okra	12	595	\$ 10,680	64,260
Onions	2	22,500	\$ 5,450	45,000
Pole Beans	6	430	\$ 24,500	77,400
Pumpkin	57	216,000	\$ 460,350	12,312,000
Snap Beans	4	225	\$ 5,695	27,000
Southern Peas	8	410	\$ 13,299	82,000
Spinach	5	320	\$ 4,420	40,000
Sweet Corn	293	1,790	\$ 377,977	22,027,740
Sweet Potatoes	4	575	\$ 16,450	126,500
Tomatoes	68	6,405	\$ 347,984	10,888,500
Turnip Greens	19	950	\$ 16,168	451,250
Watermelon	18	1,280	\$ 111,420	345,600
Winter Squash	2	50	\$ 1,455	4,000
Yellow Squash	22	2,175	\$ 40,018	1,914,000
Zucchini	10	1,375	\$ 21,960	305,556
Total Vegetables	661	-	\$ 2,048,507	58,086,716

**Yield/acre metrics vary from crop to crop, however the above calculations of estimated weight account for variation accordingly. Source: 2012 Farm Gate Value Report, compiled and published by the University of Georgia, Center for Agribusiness & Economic Development*

Local Food Operations

Local food producers are characterized in the USDA Census of Agriculture based on their survey response concerning direct to consumer marketing and/or sales.

Between 2007 and 2012 the region saw significant growth in the number direct to consumer farming operations and the corresponding value of direct sales. In fact the region's growth substantially outpaced state and national trends (see Table 11 for comparisons). The 2012 Census of Agriculture reported 499 local food farms in the Metropolitan Atlanta region that participate in direct to consumer marketing and/or sales. These farming operations make up 7 percent of all farms in the region for the 2012 census year. The number of local food producers in the region increased by 27 percent between 2007 and 2012 and accounted for over a third of the growth in direct to consumer operations in Georgia. As such, about 20 percent of the state's local food farms are located in the metro Atlanta region.

The corresponding market value of sales from local food producers accounted for less than 1 percent of all agricultural sales in the region in 2012 and 2007, which is comparable state and national trends (see figure 6). However, the region saw a 78 percent increase in direct sales values during the same time period. This was significantly higher than the national increase of only 8 percent in value of direct sales. According to USDA reports on local food trends, small farms are the most active types of operations engaged in direct marketing, but large farms participating in direct marketing have exhibited the most growth and are capturing a much larger proportion of overall direct sales (Low & Vogel , 2011; Tropp, 2014). On average, the estimated value of direct sales per farm in the region was about \$5,500 in 2012, which was a 40 percent increase from the average value of direct sales reported for 2007.

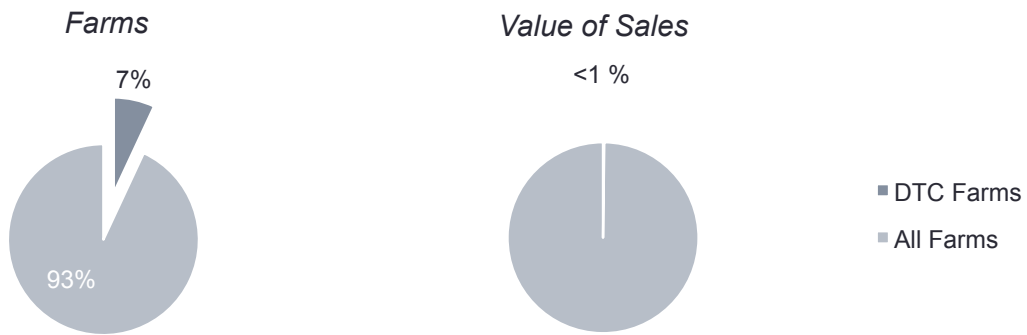
Table 11: Comparison of Direct-to-Consumer Operations in the Region, Georgia, and United States between 2007 and 2012

	Number of Direct to Consumer Farms			
	2007	2012	Net Change	% of Change
Region	394	499	105	27%
Georgia	1,890	2,177	287	15%
United States	136,817	144,530	7,713	6%

	Value of Direct to Consumer Sales			
	2007	2012	Net Change	% of Change
Region	\$ 1,590,000	\$ 2,829,000	\$ 1,239,000	78%
Georgia	\$ 13,146,000	\$ 13,197,000	\$ 51,000	0%
United States	\$ 1,211,000,000	\$ 1,310,000,000	\$ 99,000,000	8%

Source: 2007 and 2012 U.S. Censuses of Agriculture

Figure 6: Proportion of Direct to Consumer (DTC) Operations Compared to All Farms and Total Value of Sales (2012)



Source: 2007 and 2012 U.S. Censuses of Agriculture

Infrastructure Inventory

Focusing on logistical components that connect the producer to the consumer within a local food system, this research provides an infrastructure inventory of the key entities that contribute to the local food system supply chain and support local food system activities in the region. To complement the inventory, this research also highlighted a local food distributor to provide more qualitative insight into the dynamics and logistics of conveyance.

Local Food Suppliers

As stated in the previous results section, about 500 farms in the Metro Atlanta region were considered local food producers in the 2012 USDA Census of Agriculture. However, this figure may be misleading. Many active local food producers are very small operations, including hobbyists and community gardens, and may not be accounted for in the traditional agricultural census. Despite this possible gap in currently available data sources, one can assume that more local food producers are actively participating in the region's local food system than are captured by the traditional, large scale information gathering methodology of the USDA. For example, the Georgia Organics "Good Food Guide" lists about 60 community gardens that are within the Atlanta MSA counties, which are presumably contributing to the region's local food supply (Georgia Organics , 2015).

Supply Chain Outlets

Direct and intermediated marketing channels are the primary market arrangements found in local food system. Direct marketing (as in direct to consumer from the producer) accounts for a small but growing proportion of overall agricultural

sales. Typically, direct marketing includes farmers markets, roadside stands, on-farm stores, online sales, and community-supported agriculture (CSAs). Intermediated marketing channels indirectly supply local food products to the consumer via external distributors utilized by the producer. For the purpose of this research, the inventory of direct marketing outlets includes farmers markets and community supported agriculture (CSA) outlets¹. The inventory of intermediated marketing outlets focuses on the characteristics of direct to local wholesale customers and regional distributors.

The USDA Census of Agriculture collects data pertaining to the number of farming operations that engage in direct and intermediated marketing configurations associated with local food systems. The USDA Agricultural Marketing Service produces a Food Environment Atlas that provides corresponding quantitative data pertaining to the number of outlets present at the time of census and other USDA sponsored surveys. When available, the USDA data was utilized to establish the default baseline for inventory estimates of marketing outlets in this research. However, additional resources were cross-referenced to compare information related to marketing outlets.

Direct Marketing Outlets.

