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Food Policy: Urban Farming as a Supplemental Food Source

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Abstract

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

The distance between farms and cities and the limited access that some residents have to fresh foods can be detrimental to a city's capacity to feed people over time. This study addressed the under-studied topic of urban farming as a secondary food source, specifically by exploring the opportunities and limitations of urban farming in a large Northeastern city. Brundtland's food policy was the pivotal theory supporting food production to end global starvation, and was the link between environmental conservation and human survival. The research question for this study examined the potential food policy opportunities and limitations that assist urban farms as a supplemental food source. Twenty stakeholders from the public (6), nonprofit (7), private (3), and academic (4) sectors formed the purposeful snowball sample in this case study. Data were collected through open-ended interviews, which were then subjected to an iterative and inductive coding strategy. The significant finding of this study is that while food policy supported urban farms as a secondary food source in a way consistent with Brundtland's theory, local food alone was inadequate to feed its urban population. Other key findings revealed that food policies that influenced land use, food production, and procurement presented unique challenges in each sector. Existing food production policies such as zoning regulations, permitting processes, and public funding benefited one sector over another. The study contributes to social change by exploring food policies that encourage partnerships between sector stakeholders; urban, rural, and suburban farmers; and city residents that foster alternative and sustainable food production in the urban setting.

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Dedication

I began my first week at Walden with mixed feelings: happy to start a new adventure, and sad about the loss of my mother. She would have wanted me to follow my dreams, and I dedicate my dissertation to her. My mother was the first adult learner I ever met and my role model. I also want to dedicate this to my father, a hard worker who taught me the same values.

This dedication is for my family: Claude, my spouse, who was my biggest supporter, and believed that my dream would come true; my cats Mr. Bean and Oscar, who sat by my side throughout the long periods of writing, thinking, and understanding. They taught me patience, kindness, and unconditional love, while my birds filled the house with their music and conversation.

I also dedicate this to my support group of Dr. Patti, Dr. BessieM, Dr. Emma, Byron, and Judy. We shared our fears, hopes, failures, and celebrated every success and milestone along the way. You will forever be part of my life, and thank you for taking this journey with me.

In addition, I dedicate this to Mother Nature who sustains life, and the animals that bring us joy and comfort. Finally, I dedicate this to the young girls and women who are limited by society, culture, and tradition, and left without an opportunity for an education.

Acknowledgments

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I am also grateful to Dr. Richard Larkin, the librarians, academic advisers, writers, editors, and other outstanding individuals at Walden University for their advice, guidance, and support. Finally, I want to thank Dr. Elizabeth Wilson, my mentor and friend who reminded me to hold fast to my dream.

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Chapter 1: Introduction to the Study

Introduction

City food supply is part of a complex food system and systemic fluctuations can be detrimental to the city's capacity to feed people in the long term (Kortright & Wakefield, 2011; Morgan, 2009). Inconsistent practices to grow, transport, distribute, and dispose of food are the result of complexities in the urban food system (Ericksen, 2007). This study offered an exploration of urban farms as a supplemental food resource in the Northeast United States. For the purpose of this study, the research question was evaluated with regard to urban agriculture public policy. This study examined the potential to develop an urban farming network as a resource in a large Northeastern city.

Food policy complexities created unsustainable practices and few supplemental food resources (Holmgren, 2002). Other challenges included population growth, complicated food production processes, and a centralized food network. Threats to a food system are urbanization, agriculture designed for short-term food production, and unstable food prices (Ericksen, 2007; Kortright & Wakefield, 2011). According to Ericksen (2007), the combined risk factors and complexities, such as long transport miles to deliver food, energy-intensive food production, and complex food networks make the food system weak and unsustainable.

The challenge of providing food for the city is a longstanding one. Threats to a food system could occur anywhere along the food supply chain, which does not favor stability or consistency (Brundtland, 1987; Ericksen, 2007; Wiskerke, 2009). For example, in the 1920s, New York City's vulnerable food system was evident when a

potential transportation strike threatened the city's and the country's entire food supply (Peters, Bills, Wilkins, & Fick, 2008). When Hurricane Katrina destroyed New Orleans' food supply in 2005, the United Stated Department of Agriculture transported food to survivors in devastated neighborhoods (Loyd & Harless, 2005).

Although food security and insecurity were not within the scope of this study, they are a common theme in food policy research and were discussed briefly. The Brundtland Report first linked food security to environmental conservation and global starvation (Brundtland, 1987). According to Brundtland (1987), food policy theory evolved from research on industrial or large-scale agriculture. In the 1980s, this type of agriculture was the default solution to end hunger in developing nations.

The United States Department of Agriculture defined food security as "…access by all people at all times to enough food for an active, healthy life." (para. 1, www.ers.usda.gov). Three categories of food security included community food security: "…a condition in which all community residents obtain safe, culturally appropriate, nutritionally sound diet through an economically and environmentally sustainable food system that promotes community self-reliance and social justice" as defined by Hamm and Bellows, 2003 (p. 37). McBeath and McBeath (2009) identified global food security as "the material basis for human survival" (p. 49). Friedmann and McMichael (1989) described environmental food security as the connections between the physical, cultural, and political boundaries in nature and the tensions between communities regarding food production and distribution (as cited by Kaiser, 2011).

In general, food security is an interconnecting part of food policy and influenced by the assets available in the community. Food security can be high (wealthy communities with many choices in food), medium (food available but sometimes people run out of food), or low (poor neighborhoods with few choices in healthy foods) (Kortright & Wakefield, 2011; Morgan, 2009; Pothukuchi & Kaufman, 1999). According to McBeath and McBeath (2009), food insecurity described the conditions that block individual access to food (limited transport or availability of fresh food), or burden the environment (pollution, overfishing, pesticides use, and weather extremes). As mentioned, food security was a recurring theme (Clemmitt, 2008; Hutson, 2011; United Nations Food and Agriculture Organization (UNFAO), 2011) and outside the scope of this study.

The focus of this research was the interactions and complexities that are inherent to an urban farm network as a supplemental food source (Angelo, Timbers, Walker, & Donabedia, 2011; Hutson, 2011). The social change aspect of this study could improve community and personal well-being, and offered a fresh look at public policy and local food policy (James, 2011; Kortright & Wakefield, 2011). Researchers discussed the potential benefits of growing food: Encourage awareness about local food systems, help low-income people access healthy food, and foster cross-sector partnerships to improve the urban food policies (Chase, 2012; Hiranandani, 2010; Mayer and Knox, 2010; Zerbe, 2010).

I included an introduction and background on urban farms, the problem statement concerning food deficits, purpose of the study, research questions, and the nature of the

study Chapter 1. Other sections included the definitions of key terms, scope and delimitation, and the potential contribution of the study to public policy. I presented a description and analysis of the urban agriculture literature, and reviewed the theoretical and conceptual framework in Chapter 2. There also was a discussion of food policy concepts such as urban agriculture, urban farms, and permaculture in the chapter. In Chapter 3, I presented the research design and rationale, researcher role, data collection strategy, participant selection plan, data analysis plan, ethical procedures, and preliminary semistructured interview questions.

Background

Contemporary urban food production relies on a global food network of large-scale, industrial practices. Fewer communities support small-scale, locally based agriculture (Clemmitt, 2008; Godfray et al., 2010; Maxwell & Slater, 2003). Although the local food system could benefit from different ways to grow food, industrial agriculture remains the preferred method of food production. There are many challenges associated with industrial agriculture (IDA) practices. Such challenges included the ongoing need for more farmland to grow fewer crop varieties, processed and fatty foods that cause obesity in children and adults worldwide, fewer family-owned farms in rural areas, and more people moving into the city (urbanization) (Chase, 2012; Pothukuchi, 2009; Wiskerke, 2009).

Food policy literature. In this study, I explored food policy to describe food production in the context of urban agriculture. Specifically, urban farming, alternative food systems, and permaculture could provide the tools to create a supplemental food

source (Harper, Shattuck, Holt-Gimenez, Alkon, Limbrick, 2009). Harper et al., indicated that current food policy literature identified alternative food systems (AFS) as a complementary food source for the city. Alternative food systems included two types of urban agriculture: *formal infrastructures* known as food policy councils or regional food plans, and *informal infrastructures* such as social movements or community-based food production (Harper et al., 2009; Zerbe, 2010). Public policy included the subcategory of food policy in its various forms.

Food production could be robust if supported by both industrial agriculture and alternative food systems. Alternative ways to grow food might lower the risk of food deficits and improve the local food system. Further, a balanced food system could evolve through an assortment of ways to grow food (Ericksen, 2007; Kortright & Wakefield, 2011). Researchers in contemporary food policy examined local and cross-sector partnerships as tools to develop regional and local food systems (Maxwell & Slater, 2003; Morgan 2009; Sonnino 2009). However, this research only explored urban farms as a supplemental food resource. A process to design an alternative food system was outside the scope of the study.

Food policy and permaculture. Food policy also included permaculture principles that favor sustainability to save resources for present and future generations, and ethics to promote social well-being (Holmgren, 2002). In this study, *sustainability* referred to long-term food production. Sustainability was not a new concept and directly linked to the 1987 *Brundtland Report* (Brundtland, 1987; Kulhman & Farrington, 2010). Permaculture practices included urban agriculture and alternatives in food production

(Taylor Lovell, 2010). According to Plyler (2012), urban agriculture (urban farms, farmers' markets, community gardens) was 15 times more productive than industrial agriculture. Urban farms were an example of food policies that combined features from permaculture and urban agriculture (Zerbe, 2010). In general, food policy literature described formal and complex ways to grow food. This gap was an opportunity to examine small, local, and individually based solutions to urban food production. As such, I explored an alternative food production process that combined elements of urban agriculture and permaculture. My goal is to understand the role of public policy in creating an urban farm network, and its potential contribution as a supplemental food source for a city in the Northeast.

Problem Statement

Many urban food systems do not have a supplemental food supply (United Nations Food and Agriculture Organization, UNFAO, 2011). Collectively, population growth and limited public land for agriculture increased the potential for a food deficit, and were the main challenges to the local food system (Morgan, 2009; Wiskerke, 2009). Food systems in a major metropolitan community in the Northeast relied on a complex global food network as its primary food source (Peters et al., 2008).

Contemporary food systems use industrial agriculture (IDA) practices and large amounts of natural resources, fossil fuels, and agricultural technologies (Godfray et al., 2010). However, some researchers suggested that IDA favors unsustainable practices (Maxwell & Slater, 2003; Wiskerke, 2009; Zerbe, 2010). For example, industrial agriculture practices increased risks in nature favoring limited crop variety and pesticides

use in humans from hormone-fed animals and synthetic fertilizers. This also occurred in rural communities where large factory farms control the food supply and there are fewer family-owned farms.

There were also risks to urban populations limited to a diet of processed and packaged foods that result in higher food-related diseases. In addition, infrastructure risks included problems from weather extremes or threats if food was not available by road or railway. As a subcategory of public policy, food policy itself was an incremental process to find new solutions from old ideas (Maxwell & Slater, 2003). Other researchers have found that new food policies were cross-discipline by design using ideas from agriculture, public policy, public health, urban planning, social justice, or community development (Ericksen, 2007). According to Andreatta, Ryne, and Dery (2008), the reality of food policy was that one size does not fit all; each community had its unique food challenges. Successful, effective, and reasonable implementation of food policies depend on community assets (local expertise, community interest, political support) as part of the solution (Andreatta et al., 2008; Ericksen, 2007).

In their case study, Andreatta et al. (2008) described how local farmers used agriculture to connect with people in low-income urban communities. Farmers gained a new niche market in low-income communities, and urban populations had access to fresh foods (Andreatta et al., 2008). However, the farmers did not consider a food education program to teach people to cook simple meals with fresh food (Andreatta et al., 2008). Andreatta et al. noted that farmers ignored the food needs of the community. It was

important to recognize the challenges and complexities in developing sensible food policy (Andreatta et al., 2008).

Several factors could offset the urban food supply problem. New food policies might promote supplemental food sources including land use and zoning for local food production, urban farms, and subsidies for local farmers, and farmers' markets (Bates & Hemenway, 2011; Mayer & Knox, 2009; Zerbe, 2010). There was a public policy opportunity to contribute new information to food policy literature through an exploration of urban farms for food production, and the potential for their expansion as a comprehensive food source.

Purpose of the Study

The purpose of this study was to explore food policies that help or harm the creation of a secondary food source in a large Northeastern city in the United States. These policies are the food-related activities including food production, local food and zoning policies, consumer buying choices, food distribution, transport, and disposal. These elements make up the food system for growing food (crops, fish, honey, technologies that artificially grow meat) and nonfood items (flowers) (Fountain, 2013; Hand & Martinez, 2010). This study identified the limits and opportunities for urban farming as a supplemental food source.

This research used a case study approach to gain an understanding of food policy concepts in urban farming. Urban agriculture, permaculture, and alternative food systems were examples of food policies that support a supplemental food source (Dixon, Donati, Pike, & Hattersley, 2009). Researchers additionally found that urban agriculture was the

overall food policy to address food production in the city (Chase, 2012; Holmgren, 2002). Permaculture supported small-scale agriculture that was best suited for life in the city (Holmgren, 2002). Alternative food systems were various food-related activities (Andreatta et al., 2008). For this research, urban farms were alternative food systems, a type of urban agriculture that supported environmental, social, and economic sustainability (Andreatta et al., 2008).

Research Question

Research question: What are the public policy limits and opportunities that support urban farms as a supplemental food source?

Theoretical Framework

Food Policy Theory

Brundtland's (1987) food policy theory was an outgrowth of the United Nations' effort to end the global food crisis. The public policy aspect of food included the government regulations that direct food-related activities such as production, transport, distribution, and food safety (Maxwell & Slater, 2003). The United Nations (UN structured a plan to boost food production using industrial agriculture, technology, and fast growing crops to feed starving people worldwide (Brundtland, 1987).

The United States Agricultural Adjustment Act of 1938 was the foundation of the current Farm Bill (www.ag.senate.gov). However, this study applied Brundtland's (1987) food policy theory which recognizes food production within the limits of nature and the relationship between conserving nature and human survival (Brundtland, 1987). When

these interactions were discussed with the international community, food policy became a global concern (Kulhman & Farrington, 2010).

In general, food policy research developed from industrial agriculture which supported large-scale food production, agricultural technologies, and monocrops (Godfray et al., 2010; Maxwell & Slater, 2003; Wiskerke, 2009; Zerbe, 2010). Researchers found that this type of agriculture was the world's primary food source (Godfray et al., 2010; Zerbe, 2010). Previously, Ericksen (2007) suggested that the food supply chain was complex because it was part of a global food network, with many transport miles between food producers and consumers.

By its nature, food policy favored a complex food system and tradeoffs between conflicting stakeholder interests (Harper et al., 2009; Sonnino, 2009). Complexities suggest that there were connections between food, human survival, economic growth, poverty, international collaborations, and political support (Brundtland, 1987; Wiskerke, 2009). Ericksen (2007) and Wiskerke found that food policy complexities were characteristic of the interactions between food-related activities including food systems, food supply chains, and food cycles. Further discussions on these interactions follow in Chapter 2.

Conceptual Framework

Urban Agriculture

This research was an exploration of ideas and processes supporting urban farms as a supplemental food source a large Northeastern metropolitan community. As such, food policy included many choices in food production. In this study, urban agriculture was the

specific type of food policy to examine the design of urban farms. Urban agriculture supported food production based on the assets, collective knowledge, and community resources available in the city (Taylor Lovell, 2010).

Urban agriculture has several definitions; for example, Taylor Lovell (2010) defined urban agriculture as food production in the city. Dixon et al. (2009) defined it as food distribution in urban areas. Duchemin, Wegmuller, and Legault (2009) described it as a collection of agricultural and city development concerns. Further, Taylor Lovell's (2010) discussed the ties between urban agriculture and urban planning. Traditionally, urban planners ignored food as part of the city landscape, and created a gap in community efforts to improve local food systems and food policies (Glosser, Kaufman, & Pothukuchi, 2007; Taylor Lovell (2010).

Permaculture supporters favored less harmful ways to grow food in coordination with urban agriculture (Holmgren, 2002). Organic farming, composting, food culture, and traditions were features of permaculture (Holmgren, 2002). Permaculture practices filled in the intangible social elements that were missing in food policy alone (Holmgren, 2002). Collectively, food policy, urban agriculture, and permaculture provided a public policy framework that described urban farming as a supplemental food source (Dixon et al., 2009; Peters et al., 2008; Zerbe, 2010). This food source could be a reflection of human cultures, behaviors, and traditions (Zerbe, 2010).

In summary, the research question concerned the public policy limitations, opportunities, and potential for an urban farm network to provide a supplemental food source. I used a case study approach to examine the creation of an urban farm network

and its influence on local food policy. My sampling strategy provided the rich data needed for an in-depth analysis of an urban farm network, and I presented more details in Chapter 2.

Nature of the Study

My research was a qualitative study that explored urban farming as a supplemental food source. Using basic food policy concepts, I explained the potential contributions of urban farms to local food policy in an urban environment in the Northeast. For instance, I discussed food policy as the guidelines for food activities, urban agriculture as the food activities unique to the city, and permaculture as the variety in food production (Andreatta et al., 2008; Bates & Hemenway, 2011; Holmgren, 2002). The phenomenon was the exploration of food-related activities to design an urban farm network.

The data collection plan included various stakeholders in food policy development, urban farming, city and state agriculture, public policy, urban planning, community gardening, urban food research, and urban agriculture. Case study data contained multiple data sources (interviews, document analysis, and archival records). Rich, detailed descriptions revealed themes, and a coding procedure and HyperResearch software organized information in tables, graphics, or chronological order (Yin, 2009).

Definitions

I used the following definitions in my study:

Agriculture: "Establishments primarily engaged in growing crops, raising animals, harvesting timber, and harvesting fish and other animals from a farm, ranch, or their natural habitats" (www.dhs.gov, p. 18).

Alternative food systems: A type of food system that uses simple farming practices (recycled resources, crop rotation) and the variety in food production (Chase, 2010; Zerbe, 2010). Community supported agriculture and Slow Food and Fair Trade (consumer politics) are examples of alternative food systems (Andreatta et al., 2008; Hiranandani, 2010; Jarosz, 2008; Mayer & Knox, 2009). Culture and traditions, and food branding are other examples (Haydu & Kandoff, 2010; Mariola, 2008).

Food: "Establishments transform livestock and agricultural products into products for intermediate or final consumption" (www.dhs.gov, p. 18).

Food cycle: The life cycle of food from production to disposal, where food comes from: food producers, transport over short or long distances, consumers who buy local or exported food and food disposal (recycling or waste) (Wiskerke, 2009). Ericksen (2007) defined the food cycle as the interactions between food systems, nature, and society.

Food policy: The government regulations that guide food production, distribution, consumption, and waste (Maxwell & Slater, 2003). Hiranandani (2010) and

Mayer and Knox (2009) defined it as a complex of tradeoffs between stakeholders in urban agriculture, permaculture, urban planning, and food interests in rural and urban communities. Food policy was also defined as "decisions that impact the ways that people produce, obtain, consume and dispose of their food" (Mansfield & Mendes, 2013, p. 38).

Food supply chain: A series of food-related activities including production, processing, packaging, transport, distribution, consumption, and disposal (Brundtland, 1987; Ericksen, 2007).

Food systems: A food system is a collection of food-related activities (Wiskerke, 2009). For example, a complex food system is large-scale food production, compared to simple, small-scale production, with few infrastructures (Ericksen, 2007). Food systems include the social value of food culture and traditions; economics as food access and pricing; the built environment such as transportation options, presence of grocery stores, and food type including who, when, and what kinds of food people eat (Ericksen, 2007).

Industrial agriculture: Agriculture based on large-scale food production, technologies, and limited crop variety or monoculture (Wiskerke, 2009). Industrial agriculture is an outgrowth of the industrial revolution and is the primary food source in urban communities (Hemenway, 2011; Jarosz, 2008; Maxwell & Slater, 2003).

Local food or local food systems: These terms have an array of definitions with little consensus about what *local* means (Hand & Martinez, 2010). Other

definitions included distance, transport miles; geography by region, city, state, and country, a system of farmers' markets, urban agriculture, a social movement (Fair Trade), and consumer behavior (willing to pay more for food labeled *local*) (Hand & Martinez, 2010).

Permaculture: Holistic agriculture to balance activities in nature and society (Holmgren, 2002). Permaculture activities are ethical (caring for nature) and social (sustainable agriculture to feed people in the long term). Permaculture practices included alternative food systems, community gardens, and social networks (Andreatta et al., 2008; James, 2011).

Supplemental food source: Small-scale agriculture that includes urban farms, rooftop gardens, simple gardening practices, community support agriculture, community gardens (Jarosz, 2008; Wiskerke, 2009).

Sustainability: A process to conserve natural resources for present and future generations (Brundtland, 1987). Sustainability is a vague idea that is open to interpretation and was revised to include culture and social well-being (Holmgren, 2002). I defined sustainability as a process for long-term food production for present and future generations.

Sustainable agriculture: This type of agriculture describes long-term, holistic food production through composting, organic farming, and support for the local food sector (Holmgren, 2002). It provides a means to grow food to support life within the limits of nature (Brundtland, 1987).

Urban agriculture: "…the growing, processing, and distribution of food and nonfood plant and tree crops and the raising of livestock, directly for the urban market, both within and on the fringe of an urban area" (Taylor Lovell, 2010, p. 2500). Chase (2012) included food production, transport, and distribution. Urban agriculture is also "food production in cities through plant cultivation or animal husbandry and the processing and distribution of that food" (Mukherji, 2009, p. 2).

Urban farms: Small, commercial farms on 100 to 200 acres designed to sell food for profit located in the city or nearby suburban areas (peri-urban areas) (Brown & Carter, 2003). For this study, urban farms were also micro farms the size of one-quarter acre (10,890 square feet) or less in size.

City Ordinance: was the synonym for the new urban agriculture regulations adopted by a Northeastern city.

[City] or *[State]:* represented the synonyms for the Northeastern city and state that was the setting of this study.

Assumptions

I made several key assumptions concerning a supplemental food source. An assumption was that urban agriculture is a dynamic process to encourage people to grow their food. But there were associated restrictions with urban farming, such as soil testing requirements, construction regulations, and zoning laws. Many people may not grow their food, but I assumed that a fair number of people will participate in urban farming. Urban agriculture supported different ways to grow food. However, I assumed that people

understood that there were associated regulations such as fire safety, weight, and lighting restrictions on rooftops farms, food safety, and raised bed-farming practices.