Direct marketing was reportedly the leading entrepreneurial activity among all agricultural producers according to the 2007 USDA Census of Agriculture (Martinez, et al., 2010; Tropp, 2014). While direct marketing is fast growing and relatively diverse, direct-to-consumer marketing depends heavily on customer preference and competes for a relatively small share of the consumer dollars spent on local food. Direct marketing

¹ Quantitative data concerning on farm, online, and roadside marketing outlets were especially difficult to corroborate and confirm. USDA data at the county-level is not available for these types of direct marketing outlets, and thus not included in this research.

is typically utilized by small farms, and is considered an appropriate market scale for beginner farmers looking for a point of entry into local food sales. Direct marketing yields higher sales margins, but due to the low volume of sales it is often hard for producers to sustainably scale up (Bauman, Shideler, Thilmany, Taylor, & Angelo, 2015).

A variety of direct marketing outlets provide alternative, on-farm revenue streams for local producers. These outlets include roadside stands, online sales, on-farm stores, and agritourism activities like you pick operations. Online sales and roadside markets provide the most autonomy, but are limited to the marketing prowess of the producer. These types of solo ventures reduce access to customers generated by more communal marketplaces, such as farmers markets, which are considered a good point of entry for farmers looking to develop a customer base.

The number of farmers markets across the United States has grown significantly in recent years (growth was generally more concentrated in urban areas). At farmers markets, producers can maintain high price points despite the potentially limited sales volume. Comparatively, community supported agriculture (CSAs) tend to have more stable profit margins for farmers because they provide consistent income and commitment from the customer. Of these direct marketing outlets, CSAs have the most potential to support sustainably scaling up farming operations (Bauman, Shideler, Thilmany, Taylor, & Angelo, 2015). Farmers markets and CSAs are the two marketing outlets most often considered the hallmark of local food systems.

According to data from the USDA Food Environment Atlas, there were 62 farmers markets in the counties that make up the study area in 2013. This is a

significant increase compared to the previously reported finding of only 4 farmers markets in the region in 2009. Presumably, the 62 farmers markets listed in the USDA local food directory website reflect the corresponding outlets reported in the Food Environment Atlas (U.S. Department of Agriculture Agricultural Marketing Services).

However, these figures are slightly inconsistent with other resources that were evaluated for this research. For example, according to the Georgia Organics “Good Food Guide” there are 67 farmers markets in the region (Georgia Organics , 2015). Similarly, the Atlanta Local Food Initiative (ALFI) conducted a regional study in 2012 that reported 45 farmers markets, which differs from the USDA census data from the same year that reported 49 farmers markets in the counties that were included in that particular study (Atlanta Local Food Initiative, 2012).

Comparatively, the USDA reported 83 community supported agriculture (CSA) operations in the region during the 2007 census in the Food Environment Atlas, which would account for about 20 percent of local food producers (2012 census information on CSA participation was not available). Meanwhile, Georgia Organics listed only 15 local farms (or 39 percent) with CSAs in their “Good Food Guide”, which is comparable to the ALFI reported 38 percent participation of local producers in CSAs in their 2012 study (Georgia Organics , 2015; Atlanta Local Food Initiative, 2012). However, there were only 14 CSAs listed statewide on the USDA local food directory website, 3 of which are located in the region (U.S. Department of Agriculture Agricultural Marketing Service).

Intermediated Marketing Outlets.

Intermediated marketing outlets that were considered for this research included direct to local wholesale customers and regional distributors. However, vetted

quantitative data to inform the infrastructure inventory in the area of intermediated marketing outlets was not readily available for analysis. Direct to wholesale customers include retailers, restaurants, and institutions, and are some of the most profitable and reliable market arrangements available to local food producers.

These arrangements are often characterized by strong client relationships and informal contracts. A fair amount of risk exists for the wholesale buyer of local produce who relies on fewer producers to deliver sufficient supply of food products, particularly while assuming higher costs (Bauman, Shideler, Thilmany, Taylor, & Angelo, 2015). It is very difficult to provide accurate estimates of the number of wholesale customers that work with local producers, particularly in a regional context without access to verified data at the county-level. However, while various customer surveys reporting consumer preferences for face-to-face interactions, the majority of local food sales (at least 60 percent) were through intermediated marketing channels (Low, et al., 2015).

Alternatively, producers may utilize regional distributors as third party entities to coordinate the marketing, processing, and distribution of their products. These entities often act as aggregators and brokers in the exchange of local food products between producers and wholesale customers. Information found in the Georgia Organics “Good Food Guide” listed 4 regional distributors in the Metro Atlanta region (Georgia Organics, 2015). Similarly, local aggregators with online outlets may serve both wholesale and conventional customers. According to the “Good Food Guide” there are 6 such online retailers that serve the metro area.

Value-based food supply chains are “strategic alliances between farmers or ranchers and other supply chain partners that deal in significant volumes of high quality,

differentiated food products and distribute rewards equitably across the chain” (Diamond, Tropp, Barham, Muldoon, & Kiraly, 2014). Value based food chains allow producers to scale up without losing all their marketing control. Producers retain more pricing control in the value based food chain model compared to conventional wholesale marketing arrangements. However, it must be reiterated that intermediated marketing channels are more conducive to larger producers because the customer base requires both large volumes of food products and consistent quality of goods (Bauman, Shideler, Thilmany, Taylor, & Angelo, 2015).

Alternatively, small and medium sized farms can gain access to intermediated market outlets through collective organizations commonly referred to as food hubs. Regional food hubs are a prominent example value based food chain models. A food hub is defined as “a business or organization that actively manages the aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers and to strengthen their ability to satisfy wholesale, retail and institutional demand” (Barham, Tropp, Enterline , Farbman, Fisk, & Kiraly, 2012). In these particular marketing arrangements, food hubs are central in the food supply chain between producers and customer and act as the facilitator for market transactions (Bauman, Shideler, Thilmany, Taylor, & Angelo, 2015).

Food hubs are growing in popularity across the United States. The USDA recently began promoting food hubs in support of their national local food campaigns and according to their data, there was only 1 food hub in the region in 2012, however the USDA online local food directory listed 5 food hubs in the region (U.S. Department of Agriculture Agricultural Marketing Service). The University of Georgia College of

Agricultural and Environmental Sciences released a report in 2012 based on a survey of food hub support in the state, and confirmed 2 active food hubs based in the metro region with the addition of approximately 6 food hubs in development and/or operating as scaled-down intermediary outlets (Beechuk, Gaskin, & Munden-Dixon , 2013).

Supply Chain Services.

A variety of supply chain services improve the logistics of a local food system. These entities include value added services (such as processing, packaging, and commercial kitchens), business services (which may assist with branding, active management, and brokerage), as well operational services (like cold storage and product transportation/delivery). The USDA provides project funding for over 230 supply chain businesses and services throughout the region, as shown in Table 12 (U.S. Department of Agriculture , 2015). These projects account for over 40 percent of the programs and initiatives supported by the USDA in the state of Georgia. While not as tangible as the supply chain services discussed above, the region is also teeming with organizations and agencies that are concerned with the local food system and provide significant support networks.

Table 12: USDA Funded Local Food Projects (2016)

<i>Classification</i>	<i>Programs</i>
Meat Processors	111
Farmers Markets	62
Food Hubs	3
Wholesale Markets	1
Green Schools	29
Community Gardens	0
Farm to School	24
Total Programs	230

Market Potential Assessment

In order to determine the region's aptitude for supporting a local food system, this research observed consumer behaviors of the region's population who will ultimately serve as the end customers in the transactions of getting food from farm to fork. Market potential was assessed through establishing a baseline estimate for consumer demand to determine how much of that demand could potentially be met by local food producers.