Any assumptions about food policy included social equity based on the dynamic nature of urban agriculture. However, urban agriculture may not foster social equity in every community. Equity depended on available resources in public land or skills in gardening, and wealthy communities likely had more resources than low-income areas (Macias, 2008). Further, other assumptions were that urban agriculture supported sustainable agriculture more than industrial agriculture, and evolved from simple permaculture principles. But the caveat was that sustainability is relative: Both urban agriculture and industrial agriculture used natural resources and fossil fuels to grow food. In addition, the process to expand urban farming required substantial infrastructures to coordinate an urban farm network.

I assumed that the participants agreed to share their knowledge and actual experiences without fear. There was a twofold assumption that participants were truthful in their responses and organizations cooperated with requests to interview staff and review documents. Truth means "reasonably accurate and believable data" from different perspectives (Patton, 2002, p. 578). The selection of a qualitative study was to collect accurate data from various points of view rather than from one perspective (Patton, 2002). For instance, document reviews were other resources to help find the truth (Patton, 2002). Another research assumption was that the case study approach is a resource for thick, rich descriptions for understanding how an urban farm network can emerge. The

format was a phenomenological interview style of open-ended conversations with informants, rather than a quantitative survey or questionnaire-based approach.

In summary, my assumptions combined data on the dynamic qualities of urban agriculture. Adequate community support and political will were other considerations needed for an urban farm network. The quality and depth of the research influenced the transferability of the findings (similar findings in different contexts) (Patton, 2002). In this study, transferability was limited to communities similar to large a metropolitan community in the Northeast in size, political support, and available resources. Again, it was not clear if the results of this study might transfer broadly to different communities, or be limited to small neighborhoods rather than the citywide landscape.

Scope and Delimitations

I designed this research to explore the creation of an alternative food source, not to develop a new food system, and limited the scope to the processes that contribute to a supplemental food source. There is a trend in many cities today: population growth, restrictions on public land for agriculture, expanding food desert communities, and complex food systems are factors that drive urban food production (Morgan, 2009; Wiskerke, 2009). The trend contributes to a possible threat for food deficits because an urban community in the Northeast relied on a complex global food network as its primary food source. In addition, food policy theory was the foundation to discuss a range of stakeholder interests (Brundtland, 1978; Peters et al., 2008). I excluded rural food systems from the scope of this study because of their unique challenges (food access,

economic hardships, weather extremes) (Morgan, 2009; Kortright & Wakefield, 2011; Pothukuchi & Kaufman, 1999).

Trochim and Donnelly (2007) stated that the value of qualitative research was its variety and ability to explore, understand, and explain the phenomenon under study. The case study was less about truth and more about describing meaningful conclusions (Trochim & Donnelly, 2007). I used purposeful sampling that was limited to select industries, with selection criteria based on informants experienced in urban agriculture, urban farming, public policy, food production, urban planning, and implementation strategies to produce food for the community.

Participants with knowledge and skills in urban agriculture could identify the research boundaries. The participant skill sets included implementation, involved in urban agriculture, knowledge of urban farming, and the local food system. Participants could be senior level government officials in a state agriculture agency. Local nonprofits participants can include decision makers in farm management in an urban farming organization. I excluded people active in small-scale gardens and community gardens, which were primarily edible gardens for educational or personal use (Bosschaert, 2008). Other theories I reviewed were (a) community resilience which described how a community uses its resources to adapt to change (Magis, 2010); (b) community food security identified by the food infrastructures and qualities that exist in the community (Lutz, Swisher & Brennan, 2010); (c) contemporary agri-ecological which was an alternative agriculture system that supported community resilience (King, 2008); (d) foodways was a generic

term for what people eat, their cultures, beliefs, and practices around the production, preparation, and presentation of food (Cannuscio, Weiss, & Asch, 2010).

I further explored alternative theories such as social justice, Slow Food, and Transition Towns (Harper et al., 2009; Zerbe, 2010). However, these topics were too autonomous, focused on resources only in one location, and did not lend themselves to political support, or external resources. In addition, I found little research on some of these theories, or the concepts were unrelated to public policy and food production in the city (Harper et al., 2009; Peters et al., 2008; Zerbe, 2010).

Limitations

A possible weakness was a case study itself: A relatively small sample size could limit different points of view about the main food policy concepts under investigation. Another weakness might be in finding the cases that provided enough rich details needed to answer the research questions; therefore, the sampling strategy must be carefully designed (Patton, 2002).

To offset these weaknesses, I used purposeful sampling for data collection (Patton, 2002; Yin, 2009). To avoid the risk of bias, I included data from various sources. Adequate descriptions from interviews, document analysis, archival records, exploring different theories and an external audit could improve the dependability of this research. I was the primary observer who kept an open mind about any case study limitations, and actively searched for alternative or opposing points of view (Patton, 2002; Yin, 2009). The nature of qualitative research was subjective (Yin, 2009). As mentioned, the

transferability of the findings may be limited to urban communities with infrastructures similar to a large Northeastern metropolitan community.

Significance of the Study

I might contribute new knowledge to public policy in general and food policy in particular. Ericksen (2007) suggested that food policy evolved from agriculture, public health, urban planning, business, education, and community development. Inherently, there are urban agriculture and urban farming qualities that could influence food policy based on available assets in local communities. In addition, there may be opportunities for urban agriculture collaborations between public and private stakeholders and local food policies in their cities.

A gap in food policy literature did not addressed food production in local communities. Examples of local food policies included formal infrastructures such as food policy councils, regional planning boards, and informal infrastructures including urban farms and small-scale agriculture. In this research, I explored the potential for urban farms to become a supplemental food source, and not replace the primary industrial agriculture food system. In addition, the local food system might benefit from urban farmers who grow food and ease the burden from urbanization and limited public land for agriculture. I will address the opportunities for positive social change through public-private partnerships, greater interactions between local farmers and consumers, and better access to healthy foods in low-income communities (Kortright & Wakefield, 2011; Morgan, 2009).

Summary

There were inherent complex food policy interactions that contributed to a supplemental food resource. The main challenge is that today's global food system is outdated and not sustainable (Godfray, et al., 2010). However, the interactions between urban agriculture and urban farms might offer a solution as a supplemental food source in contemporary urban communities (Holmgren, 2002; Zerbe, 2010).

The purpose of this qualitative research was to explore the creation of a small-scale urban farm network in a Northeastern city. The theoretical framework was a specific type of food policy known as urban agriculture (Brundtland, 1987; Holmgren, 2002). The phenomenon was the activities needed to develop an urban farm network. The rationale for this study was an effort to understand the public policy challenges in providing food for an urban community. Through the literature review, I discovered few studies on small-scale solutions for urban food production. While there was an opportunity for new research in this area, there were associated challenges in creating a supplemental food source. For instance, as part of urban agriculture, an urban farm network would need various infrastructures (formal food policy councils, food plans, community interest, and political support) (Harper et al., 2009; Zerbe, 2010). Further, I assumed that urban agriculture was sustainable and challenged the premise that simple food systems used less energy than a complex food system (Ericksen, 2007).

The rationale was based on the assumptions, scope, delimits, and limitations of this study. By its nature, qualitative research is subjective, with limited generalizability and transferability. My study provided a description of a supplemental food source for a

large Northeastern metropolitan community. In Chapter 2, I described the current food policy research, followed by a discussion of my methodology in Chapter 3.

Chapter 2: Literature Review

Introduction

The challenge of providing food for the city is a longstanding one. Urban food systems are inconsistent as many cities struggle with complexities in food production, transport, distribution, and access (Ericksen, 2007). Threats to a food system can occur anywhere along the food supply chain, which does not favor stability or consistency (Brundtland, 1987; Ericksen, 2007; Wiskerke, 2009). For example, in the 1920s, New York City's vulnerable food system was evident when a potential transportation strike threatened the city and the country's entire food supply (Peters et al., 2008).

When Hurricane Katrina destroyed New Orleans' food supply in 2005, the United States Department of Agriculture (USDA) delivered 80,000 pounds of food to survivors (Loyd & Harless, 2005). Government officials delivered emergency food packages and food stamps directly to households in devastated neighborhoods (Loyd & Harless, 2005). Officials prepared over 300 trucks filled with canned vegetables, fruits, meats, cheese, and baby food (more than 12 million pounds of food) for delivery (Loyd, 2005). Conditions in New York and New Orleans illustrated the importance of a secondary food source for the survival of a community (Peters, et al. (2008).

United Nations officials predicted that the world's population will reach nine billion by 2050, and long-term solutions in urban food production are forthcoming (Brundtland. 1987; UNFAO, 2011). Current trends in many cities included new food policies to find alternative ways to feed more people, and threats from limited public land for agriculture (Maxwell & Slater, 2003; Morgan, 2009; Sonnino, 2009). In addition,

urban food systems remain weak without food reserves or infrastructures to absorb external shocks (Wiskerke, 2009). The Department of Homeland Security is concerned about the nation's food supply and issued the National Infrastructure Protection Plan as the national policy to protect agriculture and food systems (critical infrastructure) against natural disasters, terrorist attacks, and other emergencies (www.dhs.gov). The Department of Defense coordinated Operation Liberty Shield, a comprehensive multidepartment, multiagency national plan to protect the nation's citizens and agricultural infrastructures (www.defense.gov). Participating departments include Agriculture, Health and Human Services, Public Health, Environmental Protection, Education, Transportation, and others (www.defense.gov).

The purpose of my qualitative case study was to explore the creation of a complementary food source in an urban community in the Northeast. Further, I explored the activities that influenced public policy and local food policy. Such activities included consumer buying choices, social media campaigns, or technologies that artificially grow meat (Fountain, 2013; Hand & Martinez, 2010). A process to design an urban farm network may provide innovations in food policy. Ericksen (2007) recognized that understanding the rewards and risks of creating a supplemental food source may be critical to the future survival of cities. In addition, I might contribute new ideas and solutions to urban food production, information that is missing in the current food policy literature. In Chapter 2, I provided a description and analysis of the literature, food policy concepts (urban agriculture, urban farms, permaculture), and a review of the theoretical and conceptual framework.

Literature Search Strategy

Through an exhaustive literature review, I described key features in food policy and potential solutions to create a supplemental food source: food systems, urban agriculture, permaculture, sustainable agriculture, local food, sustainability, and alternative agriculture. Database searches in CQ Researcher, Academic Search Complete, ProQuest Central, SocINDEX, Academic ASAP, Thoreau, and Web of Knowledge revealed basic food policy key words. The ProQuest Dissertations & Thesis, Military & Government Collection, and Greenfile databases provided articles on small-scale agriculture, urban farms, food security, and civic agriculture. Keywords to find publications from 1985 to 2014 included food policy, local food systems, urban farms, informal gardens, edible gardens, foodscape, and community gardens.

Another literature resource was a scholarly lecture series on food in the urban landscape. Speakers in the series presented an overview of the urban food system in an urban community in the Northeast. Scholars and practitioners discussed the challenges of the city's food system: stakeholder diversity, limited access to healthy food, the obesity epidemic, local and global food systems, and reconnecting people to their food sources. A recurring theme in the lecture series was that food systems are complex. Policy solutions should engage local resources, such as community organizations, public and private stakeholder, and people with local food system expertise.

Lecture series summary. Food policy researchers from the lecture series offered a historical view of urban food systems. For example, a speaker at the lecture noted that there are two important outcomes of the industrialized food system: It made food more

available and provided technology that decreased the amount of food people needed to survive. In other words, wealthy nations had less starvation and famine, and more access to food variety. The speaker said that recreational eating and drinking was encouraged by convenient and fast foods. But the tradeoff resulted in more long-term health-related diseases and obesity due to excess eating and less exercise.

Another speaker described agricultural policies of the last century that expanded only after the Great Depression. Before that time, agriculture was limited, but by the 1930s, government intervened in many areas of food production including crop variety, agriculture technologies, and controlling the market. Policy officials supported research and development to increase production (crop and animal) and efficiency (input/output and labor). The speaker noted that the upsurge in corn, sugar, wheat, soya, dairy, and cotton was the outcome of these food policies. For example, corn is a commodity used for ethanol, to feed a growing population, and remains a popular export. However, fewer crop varieties planted on less available land and more environmental harm, represent a food system that is not sustainable.

A different presenter in the lecture series described yet another challenging food policy, food waste. Many retail establishments throw out five billion pounds of food yearly, and it is not possible for trucks to pick up excess food from grocery stores. Further, hunger in the U.S. is the result of eating the wrong foods and poor nutrition. The speaker noted that overall, food has become invisible, and people take it for granted. The *nutrition transition* diet of fast foods, processed and packaged meals have produced a slow, negative and long-term affect on human health. Food waste is a growing public

policy problem as cities struggle with urbanization and providing adequate nutritional food. Further, people in low-income communities may reject food that has expired and removed from grocery stores. An interesting note is that the state's Department of Environmental Protection banned commercial food waste from public landfills. In the near future, supermarkets and restaurant owners will have to make a concerted effort to redirect expired food to nonprofit organizations such as food banks and pantries, or church groups, and gleaning centers.

Theoretical Objectives and Assumptions

Food policy research. Food policy was the theoretical foundation to explore the creation of a secondary food source/. While there are many types of food policies, I examined urban farms as a secondary food source in a Northeastern city in the United States. Brundtland (1987) defined public policies as the government regulations, and directives used to solve public concerns. As a subspecialty of public policy, food policy is a growing concern (Maxwell & Slater, 2003). Brundtland (1987), Ericksen (2007), and Wiskerke (2009) found that food policy complexities are characteristic of the interactions of critical public concerns, such as the food-related activities (food systems, food supply chains, food cycles) in a community.

Food systems can be either large-scale, support agricultural technologies or monocrops, or small-scale, favor organic farms, and urban agriculture (Godfray et al., 2010; Zerbe, 2010). According to Ericksen (2007), the food supply chain could be complex and part of a global food network, or simple and dependent on local food resources. The food cycle is the life cycle of food from start to end, and included food

produced by local or regional farmers or the global food network, and transported over short or long distances. Food cycle activities involved consumption of local or imported food, disposal by composting, recycling, or gleaning (overripe or slightly damaged produce is donated to food banks and homeless shelters) (Brundtland, 1987; Ericksen, 2007; Wiskerke, 2009).

International food policies. International food policy was an outgrowth of the 1987 United Nations (UN) document, *Our Common Future, From One Earth to One World: Report of the World Commission on Environment and Development*, also called the *Brundtland Report* (Report) (Brundtland, 1987). During the 1980s, developing nations suffered from long periods of poverty due to limited domestic resources and international support (Brundtland, 1987). Brundtland suggested that new food policies might counteract the real threat of a food crisis in poor countries. According to Brundtland, the UN's immediate response was to redouble food production and food policy was critical for human survival. Brundtland observed that poverty was a threat to communities with limited resources to grow food.

The *Brundtland Report* was important for three reasons: First, the Report was the seminal document that introduced food policy to the international community (Morgan, 2009; Pingali, 2006; Pothukuchi, 2009). For the first time, food became a topic of global concern - joint ventures between countries were a means to end starvation (Brundtland, 1987). Second, Brundtland's Report served as a platform to describe the relationships between environmental conservation and human survival. Sustainable agriculture was a resource to preserve natural resources for present and future generations (Brundtland,

1987). As such, urban agriculture became a bridge between sustainable agriculture and food production in urban communities (Brundtland, 1987). Third, decision makers used the Report to develop food policies for the current industrial agriculture-based food system (Brundtland, 1987). This type of agriculture provided the foundation of the global food network which is the primary food source for cities worldwide (Brundtland, 1987; Clemmitt, 2008; Godfray et al., 2010).

In contrast to industrial agriculture, city officials in Havana and the Cuban government have maintained a well-developed urban agriculture system since the 1980s (Dixon et al., 2009; Hiranandani, 2010). Havana is an example of international food policies that reflect sustainability and human survival. Officials in Montréal, Canada designed a network of 97 community gardens throughout the city (Taylor Lovell, 2010). The government in Beijing, China, expanded an urban agriculture model of farms and public land for agriculture (Taylor Lovell, 2010). Members of the London Food Board introduced the Healthy and Sustainable Food program to increase regional foods throughout the United Kingdom (Reynolds, 2009).

Regional and local policies. A focal point of domestic food policy was regional and local food. The Agricultural Act of 2014 known as the Farm Bill provided "national agriculture, nutrition, conservation, and forestry policy" (para. 1, www.ag.senate.gov). Several Farm Bill policy makers supported industrial agriculture subsidies and incentives. But my study was limited to small-scale agriculture, local and regional food policies (Hardesty, 2010).

Of note, American Planning Association members recognized that local and regional food systems were critical to urban planning (Raja, Born, & Russell, 2008). Raja et al. suggested that local or community food policy explored the interactions between food producers, distributors, and consumers. Regional food policy is a collection of local food systems identified by geographic proximity (Clark et al., 2010). Farmers located just outside the city can create *agri-regions* that rely on food resources in the community (Clark et al., 2010). Policy makers can apply regionalization to potentially expand agriculture anchored by a group of farms within an area (Clark et al., 2010).

Food policy summary. The city of Buffalo, New York is a community with numerous vacant lots and abandoned properties available for agricultural use (Metcalf & Widener, 2011). City officials applied local and regional food policies to increase the local food supply. In a Northeastern city, food policy changed restrictive zoning laws to allow plant agriculture in all zoning districts. Specifically, zoning codes were changed to include a new section, called the *City Ordinance*, (Ordinance) to accommodate urban agriculture projects throughout the city. In Seattle, Washington, members of the Puget Sound Regional Council (PSRC) designed a multiple county plan to enhance the region's food system. The comprehensive plan included an element of food in land use, housing, economic growth, transit, and environmental conservation policies (PSRC, 2012).

Food policy definitions. A food policy definition was "any decision made by a government institution which shapes the type of foods used or available…", and underscored the incremental nature of public policy (Hamilton, 2002, p. 444). New food

policies emerged from old ones and integrated ideas from community development, agriculture, public health, urban planning, and technology (Ericksen, 2007).

In contrast, food policy included infrastructures and guidelines for food-related activities in the community (Maxwell & Slater, 2003). For instance, food policy decision makers included (a) food production activities (urban farming or edible gardens), (b) agricultural variety (urban agriculture and industrial agriculture), (c) food distribution (community shared agriculture) or farmers' markets, (d) consumption (home cooked meals and takeout/fast food), (e) economics (food pricing, and trade policies) (Maxwell & Slater, 2003). The social qualities included food traditions and consumer food choices (Maxwell & Slater, 2003). Food policy represents a collection of food related activities, and has a clear impact on the well-being of urban communities (Morgan 2009; Sonnino 2009).

Brundtland (1987), Ericksen (2007), and Hamilton (2002) explained that the goal of food policy was to develop infrastructures that improved the flow of food through a community. In addition, food policy makers included food access, pricing, culture, traditions, and quality. Contemporary food policy research is fluid and cross discipline in nature (Godfray et al., 2010; Maxwell & Slater, 2003; Morgan, 2009; Sonnino, 2009). The challenges in food policy theory were based on its unique qualities (Macias, 2008, Morgan, 2009, Taylor Lovell, 2010). For example, food policy could be specific to rural and urban areas or policies might change within urban neighborhoods that fall within the city's overall food policy (Morgan, 2009; Pothukuchi & Kaufman, 1999). Variations in food policies combined urban food planning, local and regional food policy councils,

institutional policies, hybrid agriculture, and social justice (Glosser et al, 2007, Lutz et al., 2010, Pothukuchi, 2009, Reynolds, 2009).

Food policy objectives. In the literature review, I described food policy objectives that explored their complexities. Food policy decision makers recognized the connections between food and human survival as an important objective (Brundtland, 1987). These connections included agricultural practices that strengthened the local food system, food crisis as a reality in nations struggling with poverty, and long-term environmental harm that is detrimental to humanity. The Report was the first formal document about environmental conservation and human survival, and Brundtland (1987) fostered it to gain the attention of the international community.

The second objective was that the solution to poverty was food access and economic parity: When people had money, they could buy food (Brundtland, 1987). The authors of the UN's 1984 report, *Potential Population Supporting Capacities of Lands in the Developing World,* called the *Land, Food and People Report* described the relationships between livable wages and food (Brundtland, 1987). For instance, conserving farmland in poor rural communities was a mechanism to encourage people to work their land, rather than migrate into cities (Brundtland, 1987). If people could generate profit from their crops, then economic growth would return to their communities (Brundtland, 1987).

Pingali (2006) suggested a third objective. Brundtland presented the *Report* as a global agenda for change to promote long-term plans for sustainable development into the next century. The plans involved international joint ventures to resolve environmental

problems and global action plans to protect nature (Brundtland, 1987). Brundtland favored sustainability to conserve natural resources for present and future generations. But the means to implement sustainability remained unclear, and the Report was more useful as a long-term planning guide for rich and poor countries (Brundtland, 1987).

Brundtland offered a fourth objective: Food policy could not evolve without government support. Godfray et al. (2010) found that the Report was the first document to introduce sustainable development to global policy makers. But *sustainable development* had a vague definition: "Ensuring human rights and well-being without depleting or diminishing the capacity of the earth's ecosystems to support life, or at the expense of others well-being" (Brundtland, 1987, p. 24). *Sustainable agriculture* described the balance "between food self-sufficiency and food self-reliance," and favored job creation to eradicate poverty and protect natural resources (para. 3, www.fao.org). Although the environment was already on the UN's agenda, Brundtland emphasized the link between human survival and conserving nature, and suggested that the process to balance food policy objectives was political and ambiguous at best.

Food policy assumptions. Food policies are assumptions about a particular outcome. For instance, Brundtland's (1987) assumption was that the 1980s food crisis was the result of technological inequities between rich and poor countries, and consumer demand for meat and dairy products. But the food crisis also included the "new fundamentals," the indicators of poverty, food production, or lack of agricultural resources (Lang, 2010, p. 88).

However, a food crisis was open to interpretation and food policy makers who ignored the new fundamentals increased the threats to their food system (Lang, 2010). Lang explained that industrial agriculture was not the true cause of a food crisis. In the 1980s, higher food production did not end hunger in developing countries, and hunger increased since the 1990s. Lang proposed that effective food policies should consider unhealthy eating habits and undernourished people, agriculture to feed livestock rather than people, and the harm from large-scale food production. In other words, several factors contributed to the food crisis beyond technological inequities and consumer demands for meat and dairy (Lang, 2010).

Clemmitt (2008) provided a chronology of food crisis events:

1. 1917: The War Department encouraged youth to grow vegetable gardens.
2. 1928: Drought in northern China killed three million people.
3. 1945: Los Angeles schoolchildren planted 13,000 gardens to help the war effort.
4. 1948: The Green Revolution or industrial agriculture, applied technology to expand agricultural processes.
5. 1990s: Farm subsidies reached $5.9 billion in emergency funds as floods, and civil war destroyed communities in North Korea, Ethiopia, and the Soviet Union.
6. 2007 - 2008: Grain production declined. Congress favored corn production for biofuels in gasoline. The UN declared that 850 million people worldwide were starving. The Green Revolution continued to deplete resources and wreak

havoc in nature. Congress favored complex industrial agriculture as the primary food source.