Consumer Dietary Needs

Focusing on the capacity of existing food producing operations to potentially contribute to the local food supply and meet the dietary needs of consumers within the region, this research utilized findings from USDA research pertaining to the average dietary intake of consumers and the per capita availability of specific food products. These reported consumption patterns were applied to the region's population to inform high level assumptions about the types of food that the population would typically eat by commodity group and estimates of how much food is needed to meet average dietary demands. Concentrating specifically on the potential demand for fruits and vegetables, the amount of food that is produced locally (as determined in the production capacity section of this report) was then compared to the expected availability of those food products and the estimated volume that would be consumed in the region.

Consumption Trends.

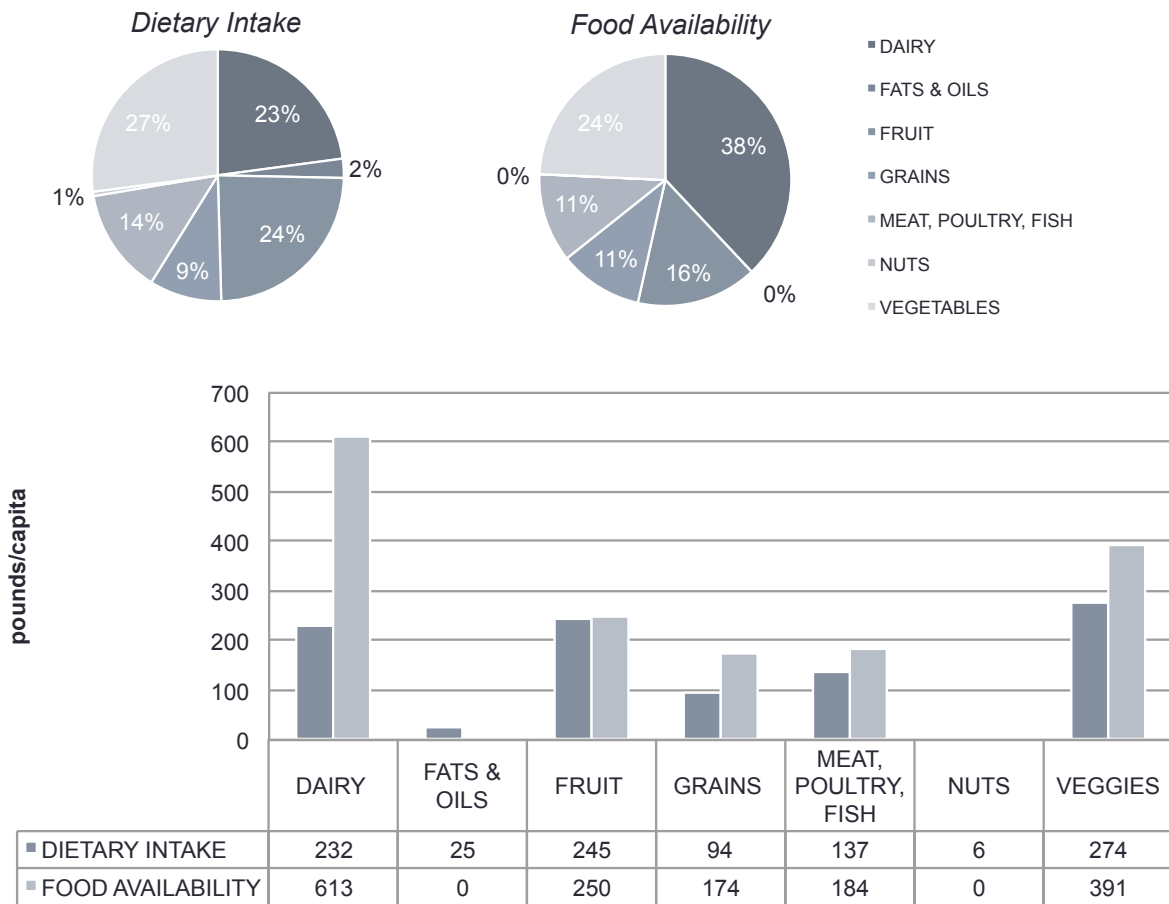
According to the USDA, the average American consumes about 2.8 pounds of food each day (Bowman, Martin, Carlson, Clemens, Lin, & Moshfegh, 2013). Figure 7 shows the average dietary intake of foods by commodity. Over half of consumer diets

consist of fruits and vegetables. However, the actual consumption of fruits and vegetables in the region may be lower according to the Center for Disease Control. According to a 2013 report, the median intake of fruits and vegetables per day of an adult in Georgia is less than 3 servings, which is on the low end of the recommended 2 to 5 servings per day (Centers for Disease Control and Prevention , 2013). While these translations of consumption behavior may vary, this research defaults to the USDA estimates to inform the potential volume of food that may be consumed in the study area.

As such, this research estimates that the region's current population would consume nearly 6 billion pounds of food annually, of which over 3 billion pounds would consist of fruits and vegetables². Similarly, the USDA reports the average per capita availability of specific food products. Based on 2012 data, about 1600 pounds of food was available per capita for consumers. This figure suggests that the food supply exceeds the overall dietary intake average of 1100 pounds of food per capita. Applying the average per capita availability of food products to the estimated current metro population, this research estimates over 9 billion pounds of food would be available for consumers in the region, with fruits and vegetables accounting for about 40 percent or over 3.5 billion pounds of the total available food.

² Current population reflects the estimated 2015 population of the Atlanta MSA based on the most up to date "Annual Estimates of the Resident Population" data released by the Census Bureau in March 2016.

Figure 7: Comparison of Per Capita Daily Dietary Intake and Food Availability by Commodity



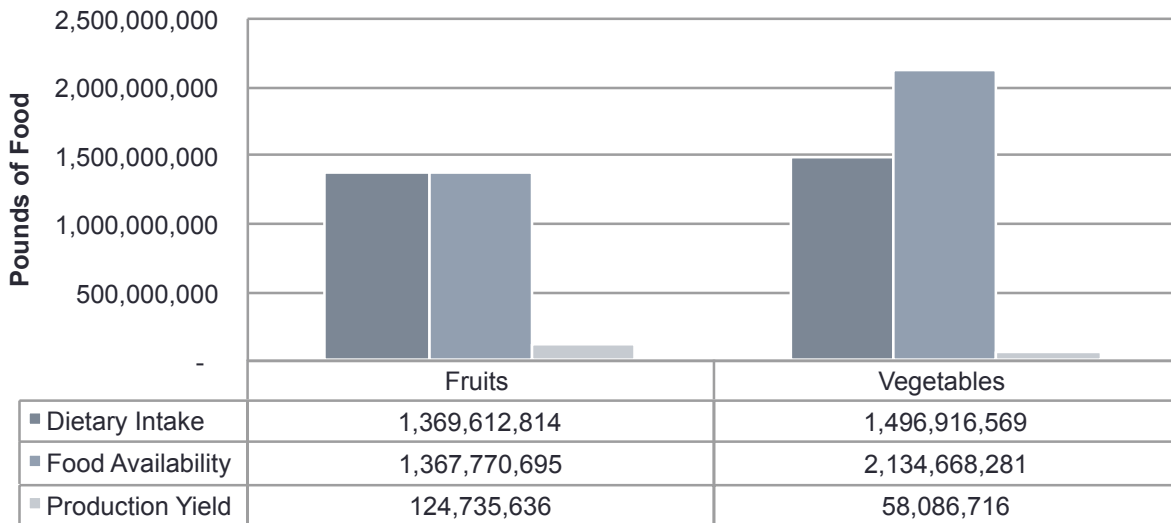
Source: "Retail Food Commodity Intake" produced by USDA Agricultural Marketing Service and "Food Availability (Per Capita) Data System" produced by the USDA Economic Research Service

Available Food Supply.

Utilizing the above estimates of consumer demand, this research analyzed how much of that demand could have potentially been met by food producing operations in the region. In Table 13 the average per capita dietary intake and expected availability of fruits and vegetables were applied to 2012 census population estimates for the Atlanta MSA and compared to the volume of fruits and vegetables produced in the region based on data from the 2012 Farm Gate Report.

Table 13: Comparison of Production Yield to Estimated Dietary Intake & Availability based on Atlanta MSA Population (2012)

	<i>Dietary Intake</i>	<i>Food Availability</i>	<i>Production Yield</i>
Fruits	1,369,612,814	1,367,770,695	124,735,636
Vegetables	1,496,916,569	2,134,668,281	58,086,716
Total Produce	2,866,529,384	3,502,438,976	182,822,352



Source: "Retail Food Commodity Intake" produced by USDA Agricultural Marketing Service and "Food Availability" produced by USDA Agricultural Marketing Service.

Based on this comparison, production yields of fruits and vegetables in the region did not come close to meeting estimated consumer demands. Production yields would have met only 9 percent of the dietary intake estimates of fruits and nuts and a mere 3 percent of vegetables. By commodity groups, similar results of 9 percent of the fruits and nuts and 4 percent of vegetables produced in the region could have met the expected availability needs. However, when production yields of specific fruit and vegetables crop were compared to expected availability of individual crop varieties, there were examples of surplus food production in the region. All other food production yields among fruit and vegetable crops showed shortages.

The calculations generated above established a baseline estimate of potential consumer demand and enabled an evaluation of how much of this demand could potentially be met by local food producers based on current production yields. There is clearly demand for food products that are actively being produced in the region. This correlation of estimated supply and demand assists in identifying gaps and thus opportunities for the local food system.

Purchasing Power

In addition to understanding what consumers are eating, this research analyzes how much they are spending on food and what types of market outlets are available to enable their food purchases. To determine this information, data pertaining to food expenditures in the Atlanta MSA was gathered from Bureau of Labor Statistics reports on consumer spending and compared to the estimated retail value of sales for food products produced in the region. Market trends pertaining to consumer preferences were also considered due to their influence on wholesale customers with substantial purchasing power and potential to significantly impact demand for local food products at a larger scale. With scale in mind, USDA census data was used to determine how many conventional food retail outlets are available in the metropolitan area and how the concentration of these outlets compare to common local food marketing outlets present in the region.

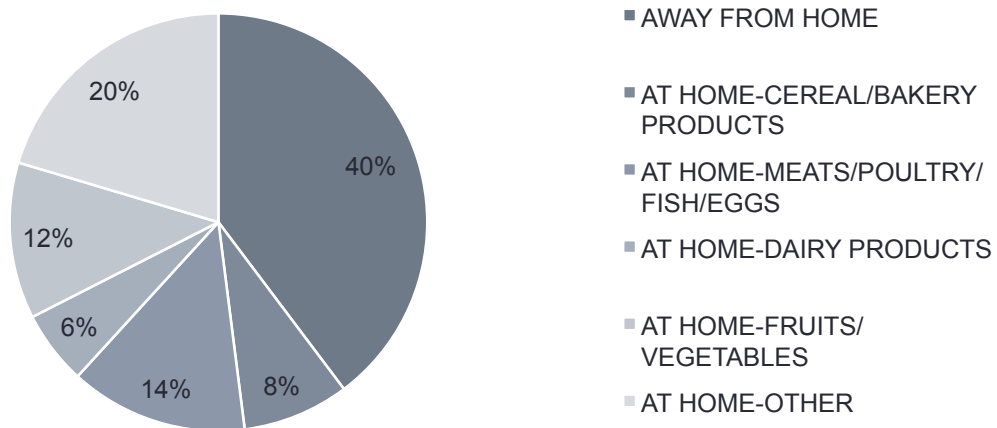
Food Expenditures.

According to the most recent Bureau of Labor Statistics reports, consumers in the Atlanta MSA spend about \$12.5 billion on food annually (U.S. Bureau of Labor Statistics, 2016). Of the region's food expenditures \$7.4 billion (59 percent) is spent on

food for the home and \$5.2 billion (41 percent) is spent on food away from the home. In a 2014 Nielsen Site Report estimating food expenditures for in-home consumption, the average consumer in the study area spends only 12.67 percent on fruits and vegetables (Nielsen, 2014). However, in context to the region’s purchasing power for locally produced food products, metro consumers collectively spend an estimated \$1.5 billion annually on fruits and vegetables alone.

Table 14: Food Expenditures in the Atlanta MSA (2012)

	<i>Per Consumer Unit</i>	<i>Total Atlanta MSA</i>
Average Annual Expenditures	\$ 51,935	\$ 122,047,250,000
Food	\$ 6,068	\$ 14,259,800,000
Food at Home	\$ 3,657	\$ 8,593,950,000
Fruits & Vegetables	\$ 735	\$ 1,727,250,000
Food away from Home	\$ 2,411	\$ 5,665,850,000



Source: Consumer Expenditure Survey, U.S. Bureau of Labor Statistics (September 2013)

For a more linear comparison of consumer spending to the value of sales for food products produced in the region, 2012 data from USDA and BLS were analyzed. According to this data, food expenditures in 2012 accounted for 12 percent of total

consumer spending, averaging \$6,068 per consumer unit. Table 14 breaks down food expenditures into purchases for in-home consumption and eating away from home. Among the types of food purchased for home, fruits and vegetables accounted for 20 percent (or 12 percent of total food purchases). Thus based on the BLS estimate of 2,348 consumer units in the Atlanta MSA, consumers in the region spent \$1.7 billion on fruits and vegetables in 2012. When compared to USDA census data from 2012, that is over 250 times retail value of sales for fruit and vegetable producers within the region and over 600 times the value of sales for all producers with direct sales³.

Consumer Preference.

In recent years demand for locally produced food has exploded on an international scale. Consumers seeking quality food products and access to unique varieties of goods have risen in tandem with the general social consciousness about the provenance of food, the environmental impacts of food choices, and the desire to support local economies. In 2013, A.T. Kearney conducted a survey to determine consumers' willingness to purchase local food and what impacted their decisions to support the local food system. Key drivers for consumers who were willing to buy local were (1) knowing their purchase helps the local economy, (2) having access to a variety products and/or better quality products, (3) associating local food with healthier alternatives, (4) improving their carbon footprint, and (5) increasing natural and organic production (Rushing & Ruehle, 2013).