Brundtland (1987) and Maxwell and Slater (2003) favored economic growth as a catalyst to end worldwide poverty. The UN policy makers promoted economic growth in their report, *The State of Food Insecurity in the World 2006* (Pingali, 2006). However, infrastructure, start-up costs, farming experience, and knowledge of the marketplace are critical for farmers to generate profits from their farms (Angelo et al., 2011; Zerbe, 2010). Economic growth to end poverty was a slow and demanding process (Hemenway, 2011).

***Brundtland Report* summary**. Mutual gains from equitable and sustainable practices were possible. If a poor nation lacked technology to begin sustainable farming, a wealthy bordering nation might offer technical support (Brundtland, 1987). Brundtland's basic conclusion was that effective food policies required political support. Further, Pothukuchi (2009) and Morgan (2009) offered that a comprehensive food system emerged from political will, cross-sector expertise, a strategy to enact change, and interest at the national level.

In the end, Brundtland (1987) concluded that there was a link between food policy and the survival of all future generations. The interaction of public policy and food activities in the community was a reflection of its sustainable practices (Brundtland, 1987). As mentioned, sustainability had different meanings for different stakeholders: Tradeoffs and power leveraging between rich and poor nations was part of the process (Brundtland, 1987). Overall, the Report was a powerful tool to spark new conversations on the critical need to save natural resources for human survival (Brundtland, 1987).

Urban Agriculture Literature

In this study, I focused on local food policy in the Northeast, although many food policies and urban agriculture studies address global and international concerns. As mentioned, food policy offered a broad perspective on the interactions between local, regional, and global food systems (Angelo et al., 2011; Maxwell & Slater, 2003). The local needs of the community and its various food production activities can be resolved through urban agriculture. Urban agriculture is "the growing, processing, distribution of food and other products through intensive plant cultivation and animal husbandry in and around cities" (Brown & Carter, 2003, p. 3).

The urban agriculture definition is inclusive of all areas of agriculture, related businesses, natural resources, consumption, well-being, recreation, and economics (Brown & Carter, 2003). Similar to other food policy concepts, urban agriculture has different meanings as seen in the Definitions section in this chapter. Urban agriculture benefits include a resource to create environmental stewardship, a sense of community, to promote lower energy needs for locally grown foods, support economic development, empowerment and control over urban food policies (Brown & Carter, 2003).

Urban farms sell food and generate profits, and commercial farms can be small farms that make less than $250,000 in gross sales (Brown & Carter, 2003). They represent many farms in the Northeast region (Brown & Carter, 2003). Three groups of urban farms included *recreational farms* of less than 100 acres, *adaptive farms* of 100 to 200 acres, and *traditional farms* of more than 200 acres (Brown & Carter, 2003).

Commercial farmers can be in the suburbs (peri-urban areas) and develop close interactions with local communities (Brown & Carter, 2003).

In urban agriculture, there are different types of urban farms. Small-scale farms were similar to edible food gardens for personal or educational use (Bosschaert, 2008). These stand-alone farms produced specialty organic crops, and not designed for agricultural use (Bosschaert, 2008). Medium-scale farms are part of an institution (hospitals, universities, prisons, nursing homes) to grow food for large dining halls (Bosschaert, 2008). Students and volunteers managed the farms that were culturally, socially, and visually attractive, and support biodiversity (Bosschaert, 2008). However, medium size farms had limited expansion beyond the community level because of space limitations in the surrounding area of the institution (Bosschaert, 2008). Large-scale farms support high volume food production (Bosschaert, 2008). Large-scale farms can be vertical or stacked to maximize space in a high-rise building (Bosschaert, 2008). Alternative technologies such as hydroponics (growing food in water with added nutrients) and aeroponics (plants growing in dark boxes with a vaporized nutrient solution) are also examples of large-scale farms (Bosschaert, 2008).

Other types of urban agriculture included community gardens and small plots of land for personal and household use (Brown & Carter, 2003). Nonprofits, institutions, community groups, or individuals own these gardens. People grow food to sell or donate, and for greater access to fresh fruits and vegetables (Brown & Carter, 2003). According to Brown and Carter (2003), backyard gardens are container, windowsill, balcony and

rooftop gardens. People use them to supplement their diets with seasonal foods, and urban gardens help low-income families save money on food (Brown & Carter, 2003).

Some of the challenges in urban agriculture include land access, start-up costs, gardening skills, and the seasonality of the region (Brown & Carter, 2003). But solutions were possible through strategic partnerships. A citywide food assessment could address problems on different levels. Urban planners, social workers, public health, and international development experts might learn new practices and share ideas. In addition, food policy councils form a collective of civic and youth groups, institutions, skilled and novice gardeners (Brown & Carter, 2003). An urban agriculture system may be possible with infrastructures for various food production methods, farm-to-institution partnerships, food education programs, and creative ways to use public lands for agriculture.

However, the inherent complexities of urban food systems increase as people migrate into cities due to financial hardships in rural communities, weather extremes, and civil unrest (Forster, 2011). This collection of challenges required new policy solutions from local, national, and international communities (Forster, 2011). In 2009, 79% of the people in developed countries were city dwellers, compared to 45% in less developed areas (Forster, 2011). The challenges of urban agriculture suggested that there was potential for it to become a mainstream food source, but it had limitations (Sharzer, 2012). For instance, vacant land and public spaces have more market value as developed or commercial land rather than for agricultural use. Therefore, urban agriculture might occupy niches (farmers' markets, food trucks, urban farms) in the city rather than provide a viable mainstream food source (Sharzer, 2012, p. 75).

Global urban agriculture. Contemporary researchers in urban agriculture revealed a global trend in cities exploring food production choices. For instances, populations in African cities have been active in urban agriculture since the 1970s (Lerner & Eakin, 2011). During the 1980s, around 25% of urban populations in Africa were active in food production, and by the 1990s, the number rose to 70%, and up to 60% in Asian populations (Bryld, 2003). Urban agriculture is not a new phenomenon. In 1998, the health benefits of urban agriculture were examined for children in Kampala, Uganda (Maxwell & Slater, 2003). Seeth et al. (1998) noted that cities in Russia used urban agriculture for food production and gardening to generate income and provide food for their families (as cited by Lerner & Eakin, 2011).

The growth of urban agriculture in cities worldwide may be in response to additional pressures on urban environments (Lerner & Eakin, 2011). Local food sectors are expanding to meet the demands of global consumers (Tacoli, 2003) The emerging middle-class population, high-income professionals, and urban tourists have changed food production as people demand food from traditional and local heirloom varieties (Baker,2008, Keleman & Hellin, 2009). There is "little understanding of the complex interactions in the motivation, needs, assets, and opportunities" in urban agriculture (Lerner & Eakin, 2011, p. 318). But, the relationships between agriculture and urban planning require further studies, which should be a collaborative process.

Holistic urban agriculture. Strong connections exist between urban agriculture and agricultural sustainability. The author of report on a food-based nonprofit in the Northeast described urban agriculture relating to the environment, agriculture, social,

financial, and community. Agricultural sustainability is a balance between food production and natural resources for long-term gains. The author proposed different forms of sustainability: (a) environmental sustainability (working with natural systems to replenish the land for growing food), (b) social sustainability (conditions that provide healthy, nourishing, and productive work habits), (c) financial sustainability (fostering small-scale agriculture and alternative food systems that survive in the marketplace of large-scale profits), (d) community sustainability (interactions that built relationships between neighbors and community groups for long-term value).

Urban agriculture in the United States is generally thought of as community gardening, where people grow food on public or private land that they do not own (Peters, 2011). UN officials defined *urban agriculture* as food production, processing, distribution, and marketing for consumers in cities, towns, and nearby communities. Urban agriculture is also food production that supports sustainable agriculture (crop variety and rotation, recycling natural resources) (Peters, 2011). Examples of urban agriculture include vacant lots, hospital grounds, rooftops, windowsills, and parks as resources to grow food. The benefits of urban agriculture create jobs and promote entrepreneurship, increase access to fresh fruits and vegetables, provide a supply of healthy organic food to counteract poor nutrition and mental illness (Peters, 2011). Food culture, traditions, and well-being were also benefits (Taylor Lovell, 2010).

Based on its proximity to buildings and close living areas, urban agriculture should use organic farming (food production without heavy equipment and pesticides) (Peters, 2011). Urban agriculture by definition fosters natural processes to grow food

(Harper et al., 2009; Zerbe, 2010). More importantly, when low-income populations grow their food, it increases the food supply in the event of a food shortage (Peters, 2011). For this reason, Peters suggested that urban agriculture favors social equity between the rich and poor. U.S. cities with active urban agriculture programs included Portland, Oregon, where the Department of Parks and Recreation officials provided public land to lease garden plots for people to grow food or donate to emergency food organizations (Peters, 2011). City officials in Baltimore, Maryland created the City Farms program that leased land to urban gardeners, and members of the Community Greening Resource Network provided seeds, compost, tools, and workshops to encourage more urban gardening projects (Peters, 2011).

Urban agriculture summary. An urban agriculture system in the U.S. could be sustainable and might develop through eminent domain to pay private landowners to convert their land for public use (Peters, 2011). Nonprofit managers for land trusts can also encourage private landowners to donate land as a tax incentive. In addition, decision makers can build infrastructures for urban agriculture to provide education, resources, and jobs. But political support and public funding (state and federal) are needed to build these infrastructures (Peters, 2011).

In contrast, Taylor Lovell (2010), Tregear (2011), and Zerbe (2010) questioned Peters' (2011) assertions about alternative food systems in general. For instance, patterns in alternative food system literature can diminish its scholarly value because concepts are vague and confusing (Tregear, 2011, Clemmitt, 2008, Godfray et al., 2010, Marshall & Lozeva, 2009). However, alternative food systems are different from any industrial

agriculture system: The definition described what the food system is not, rather than what it is (Tregear, 2011). As a result, *alternative* can mean food miles, backyard gardens, consumer-buying habits, or a simple food supply chain (Tregear, 2011).

Tregear (2011) found that heterogeneity in concepts does not promote real world solutions. Shorthand terms such as heterogeneity, put many alternative food systems in one group, with an assumption that they all responded in the same way (Tregear, 2011). As such, alternative food systems are weak or strong, traditional or innovative (Tregear, 2011). But food systems identified by their value to the community was confusing and vague (Tregear, 2011). In addition, there were misperceptions of people as political radicals, when it may be that the food system itself is not sustainable or socially just (Tregear, 2011). People may support for local farmers bit overlook the corner store that offers flexible credit options for low-income individuals, or large-scale farming that recycles its food and animal waste (Tregear, 2011). As such, heterogeneous patterns do not add value to the literature. Practical solutions need re-thinking, deep exploration, and clear descriptions of basic food policy concepts (Tregear, 2011).

Consumer perceptions about local food were another pattern in alternative food systems literature. For instance, consumers believed local food systems had fresher food and were more energy efficient and sustainable (Mariola, 2008; Peters et al., 2008; Tregear, 2011). However, farmers who sold local food may use more resources in water and fossil fuel than traditional agriculture. Also, these farmers might serve as a local vendor for a supermarket chain that transports food across the country (Courtemanche & Carden, 2011; Tregear, 2011). Overall, there are deeper connections between diverse

food systems. A holistic approach to studies on alternative food systems, food policy, public policy, and small-scale agriculture was a strategy to add value to urban agriculture research. Cross-fertilization of ideas from various disciplines, plain language, transparent concepts, and open-mindedness can stimulate new research (Tregear, 2011). A contrary and questioning approach can further add value to any food policy study.

Literature based analysis. Food policy studies included several themes. Food policy is an evolving landscape, and one food policy model does not fit every community. The process is open to interpretation and dependent on available resources in the community (Macias, 2008; Morgan, 2009; Taylor Lovell, 2010). Agriculture in food policy includes urban agriculture, industrial agriculture, and permaculture. Except for industrial agriculture, urban agriculture and permaculture have qualities supporting organic farming, supplemental food sources, and small-scale agriculture (Harper et al., 2009; Zerbe, 2010). Some examples of food policies were formal infrastructures and informal food practices, or a vision for a specific community (Slow Food, Transition Towns) (Mayer & Knox, 2009; Wiskerke, 2009; Zerbe, 2010).

But food policy practices could also be exclusive and ignore social equity: Some policies offered more food choices through boutique grocery stores and farmers' markets (Macias, 2008). This pattern was a common in wealthy neighborhoods more than in low-income areas (Macias, 2008). For instance, projects designed to increase food access in poor communities might include large upfront fees, which people could not afford (Macias, 2008). Further, food policies could be community-based, citywide, statewide, regional, national, or international (Macias, 2008). Land, food assets, local expertise, and

consumer demand are resources that have a critical impact on food policy development (Pothukuchi, 2009).

Research based analysis. The goal of food policy is to foster stable food systems, a process that includes creating infrastructures that improve food-related activities in the community (Brundtland, 1987, Hamilton, 2002, Maxwell & Slater, 2003). However, a summary of food policy research included these challenges:

Equity in stakeholder interests. Land and zoning regulations could be barriers to effective agricultural practices. Discrepancies between large-scale and small-scale food systems, and between local and technology-based food production were other concerns about equity (Brundtland, 1987; Holmgren, 2002).

Food safety and urban agriculture. Food regulations are critical in urban agriculture. Urban farm regulations included soil testing and raised bed practices for all above ground edible gardens (Hutson, 201). Such problems may be unique to cities with soil contaminated by lead, toxins, and pesticides (Mukherji, 2009).

The industrial agriculture (IDA) food system. Currently, IDA is the most prominent type of food system in urban communities (Ericksen, 2007). This dependency puts urban populations at risk because a complex global food network is unsustainable (Holmgren, 2002). Food system complexities included long food transport miles, few centralized locations, and a large consumption of natural resources (Ericksen, 2007, Kortright & Wakefield, 2011). IDA is short-term food production, and there is an input-output imbalance when a large input (water and land) outweighs the output (amount of

food produced) (Godfray et al., 2010). Unlike organic practices, industrial agriculture is not self-replenishing (Godfray et al., 2010).

Consumer behavior and the food system. Maxwell and Slater (2003) found that food marketing and branding influence what people buy. Over time, consumer preferences favored the nutrition transition diet of fast and convenient foods. Such preferences resulted in more obese children and adults worldwide and higher costs of treating food related diseases (heart disease, diabetes) (Glosser et al., 2007; Maxwell & Slater, 2003; Pothukuchi & Kaufman, 1999).

Curious qualities of food. There are unique qualities of food that make it easy to ignore. Food is visible and invisible at the same time (Pothukuchi & Kaufman, 1999). Food has a visible feature as seen in a deluge of print advertisements, reality TV shows, and the excess of fast food restaurants in many cities (Pothukuchi & Kaufman, 1999). For the same reasons, food is also invisible because it is "always there" (Pothukuchi & Kaufman, 1999, p. 214). As a result, people think that the urban food system is stable. But easy access to unhealthy food and limited access to fresh food does not make a food system stable or sustainable (Pothukuchi & Kaufman, 1999).

Complacency and the nature of cities. Urban populations have feelings of complacency around food because cities have a "hunger safety net" for poor people with access to food banks, school lunch and food stamp programs (Pothukuchi & Kaufman, 1999, p. 214). A sustainable food system to accommodate urbanization should be a priority, and an urban farm network offers a possible solution (Pothukuchi & Kaufman, 1999).

Another food curiosity is the nature of cities. A city was defined as a place where people cannot grow enough food to keep them alive (Howard, 1960, Losch, 1954, and Toynbee 1970 as cited by Pothukuchi & Kaufman, 1999). Other food curiosities included the fact the food policy is farm policy - federal subsidies are for farmers, and social programs are for cities (Cannuscio et al. 2010). Another curiosity was that industrial agriculture technologies favor processed, packaged, and convenience foods, which has become the staple diet for many urban populations. In addition, food has a social element that creates a *third place* or a space for people to socialize at the corner store.

Food quality summary. The foundation of a complex food supply chain included the food curiosities that separated producers and consumer (Pothukuchi & Kaufman, 1999). Political support was important in urban food strategies, but the foundation of a sustainable food system was urban farms and small-scale agriculture Pothukuchi & Kaufman, 1999). A composite of disciplines such as public policy, agriculture, public health, urban planning, and community development, was the basis for food policy theory (Ericksen, 2007). The qualities, assets, and agricultural practices that were unique to each community are elements of effective food policies (Avery & Avery, 2008; Brundtland, 1987; Godfray et al., 2010; Wiskerke, 2009).

Examples of food policies included food system gaps. Wiskerke (2009) identified three elements of the food system. *Disconnecting* created a gap between food producers and consumers. *Disembedding* was food branding and marketing designed to change consumer-eating habits. *Disentwining* extended the gap between food producers, suppliers, and consumers. Such features were part of industrial agriculture and the

qualities of a complex food system (Godfray et al., 2010). As mentioned agricultural variety included industrial and natural food production, such as large-scale or commercial agriculture that applies technology and artificial processes to grow food (Brown & Carter, 2003). For instance, genetically modified crops (GMOs) are an agricultural technology to produce more high yielding monocrops (limited crop variety, monoculture) (Avery &Avery, 2008).

In contrast, permaculture is organic agriculture based on natural ways to grow food (composting, crop variety) (Holmgren, 2002). According to Harper et al., (2009) and Zerbe (2010), urban agriculture has nature-based processes to grow food. Alternative food systems had more variety in food production, and supported local and small-scale agriculture (Holmgren, 2002; Lutz et al., 2010; Zerbe, 2010). Jarosz (2008) included simple farming practices such as composting, recycling, and crop rotation in this definition. Urban agriculture and peri-urban farms or farms located around areas a city are part of an alternative food system (AFS) (Dixon et al., 2009). Other elements of AFS included social equity, traditional foods, or food geography such as Washington apples, Florida oranges, and Idaho potatoes (Haydu & Kandoff, 2010; Mariola, 2008).

Rationale for Food Policy Theory

In the United States, the earliest official food policy was the Agricultural Adjustment Act of 1938 (Act) (www.ag.senate.gov). Officials wrote the Act to provide government subsidies to farmers for excess grain for the country's food supply in case of emergencies or weather extremes (www.ag.senate.gov). However, I used the international food policy described in the 1987 *Brundtland Report* (Report). The rationale for

contemporary and global food policy was threefold: The Report suggested that there was an inextricable link between human survival and environmental conservation (Brundtland, 1987). Further, the current global food network is the primary food source and evolved from commercial agriculture (Brundtland, 1987). In addition, I studied urban farming as a supplemental food source, small-scale agriculture based on composting, recycling natural resources, and alternatives in food production (Lutz et al., 2010; Zerbe, 2010).

The challenges in food provisioning are more complicated today than in the 1930s, and food policy should address them. As such, the contemporary perspective of the Report had solutions to the food policy challenges in urban communities. From a global perspective, the nature of food systems was evolving (Lee-Woolf, 2009; Reynolds, 2009). There was an assortment of food policies in the urban landscape - urban farming, farmers' market, limited food choices, and unhealthy eating habits (Hutson, 2011; Kortright & Wakefield, 2010; Mukherji, 2008; Pingali, 2006). Food policy theory was a framework to understand the potential to develop a small scale, supplemental food source in a large Northeastern city.

Answers to the research question. I selected food policy to answer the research question for several reasons (Bates & Hemenway, 2011). First, the choice was based on understanding the challenges in the global or local food supply chain, and the best practices in large-scale and small-scale agriculture (Lutz et al., 2010; Zerbe, 2010). As such, food policy was the foundation to explore the phenomenon to create a complementary food source (Lutz et al., 2010; Zerbe, 2010).

Further, food policy was selected to explore several definitions for food-related activities - local food systems, food cycle, urban agriculture, and supplemental food sources (Maxwell & Slater, 2003; Morgan, 2009; Sonnino, 2009). The definitions build knowledge to foster new ideas in food policy development (Brundtland, 1987). In addition, food policy was a resource to best answer the research question, what are the public policy limits and opportunities that support urban farms as a supplemental food source? As such, I explored the potential to implement food policy as urban agriculture and more specifically, to evaluate urban farming as a supplemental food source.

Conceptual Framework

Urban farms could be a diverse system of food and non-food related activities. The U.S. Environmental Protection Agency (EPA) defined urban farming as "a local food system where food is cultivated and produced within an urban area and marketed to consumers within that urban area" (www.epa.gov, p. 3). EPA officials identified urban farms as a resource that provides food and nonfood products such as (beekeeping, livestock, fish farming, flowers, cultivating seeds and seedlings (www.epa.gov). Other activities included sustainable food production, food education, job training, and urban farms can be a nonprofit or business enterprise (www.epa.gov).

I examined the phenomena of the activities that foster an urban farming network. Urban agriculture could help or harm the design of this network (Dixon et al., 2009). Food production in densely populated communities (multiple family units, high-rise apartment buildings) has its unique challenges (Holmgren, 2002; Lovell, 2010; Lutz et al., 2010). While urban farms could potentially expand the urban food system, food

policy might be problematic at best. For instance, urban farms could help local food systems and enhance the well-being of the community (Flachs, 2010). But in reality, commercial urban farms and gardens require strict regulations for garden construction, food safety, and agricultural practices.

Food policy interactions. I used the relationships between public policy, food policy, urban agriculture and permaculture to explore the creation of an urban farm network (Chase, 2012; Holmgren, 2002). Urban agriculture is a type of food policy that describes food production, transport, and distribution in the urban marketplace (Chase, 2012; Taylor Lovell, 2010). Permaculture was the contextual lens for an urban farm network, and provided the invisible structures, or the social qualities of culture, traditions, and community well-being (Dixon et al., 2009). Conflicting stakeholder interests are a consideration in designing a supplemental food source (Ericksen, 2007). Collective agriculture, urban farms, social networks, and food policy councils can mirror the conflicting interests between food policy, urban agriculture, and permaculture (Dixon et al., 2009; Plyler, 2012).

Effective and forward-thinking policy makers combined multiple viewpoints on the unique food needs of the city (Brundtland, 1987; Holmgren, 2002). According to Maxwell and Slater (2003), food policy has the infrastructures to produce, distribute, and dispose of food. Such infrastructures expanded the idea that food is part of nature and a basic human need, an idea first introduced in the Report (Maxwell & Slater, 2003). Trends in food policy highlight both the need for alternative food resources and the city's dependence on a complex and unsustainable food supply chain (Wiskerke, 2009).