³ Retail value of sales is based on an estimated 75 percent retail mark up of the wholesale value of sales as reported by the census.

Determining consumers' willingness to pay for local food products is useful for marketing because it provides indicators of consumer values. Many consumers are willing to buy local food based on the perception of quality, availability of source information, or their direct relationships with producers. However, convenience remains important to even the most supportive customer. Despite the growth among farmers markets and CSAs (and ultimately increased access to those types of marketing outlets), proportionally direct-to-consumer marketing outlets are not as widely supported as traditional retail outlets for consumers seeking local food options.

According to recent customer surveys performed by the National Grocery Association, availability of locally grown produce and products is important to most consumers. More locally grown foods was the second most desired improvement behind cost savings among shoppers that were surveyed. Generally, local food sales at grocery stores are more successful among niche or specialty retailers compared to conventional supermarkets (Martinez, et al., 2010; Tropp, 2014).

Wholesale Demand.

Market trends show mainstream retailers are responding to consumer demands and adding local food options for their customers and adopting local food initiatives. For example, national retailers like Wal-Mart, Safeway, and Meijer have initiatives to source between 20 to 30 percent of their produce locally when in season. The local food trend is also prominent within the restaurant industry where businesses are promoting the use of locally sourced ingredients. Surprisingly, this trend permeates beyond fine dining and is increasingly popular among quick service operations, too (Martinez, et al., 2010).

Food retailers, restaurants, and institutions are the most prominent examples of these types of wholesale customers. Unfortunately, data limitations make it difficult to accurately estimate how many of these entities are actively purchasing local food products and/or implementing local food initiatives in the area of study. However, a recent survey report produced by the University of Georgia College of Agriculture and Environmental Sciences stated that the local institutional sector poses the most promising opportunities for market growth among wholesale customers due to its size and capacity for consistent demand (Beechuk, Gaskin, & Munden-Dixon , 2013).

Available Food Outlets.

According to USDA census data from 2012, there were nearly 12,000 conventional food outlets⁴ in the counties that make up Metro Atlanta. Food retail outlets⁵ for customers making food purchases for in-home consumption represent 31 percent of all conventional food outlets in the region. Traditional grocery stores accounted for 26 percent of food retail outlets in region, while supercenters and specialty food stores accounted for 3 percent and 6 percent respectively. There are approximately 0.7 retail food outlets per 1000 residents in the metro area, however convenience stores account for 65 percent of those businesses. Conventional food retail outlets are currently more convenient and accessible for the average consumer than the most common local food outlets. Table H.1 compares the availability of

⁴ Conventional food outlets include grocery stores, supercenters, convenience stores, specialty food stores, fast food restaurants, and full service restaurants.

⁵ Food retail outlets include grocery stores, supercenters, specialty food stores, and convenience stores.

conventional food retail and food service outlets to common local marketing outlets. In short, for every farmers market in the region there are about 15 grocery stores.

As discussed in the literature review, local food systems will likely prosper in hybrid marketing arrangements that rely on traditional local food outlets and leverage the food outlets of the conventional food system. Ultimately, consumers are more likely to purchase locally sourced food products as long as they are conveniently available. Thus providing consumers with easily accessible local food options is paramount to capturing a larger portion of the region’s food expenditures within the local food system.

Table 15: Concentration of Food Retail Outlets per 1,000 Residents in the Region (2012)

	<i>Conventional Retail Outlets</i>	
	<i>Number of Outlets</i>	<i>Outlets/1K Residents</i>
Grocery Stores	946	0.17
Supercenters	102	0.02
Specialty Food	224	0.04
Convenience Stores	2407	0.44
Retail Total	3679	0.67
	<i>Food Service Outlets</i>	
	<i>Number of Outlets</i>	<i>Outlets/1K Residents</i>
Fast Food	4217	0.77
Full Service	3936	0.72
Restaurant Total	8153	1.49
	<i>Local Food Marketing Outlets</i>	
	<i>Number of Outlets</i>	<i>Outlets/1K Residents</i>
CSA	83	0.02
Farmers Market	62	0.01
Local Total	145	0.03

Source: "Food Environment Atlas" produced by the USDA Agricultural Marketing Service

Discussion

This research focuses on the current state of the region's local food system to inform the viability of expanding it based on the assumption that expansion will result in increases in local food supply and demand and corresponding logistical improvements to support the transactions between producer and consumer. In order to determine the viability of establishing a more robust local food system in the metro Atlanta region, overarching issues that impact local food system development generally are considered and compared to key findings from the assessment of the Atlanta region specifically.

Key Findings

Production Capacity.

One of the questions this research focuses on is whether capacity can expand local food production in the region based on the current state of existing agricultural conditions. Below is an overview of findings from the production capacity assessment that address this question.

Local Food Operations. Farming operations that participate in the region's local food system account for 7 percent of all farms in metropolitan region, but less than 1 percent of the total value of sales. Proportionally, local food producing operations are on par with national trends. However, local food producing operations in the region have shown substantial growth and significantly outpaced state and national growth trends. The Atlanta region saw a 28 percent increase of local food producers and experienced a 78 percent increase in the value of direct sales.

Available Operational Assets. The Atlanta region has over 7,000 farms and nearly 11,000 operators managing about 750,000 acres of farmland. However, the

number of farms, farmland, and farmers in the region has been decreasing at a faster rate than state and national averages. While this is concerning, there remains ample existing agricultural resource to expand local food production.

Sales and Profitability. The total value of sales for all farms in the region is increasing, however the number of farms reporting losses in net cash income is three times the number of farms reporting net gains. While the volatility of farming income is a significant hindrance for expanding food production in the region, local food producers tend to be more profitable than conventional farming operations according to USDA reports (Low & Vogel , 2011).

Scales of Operation. USDA census data at the county level does not correlate scales of operations with farms participating in local food sales, but small and midsized farms are the most common among local food producers. Small and midsized farms make up 86 percent of all farming operations in the region, but are disappearing more rapidly than larger farms. The region must retain farms that are of complementary scale to local food production.

Food Production. Food production is highest in urban influenced areas according to USDA (Martinez, et al., 2010). To that point, 80 percent of the farms in the region produce food commodities. Fruits and vegetable farms account for 7 percent of all farming operations in the region, but less than 1 percent of the total value of sales.

Produce Sales. In context to local food systems, fruits and vegetables dominate local food sales and account for the highest value of local food products sold in urban areas (Low & Vogel , 2011). USDA census data at the county level does not correlate specific commodity crops with farms participating in local food sales, however national

trends show that produce growers are 8 times more likely to sell fruit and vegetable commodities through local food marketing channels. Forty-three percent of all local food farms grow fruits and vegetables, which accounts for 65 percent of total sales of locally grown food.

Fruit and Vegetable Yields. Producers in the region grew over 40 varieties of fruits and vegetables and harvested approximately 3,500 acres of produce crops in 2012, yielding an estimated 182.8 million pounds of produce. Considering the proportion of fruit and vegetable producers to other food commodity farms in the region, there appears to be opportunities to potentially increase produce production specifically and overall availability of locally sourced food products for consumers.

Based on common indicators and characteristics associated with local food production, this assessment finds that Atlanta is ripe to expand local food production. At the most basic level, the region possesses the capacity to accommodate more local food operations, particularly in context to available operational assets for scaling up local food operations and increasing the production of fruits and vegetables.

Market Potential.

This research also questions whether existing market dynamics in the region could potentially sustain expansion in the local food system based on current consumer behavior and demand. Below is an overview of findings from the market potential assessment that address this question.

Consumption Trends. The average American consumes 2.8 pounds of food a day, which translates to nearly 6 billion pounds of food annually for consumers in the metropolitan Atlanta region. Knowing that local food system cannot fully meet the

dietary needs and preferences of regional consumers, increasing the availability of locally produced food products could have substantial influence on consumers' food choice and ultimately supplement a portion of conventionally sourced food products that contribute to the region's overall consumption.

Available Food Supply. When comparing the estimated food supply needs in the region based on dietary intake and average availability of various food commodities, the region's food producers at large do not meet current demand, specifically in context to fruits and vegetables. Less than 10 percent of the produce demand would have been met by local producers based on 2012 data, which suggests that production of fruits and vegetables in the region could increase significantly in response to local demand.

Food Expenditures. Consumers in the region spent \$1.7 billion on fruits and vegetables in 2012. When compared to USDA census data from 2012, that is over 250 times retail value of sales for fruit and vegetable producers within the region and over 600 times the value of sales for all producers with direct sales. This suggests that food producing operations in the region have an opportunity to capture a much larger share of food expenditures by supplying more locally produced food products.

Based on the evaluation of current consumer behavior and demand, this research finds the region has adequate market potential to sustain expansion of the local food system. Opportunities to supplement conventionally produced food products with locally produced food products and capture a larger share of the region's food expenditures are apparent and promising. However, while the market potential assessment suggests that the region could support an increase in local food production based on current consumption trends and food supply needs, substantial infrastructure

improvements and investment is needed to ensure expanded market dynamics would successfully meet the needs of both producers and consumers.

Overarching Issues

As discussed in the literature review, there are a variety of challenges that affect the success of local food systems. Establishing appropriate economies of scales is a critical issue that affects the region's ability to expand its local food system. Increasing local food supply relies on the region's capacity to scale up local food producing operations to be more competitive with conventional food sources.

Meanwhile, there is considerable growth in market demand for local food products, however it is often mischaracterized. Smaller scale operations supplying local food products in direct to consumer markets like CSAs and farmers markets are the hallmark of local food systems. But in reality retail outlets, restaurants, and institutions are the most promising customers for substantial revenue security. While the explosion of farmers markets, CSAs, and other face-to-face market channels are encouraging, there is a larger market share of intermediary outlets that are underserved, despite their capacity to provide more economic stability in local food system supply chains. Generally, the region needs to provide an adequate local food supply in both quantity and quality for all market channels.

Diversifying marketing outlets can be key to the survival of local food producing businesses, however accessing these market channels can be challenging for producers. Smaller scale producers are not as well positioned to meet the demands of wholesale customers like institutions, restaurants, and retailers. Similarly, direct to consumer markets are not necessarily profitable enough to sustain larger scale

operations. Thus, the region must create more points of entry to connect local food producers with various marketing outlets to ensure locally sourced food products are aggregated and conveniently available to customers and competitive with conventional food products.

As the demand for local and regional food systems grows, the issue of meeting demand with adequate supply and infrastructure is emerging. There are two significant gaps that need to be addressed: production capacity to meet demand and perhaps more importantly, infrastructure limitations to support the exchange between farmer and consumer. While demand is apparent and fringe benefits are desired there is a critical gap in logistical support and competencies that hinder sustainable expansion. If the region wants to expand its local food system, it is important to think about the infrastructure and logistics that are necessary to legitimately support and sustain a thriving local food system.

It is also important to establish balance in meeting consumer demands and addressing the needs of producers. There seems to be a lot of focus on the customer experience and how to cater to their values, preferences, and conveniences. While appealing to the purchasing power is important, it seemingly trumps the needs of farmers. However, the viability of expanding production in the local food system in many ways relies on whether or not there is financial security for producers, as they have the most skin in the game. Due to variation in experience and resources, local food producers additionally face challenges in the following areas:

- *Business Expertise.* Farmers need to be business savvy to succeed. However, many farmers lack the technical resources, management skills, and financial competency to sustain and grow their operations.
- *Operational Costs and Inputs.* Like any small business, operational costs and inputs are proportionally very expensive for local food producers and require a great deal of sweat equity. From land to labor, upfront and day-to-day expenses and effort pose significant financial and physical pressure for operators. Furthermore, given the volatility of their product, profit margins are often paper-thin for small local food producers, making it difficult to invest in expansion and scaling up of operations while maintaining their livelihood.
- *Access to Capital.* Funding is essential to establishing and expanding operations. However, private lending is limited for business development in the agricultural sector. Alternatively, grant funding is more accessible to agricultural entrepreneurs, but is also more finite and often requires significant effort and finesse to attain.

Producer specific concerns need to be addressed to ensure the key stakeholders generating local food supply are appropriately supported, particular in relation to infrastructure and market dynamics. However, goals of local food advocacy initiatives and policies often fail to consider the economic viability of expanding the local food system as a competitive alternative to the conventional food supply and the necessary economies of scale for relevant infiltration into consumer markets. As such, decision makers need to focus strategies that increase point of entry and expand economies of scale.

Recommendations

Based on the findings from the assessment of the current state of the local food system in the metro Atlanta region, the following recommendations were generated. These recommendations present opportunities for local decision makers and stakeholders interested in strategies to enhance the synergy of the local food supply chain and to support future development and expansion in the region's local food system.

Establish a Regional Food Policy Council

Food policy councils are a platform for shaping local food policy that includes multi-municipality stakeholders and taps into thriving advocacy networks in order to wrangle a variety of regional food system interests. Food policy councils are typically volunteer organizations that convene stakeholders in education and policy analysis to address local food system issues over time. Their efforts tend to focus on specific concerns like food access, the relationship between producers and consumers, and the logistics associated with the “middle of the system”. The most common activities of food policy councils are focused on collecting data and conducting analyses, bringing diverse stakeholders to the table, and creating definitions to establish common ground (Freedgood & Royce, 2012).

The best method for instituting food policy councils is leveraging organic community support to incite official government action. For example, Roots of Change is a community organization located in the San Francisco area. Their goal is to link growers, retailers, restaurants, and consumers within a sustainable foodshed. The organization worked with the American Farmland Trust to establish a 100-mile food radius and

assess sustainable production within that foodshed. This assessment resulted in the San Francisco Foodshed Roundtable, which brought together thirty leaders from the region to discuss the challenges of distributing their high quality food to local communities. Roots of Change president, Michael Dimock, states that working with a regional food system is far outside the normal functions of municipal government but will become necessary in the future (Shigley, 2009). Their regionally focused work contributes to the policy agenda of California's statewide Food Policy Council.