Urbanization remains a threat to the flow of food and increases the potential for food shortages in cities worldwide (Morgan, 2009; Sonnino, 2009). Effective food policy is a concern for local governments, and many city officials are evaluating different ways to grow food (Maxwell & Slater, 2003).

Summary of food policy concepts. The phenomenon of an urban farm network could offset food policy trends. The interactions between food policy, urban agriculture, permaculture, and industrial agriculture influence a process to cultivate a complementary food source (Maxwell & Slater, 2003). A complex food supply chain includes available land, supermarket locations, transportation choices, access to fresh food, economic opportunities, and each element affects the overall quality of the food system (Glosser et al., 2007; Hébert, 2011).

Food system complications included urbanization that drives the demand for public services as more people move from rural areas into the city (Jarosz, 2008)., However, the food supply chain activities also provides opportunities to find alternative ways to grow food and build local food networks (Jarosz, 2008). In general, complications are concentrated in food desert areas. Such communities had easy access to unhealthy foods (takeout, fast food places), limited access to fresh food, and greater obesity and diet-related diseases (Freedman & Bell, 2009; Hutson, 2011).

Food policy was a source of intersecting ideas from several disciplines (Godfray et al. 2010). For example, urban planning included the built environment and food policy councils (governance). Agriculture involved urban farming, edible rooftop gardens (small-scale agriculture), and technology (vertical and hydroponic farming). A hybrid

food system could emerge from a combination of industrial agriculture and organic farming practices (Brundtland, 1987; Ericksen, 2007; Godfray et al., 2010; Wiskerke, 2009). Food-related activities are all part of the solution to design a complementary food source, and key terms were discussed in the Definition*s* section of Chapter 1.

Gap in the literature. A plethora of tradeoffs is part of the food policy design (Brundtland, 1987; Zerbe, 2010). For example, urban agriculture and permaculture have low yielding crops compared to industrial agriculture (Avery & Avery, 2008, Brundtland, 1987; Zerbe, 2010). But commercial, high yielding crops deplete natural resources which are not sustainable, in contrast to urban agriculture (Zerbe, 2010). But agriculture also has its associated risks and rewards.

I found few articles in the food policy literature on the phenomenon to create an urban farm network. Similar to other food policy concepts, urban farming has several definitions such as food production for profit, fish farming, community gardens, and growing flowers (www.epa.gov). Many urban agriculture researchers described different types of community gardens for personal use, donations, and community-based agriculture. But these gardens might be too small to complement the local food system and influence food policies in a Northeastern city (Dixon et al., 2009; Holmgren, 2002).

As such, I discovered an opportunity to review urban farming as a supplemental food source. Economic sustainability and promoting healthy eating habits may be features of urban farms: They also serve the demands of the local food sector (restaurants, farmers' markets, public food markets, food trucks) (Brown & Carter, 2003). Urban farms can potentially become a supplemental food source for the food system in a

large Northeastern city. However, infrastructure and available resources were other considerations in this process.

Urban Agriculture Policy

The qualitative method was used in many food policy studies. Case studies, meta-analyses of current studies, or comparison studies described the main challenges in food policy design. There were a few quantitative studies, but case studies were the primary resource of articles on the interactions between food policy and urban farming.

The scope of my study was urban agriculture, a type of food policy specific to the city environment (Maxwell & Slater, 2003). The primary focus was urban farming as a supplemental food source. Further, I explored the interactions, similarities, and challenges in designing an urban farm network for the city. For instance, many traditional food policies had a long-term and harmful impact on nature, including soil erosion, pesticide use, hormones in animal feed, and people exposed to synthetic chemicals (Maxwell & Slater, 2003; Wiskerke, 2009; Zerbe 2010).

Urbanization, technology changes, lifestyle choices, media, and industrial agriculture were activities that defined past and present food policies (Maxwell & Slater, 2003). Emerging policies included the challenges in developing a sustainable food system, or looking for alternatives in food production (Maxwell & Slater, 2003). Micro marketing was niche marketing for the boutique farmers' market segment to support local farmers and economies (Maxwell & Slater, 2003). Food-related diseases and consumer preference for the nutrition transition diet (high sugar, salt, and animal-based foods) increased healthcare costs worldwide (Maxwell & Slater, 2003). A comparison of old and

new food policies showed that the food supply chain had old policies that were simple. For instance, few transport miles, or farm to table transport were old policies. New policies were complex, with an extensive transportation network that included processed heat and serve meals (Maxwell & Slater, 2003). Food preparation included old policies (home cooked meals, family meals), and new policies (takeout and frequent meals outside the home) (Maxwell & Slater, 2003). Old policies were the food shocks from weather and production problems: New policies included trade inequities, subsidies, and erratic food prices (Maxwell & Slater, 2003). Also, old policies were food sector jobs in agriculture and food production, while new policies had few agricultural jobs compared to food retailing and manufacturing (Maxwell & Slater, 2003).

Sustainable food systems include the concept of space. For example, (a) social space was a place for community members to interact, listen, learn, and create social capital for people to engage in their local food systems (Feenstra, 2002); (b) political space represented local leadership through community organizing, and formal and informal activities supporting the food system (Feenstra, 2002); (c) intellectual space was for a common vision for a sustainable food system - a vision combined different interests, economies, and food policies (Feenstra, 2002); (d) economic space favored the flow of money through the local food system, when people shared costs and developed local agriculture in their communities (Feenstra, 2002). Space represented the local resources in the community such as governance, economic opportunities, and nutritional benefits (Feenstra, 2002). Space was also a resource to create a unique bridge-building element to

encourage people to have more interactions with nature, and support for the social, cultural, and spiritual health of a community (Feenstra, 2002).

Summary of food policy themes. Maxwell and Slater (2003) described several recurring food policy themes including the quality of food systems. Industrial growers control food marketing and branding, support the complex food network, and encourage the popularity of *street foods* or food from vendors and fast food restaurants (Maxwell & Slater, 2003). Such foods contributed to the global rise in obesity (Maxwell & Slater, 2003). In addition, the industrialized food system had many regulations for food handling, combined with favorable trade policies and subsidies that protect sugar and beef markets (Maxwell & Slater, 2003). Curiously, developing countries adopted flexible food policies to be competitive in the global market, which increased the spread of food-borne diseases worldwide (Maxwell & Slater, 2003).

Other food policy themes were the conditions that control the flow of food through a community, and the sustainability of food systems (Ericksen, 2007; Maxwell & Slater, 2003). Ideally, a sensible food system should limit environmental harm to nature, use resources efficiently and economically, and be relevant to the social needs of people in the community (Maxwell & Slater, 2003). But without a clear definition, *sustainability* could mean geography or food miles, agricultural practices as polyculture and monoculture, or food cultures and traditions (Maxwell & Slater, 2003). I defined *sustainability* as the agricultural practices that support long-term food production to meet the needs of present and future generations (Brundtland, 1987; Holmgren, 2002).

Therefore, food systems could be simple or complex, urban or rural, and sustainable or unsustainable.

Macro Food Policy and Technology-Based Agriculture

Traditionally, food policy evolved from public policy, industrial agriculture and large-scale technology-based food production (Brundtland, 1987). The goal of food policy was to feed the poor and in the 1980s, people in developing countries were most at risk for starvation (Brundtland, 1987). UN officials supported extensive food production as a solution to end global hunger (Brundtland, 1987). At the time, local food resources were available to support food production, but policy makers ignored small-scale agriculture as a potential solution (Brundtland, 1987).

Today's complex global food system evolved from industrial agriculture practices (Maxwell & Slater, 2003). The shift toward a macro food policy exposed the reality of the global connections between food production, distribution, and consumption (Angelo et al. 2011; Maxwell & Slater, 2003). High volume food production was the default solution to feed starving people, yet starvation has increased since the 1990s (Lang, 2010). One outcome of this macro food policy included a decline in small, family-owned farms. Other outcomes were more environmental damage to farmland and natural resources, harm to wildlife, and humans exposed to hormones and synthetic chemicals (Angelo et al., 2011; Hiranandani, 2010; Zerbe, 2010).

Food System Criteria, Contradictions, and Analysis

Food system criteria (universal values, access to healthy food, inclusion of poor people) were important factors in food policy development (Maxwell & Slater, 2003).

But policy makers rejected such criteria in favor of idealized policies around social equity and economic development (Maxwell & Slater, 2003). The outcome of policy could be uneven because policy makers used a collection of resources, stakeholders, and ideas (Maxwell & Slater, 2003). But policy should be practical to be effective.

In addition, food system planning included an assortment of idealized interests that cause the opposite effect (Harper et al., 2009; Hiranandani, 2010; Mayer & Knox, 2009; Sonnino, 2009). For example, exclusion was the tradeoff for social equity: Slow Food communities could limit the variety of available foods from different cultures. Community-supported agriculture (CSAs) might not support local economies. Farmers must pay high certification fees to sell organic food, and this excluded small farmers from participating in the marketplace. While urban agriculture advocates might encourage people to grow their food, additional resources were needed, such as basic food education programs to help people learn how to cook with fresh food (Harper et al., 2009; Hiranandani, 2010).

Different types of food systems (local or global, traditional or alternative, regional or national) each have contradictions and tradeoffs (Clark et al., 2010; Jarosz, 2008). As such, a complex food system has large-scale food production and infrastructures for transport, distribution, and processing (Ericksen, 2007; Wiskerke, 2009). But a simple food system was small scale, with few infrastructures (Ericksen, 2007; Wiskerke, 2009). Elements of a food systems included food preferences based on culture and traditions, food access and pricing, and the built environment (Ericksen, 2007). The presence of grocery stores, and factors that determine who, when, and what kinds of food people eat

were part of a food system (Ericksen, 2007). Other food system complexities included the efforts to change personal behaviors and eating habits to reduce obesity: Individual and community well-being was impaired as people struggle with intergenerational food-related health problems (Cannuscio et al., 2010).

There are tools to assess the interactions between local food systems and food-related activities (Peters, Bills, Wilkins and Fick, 2008). For instance, Hedden (1929) discussed foodshed analysis and defined a foodshed as the flow of food through the system from producers to consumers (as cited by Peters et al., 2008). In the 1920s, New York City managed to feed eight million people without anyone understanding the flow of food from production to distribution (Peters et al., 2008). People around the country relied on a complex food supply chain; A looming transportation strike of five railroad and transportation worker unions created the threat of a national food crisis (Peters et al., 2008). But fortunately, the strike never happened, and the city avoided a food crisis.

Contemporary foodshed definitions also include food geography such as rural, local, or regional foods, and related activities in the food supply chain (production, distribution, disposal) (Peters et al., 2008). Other definitions included the generic urban or rural food systems, specific types of food systems (community-support agriculture, Fair Trade), food systems that conserve natural resources, and alternative food systems (Peters et al., 2008). An emphasis on agriculture was a shared theme in these definitions, specifically agriculture that was less harmful to nature and humans, and was a link between a foodshed and a local food system (Peters et al., 2008). Therefore, foodshed

analysis could be a tool to evaluate the different costs in energy use, transport, and other food-related activities (Peters et al., 2008).

Alternative food systems. Alternative food systems (AFSs) combined simple farming practices and various food production choices (Chase, 2010). Alternative food systems were also defined urban farms, community gardens, urban agriculture and food-related social networks (Andreatta et al., 2008; Brundtland, 1987; Jarosz, 2008; Kortright & Wakefield, 2011; Taylor Lovell, 2010; Zerbe, 2010). Alternative food systems definitions included sustainable agriculture and crop diversity; social equity movements (Fair Trade, Transition Town), and were derived from culture, traditions and food branding by geography or region (Haydu & Kandoff, 2010).