Practice Food System Planning

Traditional planning practices engage diverse stakeholders and are grounded in research and analysis, which helps communities identify strategies to realize their future visions and goals. Thus, food system planning is an active approach to create future local food policy initiatives and investment. Effective policies rely on state and local government involvement because these entities have the most local influence in regulating public health and safety and tax allocation in relation to local food interests. As such, and perhaps most importantly, food system planning can coordinate otherwise isolated efforts between agencies and departments and inform effective local food policies that address comprehensive infrastructure and system relationships.

Regional comprehensive and sustainability plans can have the most significant impact on food systems at the local level. For example, King County, Washington (of the Seattle area) has a well-established commitment to local sustainability efforts. When updating their comprehensive plan in 2008, officials included food system issues to their agenda. They established the King County/Seattle Acting Food Policy Council to serve as an internal advisory board. The food policy council recommended policies to tackle

production, processing, distribution, sales and marketing, waste, and access. Their policies stress the importance of the food system as an economic and public health issue (Hodgson, *Where Food Planning and Health Intersect*, 2009).

According to the American Farmland Trust (AFT), food policy councils and food system planning are “effective at engaging diverse stakeholders, giving them a voice, fostering dialogue, and educating the public” (Freedgood & Royce, 2012). Based on case studies around the country, AFT found that as standalone efforts each approach appears to be affecting incremental policy changes, and the combination of both may have the most lasting effect.

Incentivize Local Food Support

Based on the assumption that expanding the local food system will rely on more regional demand, decision makers have an opportunity to influence the consistency of that demand by creating incentives and/or requirements for locally sourced food procurements. This approach may include a campaign for institutional commitments and offer tax incentives to local entities that meet local food procurement standards. Alternatively, policies could mandate a local food procurement requirement for public institutions and publically funded organizations with food services.

To encourage the establishment of more local food producing operations in the region, policymakers could offer conversion incentives for existing agricultural operations to produce more food products intended for the local food supply. Additional financial incentives for local food producers could include ensuring premium purchase pricing through guaranteed markets from local food procurement programs and creating

specialty crop insurance programs for producers willing to commit their crops to such markets.

Forge Stronger Regional Partnerships

The momentum of the local food movement across the United States has been primarily grassroots. As such, community engagement and advocacy are key initiators of food policy councils and other policy actions. Thus, building partnerships is one of the most effective means to develop and implement effective food system improvements because they foster progressive planning through increased collaboration, community responsiveness and ownership, and multi-sectoral strategies (Pothukuchi & Kaufman, 2002).

Currently, the Atlanta region has a multitude local food advocacy and interest groups. Among these organizations Georgia Organics and the Atlanta Local Food Initiative (ALFI) are the highest profile and recognizable. These organizations do an exceptional job at raising awareness, lobbying for progressive local food policy, and fostering a network of support for local producers. Their leadership has inspired foundational support and promoted local food interests across the region and state. However, their collective strength could be better leveraged to advance development of practical supply chain resources that enhance the region's local food system.

Facilitate Supply Chain Networks & Connectivity

Private and public sector stakeholders in the metro Atlanta region should explore opportunities to initiate a collective commitment to strengthening supply chain networks and connectivity. This collaborative effort would need to take a whole system approach

and focus on necessary regional coordination and investment. Growing Power is successful example of this type of effort.

Growing Power is a nationwide nonprofit and land trust organization that focuses on community food systems. They strive to address the whole food system in terms of production, distribution, and marketing. The success of Growing Power is based in their diversified marketing system that sells to local residents, restaurants, retail outlets, and other community organizations. Their warehouse distribution center receives food from over 300 farms each week (via the Rainbow Farmers' Cooperative), providing healthy food to the community and a guaranteed market for farmers. Growing Power creator, Will Allen, credits planners as essential to designing a successful path from producers to consumers (Terrerri, 2004). Stakeholders in the metro Atlanta region should consider emulating this model to improve supply chain infrastructure. To date there is no designated organization or effort of this scale in the region.

Provide Meaningful Consumer Education

Generally, building community support is at the forefront of many local food discussions. However, there is a caveat to these types of outreach efforts. While important, the feel good, philosophical nature of the local food movement oftentimes seems to garner more focus than the practical actions consumers and decision makers should take to support the local food system. One of the key objectives for consumer outreach should be to retrain the customer to better understand the origin of their food and the implications of their food choices. USDA sponsored Farm to School programs and the "Know Your Farmer, Know Your Food" campaign are prime examples of well-rounded efforts that educate consumers on these issues. A balanced effort is needed in

both raising awareness about the benefits of supporting the local food movement and educating consumers about the necessity for meaningful local food policy. This is critical to the successful growth of local food systems and should be more prominent on the region's local food system agenda.

Conduct Future Research & Analysis

Across the country, a considerable amount of food systems research relates to public health and access, but less so in correlation to production capacity, economic potential, and infrastructure improvements. Generally, more holistic system assessments are needed to better inform decision makers and stakeholders about the dynamics and logistics of local food systems, particularly in context to these supply chain relationships. Stakeholders in the Atlanta region should invest resources into more comprehensive research that focuses on the local food system supply chains to ensure corresponding policy development is effective.

While this research has provided high-level assessments of these supply chain entities, more thorough assessment approaches are necessary. The USDA and other organizations promoting the local movement provide a variety of assessment guidelines for stakeholders to apply to their respective areas of study. Focus areas that would be particularly useful in the metro Atlanta area include community food system assessments, economic impact assessments, and food policy audits.

Collaborative efforts in New Jersey provide an example of effective comprehensive research that is helping strengthen local food systems. In New Jersey agriculture is already a significant part of the state's economy with assumed longevity and stability. However, Rutgers University and the New Jersey Department of

Agriculture determined that the state needs a distribution system and food processing facilities for local growers. Creating such infrastructure will allow the state to capture all the value added revenue and jobs that are currently being sent out of state. Rutgers is tasked with researching ways to catch downstream dollars of New Jersey grown produce. Mark Lapping who leads the research recognizes that the agriculture and food sector is a multi-faceted form of economic activity that needs a multi-faceted set of responses and inputs from the government (Terrerri, 2004). Ultimately, the local food system is a valuable sector worthy of investment because of its enormous potential for economic development and wealth creation.

It seems that academic institutions in the Atlanta region are underutilized in context to the local food system. Emory, Georgia Tech, and the University of Georgia are powerhouse research engines in the areas of public health and sustainability, planning, and agriculture. While each of these universities has explored local food system issues individually, coordination of their resources and areas of expertise would provide well-rounded insight and information about the current state and opportunities for expansion within the region's local food system.

Conclusion

Implementing local food research, partnerships, and policies are critical to linking the production and distribution aspects of the local food economy and meeting consumer demand. These tools provide opportunities for entry-level farmers, local processors, and food related businesses while encouraging diversity in a more organized approach to the local food system. Ultimately, local food system research, partnerships, and policies should aspire to support a unified vision for the region's local food system.

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Appendix A: Producer Profile

To complement the quantitative assessment of local food operations in the region, a local farmer was interviewed to provide more qualitative insight into a producer's perspective on the region's local food system (Swancy, 2016).

Riverview Farms is family-owned and operated organic farm located to the north of Metro Atlanta. With over 1100 acres of farmland, the mid-sized operation practices "full circle farming" by producing a complementary mix of fruits and vegetables during their May to December growing season and heritage breed beef and pork with supporting feed crops. Riverview markets their farm products directly to consumers without the assistance of distributors, thus keeping all sales local by default. Riverview products are sold through three marketing outlets: CSAs, directly to restaurants, and at farmers markets. According to proprietor Charlotte Swancy, the 250 produce and/or meat CSAs carry the farm in terms of profits. The farm also has about 50 restaurant clients who primarily purchase meat. All "extra" farm products are sold at local farmers markets throughout the metro area.

While Riverview is a well established, second-generation family farm, each year of operations is characterized by a lot of hard work and stressful challenges. Offering diverse food products through various marketing channels requires a careful balance of investment, management, and maintenance. Particularly in a niche and somewhat "high-end" market. Take their annual production of lettuce. Each year Riverview has a spring and a fall crop of lettuce and plants about a half an acre each season. On average, they yield about 650 heads of lettuce each week. Over the course of two 8-week growing seasons, Riverview will harvest over 10,000 heads of lettuce to fill

customer demands. However, a labor intensive harvesting schedule is required to sustain their supply: hand cut 500 heads for CSAs on Tuesday, deliver on Wednesday; hand cut 150 heads for restaurants, deliver on Thursday; hand cut for farmers markets on Friday, deliver on Saturday/Sunday. With varying price points between \$2-4/head annual sales for lettuce would be around \$30,000. While this may seem rather profitable, the value of sales does not account for the production inputs like seasonal labor and transportation costs that contribute to the farm's annual operating expenses of around \$1 million.

Even with diverse products and marketing outlets, the Swancy family, like many other family farms find it difficult to make a comfortable living wage when most of their profits are invested back into the farm. While the farm as an asset grows increasingly valuable, there is very limited cash flow due to thin profit margins and high operating costs. Swancy noted there are definitely opportunities to increase production, sales, and profits, but that potential cushion is not necessarily worth the added stress. Despite the constant hustle, local food producers possess a level of independence that allows them to retain control within their markets and manage their operations in balance to their individual needs. This is part of the lifestyle appeal of farming for operators like Swancy.

However, there are certainly areas for improvement in the region's local food system that would help local producers like Swancy. For many farmers the economics of the local food system simply do not work. Establishing better economies of scale is a big issue with a lot of barriers. Acquiring land to expand operations often requires personal capital because bankers are hesitant to lend. According to Swancy, many farmers are forced to rent land and lose investment opportunities because of the added

operating cost. Furthermore, maintaining a diversity of goods and customers are critical when scaling up operations. However, for smaller scale growers this can be too much of a gamble. But Swancy stressed that larger scale producers can't rely on one market to sustain their operations.

Swancy stated there is also an overall lack of practical infrastructure to foster growth in a regional scale. Points of aggregation, commercial facilities, processing services, and the like are very limited, and no one seems to be willing to invest in this type of infrastructure. While the return on such investments may not be instant, Swancy feels these are potentially profitable opportunities given the dire need for such services. And she knows this first hand. Riverview Farms operates a mobile food hub that grossed six figures annually.

Similarly, in the past there were only a few farmers markets, which Swancy stated were too exclusive and too concentrated. The recent explosion of farmers markets in the region has provided more points of entry for local growers, but may be nearing a point of oversaturation. Swancy stated these "farmers markets don't sell grocery, they're social events" noting the novelty of the experience for the consumers, but not good for the livelihood of growers. To amend this issue, Swancy recently established the Freedom Farmers Market at the Carter Center, which has proven to be very successful in retraining costumers to patron markets with the intention of genuinely supporting local growers.

Appendix B: Distributor Profile

To complement the inventory quantifying various elements of the local food system infrastructure in the region, this research highlighted a local food distributor to provide more qualitative insight into the dynamics and logistics of conveyance.

The Turnip Truck is a small, independent food service distributor established in 2008 that serves both producers and consumers in metropolitan area (The Turnip Truck of Georgia, LLC , 2015). Similar to a food hub, the enterprise sources vegetables, fruits, dairy, meat, cheeses, and pantry staples from a network of local farms and artisans and sells these products to individuals and wholesale customers. The Turnip Truck's mission is to make it easy to source from local producers by acting as a local food aggregator that takes care of distribution logistics, including the marketing, storage, and delivery of local food products.

According to founder and COO, Michael Schneck, the Turnip Truck is "trying to take local food and streamline it into a sort of traditional restaurant / foodservice style distribution" (The Turnip Truck of Georgia, LLC, 2015). Their business model is based on sourcing partnerships with local food producers and markets their products to local households, restaurants, and other customers. Their business operations are lean with a staff of six employees that manage the sales, warehousing, and distribution of local food products. Each week they process orders from individual and wholesale customers and deliver locally produced products throughout the metro area.

The Turnip Truck works with 23 local farms, six regional farms, and 23 artisan producers to distribute a wide variety of local food products (The Turnip Truck of Georgia, LLC, 2015). Partnerships are forged with local producers and based on a

simple product standard: provide quality local food products in consistent quantities that are regularly available to meet customer demands. In turn the Turnip Truck handles the legwork of getting local food products from farm to fork.

The Turnip Truck offers a Box Program to individual customers (similar to a CSA) at three different price points with the option to purchase additional products a la carte. Smaller restaurants are also offered a box program in lieu of traditional wholesale purchases. Wholesale customers (including restaurants, schools, and institutions) can place orders for local food products, but must meet a base purchase price for each order. Orders are delivered (for a fee) or available at designated pick up locations in Atlanta and Decatur, as well as select Northwest and East Metro areas outside the perimeter.

In 2015 the Turnip Truck launched their online store to streamline their operations and offer more conveniences to customers and producers alike. The web platform provides real time information on local food product inventories, availability, and sourcing details. In an effort to maintain the brand identities of local farms and artisans, each product includes information about the producer. The website also provide consumer resources about food seasonality and links to other local food information.

According to testimonials found on their website, the Turnip Truck helps producers “save valuable time and money” and “grow [their businesses]” by managing sales and distribution logistics so that the producer can focus on production (The Turnip Truck of Georgia, LLC, 2015). The Turnip Truck offers flexibility in their business arrangements with local producers, ranging from delivery services for operations with

well established sales to providing a point of entry into local food markets for up and coming growers. Thus, through these partnerships, local producers benefit from a reliable outlet to sell and promote their brands and specialty products.

The Turnip Truck provides financial benefit to producers by “taking large amounts of income that would be going to agriculture industry giants and diverting it back to local producers” (The Turnip Truck of Georgia, LLC, 2015). For example, in their first five years of operations, the Turnip Truck reported that local farmers received \$1.9 million in sales from their restaurant customers. This not only benefits local producers, but also benefits the local economy by facilitating local sales and purchases that keep money in metropolitan area.

The Turnip Truck also creates better access to local food products for consumers and promotes informed purchasing decisions by providing an easy to use web-based marketplace that strives to showcase the integrity of their local food products. Emphasizing the importance of knowing where food is grown and who is growing it, Schneck stated “a big challenge...is to keep that story and keep that connection, which is obviously...the most important thing [in] trying to support the local guys” (The Turnip Truck of Georgia, LLC, 2015).