However, there was a pattern in AFS definitions and they were described by what they *are not*, rather than what they are (local, less commercial, less environmentally harmful) (Follett, 2009). As such, AFS retained a vague quality that was problematic because they are hard to define. For example, an AFS is also trust building between food producers and consumers, and shifted value away from commercial agriculture (Follett, 2009). However, these definitions may be too general to accurately explain what an alternative food system is (Follett, 2009).

Alternative food systems were very different, and it was difficult to capture their "totality" (Follett, 2009, p. 33). Strong complementary networks such as urban farms and large-scale agriculture were useful in developing new local markets, and providing shorter food supply chains (Follett, 2009). Community well-being, available

infrastructures, and the level of political support determined the success or failure of alternative food systems (Follett, 2009).

Local food systems. Hand and Martinez (2010*)* found that there was limited consensus on what "local" means (p. 1). While local food systems might reverse the processes of industrial agriculture, there should be a standard or criteria for any food system (Angelo et al. 2011; Jarosz, 2008; Mariola, 2008; Martinez et al., 2010). Consumer buying habits, location, region, or distance between consumers and producers could identify local food systems (LFS). Local food systems were an example of a *cultural shift* in American society resulting from (a) the Green Revolution or industrial agriculture which was technology-based and favored high volume crop production; (b) a dependency on natural resources that supported a complex global food supply chain; (c) separate farming practices for animal and plant agriculture, large subsidies, and favorable trade policies for industrial agriculture; (d) fewer connections between consumers and local food producers; and (e) limited access to fresh foods in low-income urban areas (Clark et al., 2010; Wiskerke, 2009).

Food systems summary. Forward thinking policy stakeholders were re-evaluating local and regional food systems in their communities (Clark et al., 2010). Peri-urban areas or farms located just outside the city were *agri-regions* that fostered the unique food resources in the community (Clark et al., 2010). *Regionalization* was a process to potentially expand agriculture from a collection of small farms into a new regional food system (Clark et al., 2010).

A different concept known as a *re-regionalization* or food systems that had local, alternative, global or conventional qualities, and supported processes, flows, and new partnerships. (Donald, Gertler, Gray and Lobao, 2010, Kneafsey, 2010). These food systems were more dynamic and could potentially grow beyond the region to the national or international level (Kneafsey, 2010). However, re-regionalized food systems were also limited to wealthy countries with resources to accommodate growth (Field et al., 2010).

Local food systems were also new food systems that supported farming practices to revitalize family farms and rebuild rural economies (Angelo et al., 2011). New food systems included urban agriculture (urban farms, community gardens, farmers' markets, organic foods) (Angelo et al., 2011). Further, sustainable farming practices might be a complementary food resource. Food systems might be weak if they created inequities between resources (Hiranandani, 2010; Maxwell & Slater, 2003; Mayer & Knox, 2009). I reviewed the tradeoffs and imbalances in developing an urban farm network. The goal was to offer public policy and food policy choices supporting stakeholder interests and the wider community.

Industrial food systems. Industrial food systems (IFS) have been complex and static since the last century, when different manufacturing technologies were used to produce high-yielding monocrops (Angelo et al., 2011). The current global food network emerged from these technologies and relied on old food systems (Angelo et al., 2011). For instance, robust food production might feed starving people in countries struggling with natural disasters and civil wars. However, the negative social and economic trends of industrialized food production included a 60% decline in family farms from 1950 to

2000 that forced people into the cities to find work (Angelo et al., 2011, p. 6). There was environmental damage from technologies that contaminated farmland and water, and pesticides that harmed wildlife, farm workers, and consumers.

Traditional agriculture from cereal and wheat crops evolved into the current technology-based agriculture of high yielding, large volume food production (Angelo et al., 2011). When farming equipment replaced workers and simple farming practices, the global food system changed forever (Angelo et al., 2011). Agricultural technologies forged a gap between rich and poor countries: Industrialized farmers in Europe and the U.S. overwhelmed small farmers in the Caribbean, Asia, and Latin America (Angelo et al., 2011). Poor farmers struggled to compete in the global marketplace (Angelo et al., 2011; Brundtland, 1987; Hemenway, 2011; Zerbe, 2010).

Urban Agriculture

History of urban agriculture. Since the Middle Ages, farmers have exploited urban agriculture (UA) to satisfied the food needs of cities and wars and natural disasters were opportunities to find other ways to grow food (Taylor Lovell, 2010). Any available space was space to grow fresh fruits and vegetables, medicine, herbs, and flowers. For instance, the population of Machu Picchu in Peru designed urban agriculture infrastructures around irrigation, food storage, terraces, and climate control (Taylor Lovell, 2010).

In the 1890s, officials in Detroit, Michigan supported the Potato Patch program to encourage urban gardens and temporarily farm land on vacant lots (Mukherji, 2009). The City Beautiful movement in the 1890s and 1900s was another gardening effort to

improve the urban landscape with open spaces (Mukherji, 2009). During the war years, the U.S. government encouraged schoolchildren and families to cultivate victory gardens to supplement their diets with fresh food (Taylor Lovell, 2010). Throughout the Industrial Revolution in England, workers used allotment gardens to grow food, and the practice spread throughout Europe. Many governments still provide allotment gardens today (Mukherji, 2009).

Contemporary urban agriculture. Officials in Asia, Latin America, and sub-Saharan Africa used UA to provide income, affordable food in poor communities, and social advancement for women (Taylor Lovell, 2010). City officials in Beijing, China, combined organic farms, greenhouses, and public land to expand urban agriculture (Taylor Lovell, 2010). Officials in Havana, Cuba designed a strong urban agriculture infrastructure after the fall of the Soviet Union and decision makers in Montréal, Canada developed a network of 97 community gardens throughout the city (Dixon et al., 2009; Hiranandani, 2010); Taylor Lovell, 2010, p. 2504).

Urban planning summary. Innovative urban planners should include infrastructures for urban farms and public land for agriculture in city planning (Taylor Lovell, 2010). Urban agriculture strategies include sustainable land use through crop rotation and nutrient recycling (Taylor Lovell, 2010). Other benefits included well-being from cultural, ethnic, and traditional foods, and improved health from plants for spices, vegetables, fruits, or medicine (Taylor Lovell, 2010). Urban agriculture could be 15 times more productive as a food source than industrial agriculture (Plyler 2012, p. 25). *Integrated agriculture* was a type of urban agriculture based on hydroponic gardening,

but growing food in containers was the most popular type of agriculture (Plyler, 2012). Urban agriculture could be an informal collective (community gardens), or formal networks (food policy councils, community groups interested in food-related activities) (Plyler, 2012).

City officials in Seattle, Washington created an alternative food network (AFN) based on a simple food supply chain to improve interactions between producers and consumers (Jarosz, 2008). The AFN was a tool to expand food resources throughout the city using (Jarosz, 2008). Resources include farmers' markets, seasonal food stands, and food cooperatives, and AFNs represented sustainable food production such as organic agriculture (Jarosz, 2008). Finally, the AFN had an element of equity to promote social consciousness, local resources, and less harm to nature (Jarosz, 2008). Alternative food networks might help local farmers access the niche market for local foods, and help low-income people find fresh foods (Jarosz, 2008). Officials in more and more cities are exploring urban farms and community gardens as a supplemental food source (Jarosz, 2008). Relative to the research question, an urban farm network could be a complementary food resource.

Urban agriculture challenges. Urban agriculture has helped people survive (guerilla gardens) or generate profit (urban farms) (Sharzer, 2012). However, without a national database on urban agriculture, commercial farms have gained a large market share; it was unclear if low food production at higher prices could be a sustainable business model for small farmers (Sharzer, 2012). The success of urban agriculture was evaluated case by base, and its overall benefits were hard to measure (Sharzer, 2012). For

instance, *small plot intensive farming* (SPIN) favored lower transport, distribution, and labor costs - SPIN was mini agriculture for food production on small plots of land (Sharzer, 2012). SPIN farmers relied on family, friends to barter to save costs and offered food education and composting services (Sharzer, 2012).

Although small plot intensive farming has increased by 17% in the U.S. since 1982, it was not clear if rural or urban SPIN farmers could survive (Sharzer, 2012, p. 90). These types of farms struggled to compete with large commercial agriculture (Sharzer, 2012). The collective value of urban agriculture remained unclear without a holistic perspective that included innovation in public policy, as well as local food and zoning policies (Sharzer, 2012).

Agricultural Diversity

I discussed agriculture relative to *sustainable agriculture*, with qualities that supported environmental conservation, met human needs, and fostered economic growth (Gold, 2009). Agriculture was a combination of different food production practices, and urban farming was sustainable agriculture for long-term solutions in food production (Holmgren, 2002). Sustainable agriculture included urban farms, rooftop, or hydroponic gardens, which were practical in densely populated communities. For instance, Cuba and Canada were two countries that used sustainable agriculture in different ways (Hiranandani, 2010). Cuba launched its sustainable agriculture in 1989 and established a foundation of permaculture-based food systems (Hiranandani, 2010). The food system planners integrated composting, decomposed animal waste for energy, mixed land use, and organic agriculture (Hiranandani, 2010). Canada supported organic farming, but

farmers paid high fees, and there was limited enforcement of the country's organic farming policies (Hiranandani, 2010).

Permaculture

Invisible structures. The core permaculture principle was a strategy to balance outputs (natural resources needed for food-related activities) and inputs (food production, personal behaviors) (Holmgren, 2002). Permaculture had a holistic quality that was missing in food policy alone: Permaculture included the invisible structures common in human activities (Holmgren, 2002). Some examples included land and nature stewardship such as organic and biodiversity in agriculture (Holmgren, 2002). Culture and education were also invisible structures and included reusing and recycling, holistic medicine, and health and spiritual well-being to create a sense of place (Holmgren, 2002). The built environment integrated rainwater recycling, and building materials from natural resources (Holmgren, 2002). Permaculture's holistic approach was the foundation of the input-output relationship and a macro approach included the natural, economic, and social relationships in the food system (Holmgren, 2002)

Permaculture principles. Holmgren (2002) described 12 principles, or thinking tools to guide common sense practices for local food systems:

> ***Principle 1: Observe and interact.*** A process to balance activities in nature and society includes observing patterns and exploring a holistic view of interactions.
>
> ***Principle 6: Produce no waste.*** Human activities should encourage practices that recycle materials and avoid waste.

***Principle 8: Integrate rather than segregate*.** Solutions can appear from a larger view rather than looking at smaller pieces of the problem.

***Principle 9: Use small and slow solutions*.** Small solutions favor local food resources and support for community businesses.

***Principle 10: Use and value diversity*.** Permaculture favors crop variety (polyculture) over growing the same crop (monoculture) each year.

Permaculture summary. Permaculture or permanent agriculture is a holistic process to balance systems in nature and society (Holmgren, 2002). In the 1970s, the idea of permaculture (PRM) emerged from landscape design specialists, David Holmgren and Bill Mollison (Holmgren, 2002). By the 1980s, Holmgren expanded the definition of permaculture: "consciously designed landscapes which mimic the patterns and relationships found in nature while yielding an abundance of food, fibers, and energy for provision of local needs" (Mannen, Hinton, Kuijper, and Porter, 2012, p. 356).

The revised permaculture definition is needed because of the gap between resource use in nature (inputs) and human activities (outputs) (Holmgren, 2002). These resources considered local, grassroots social movements for incremental change, local innovations in agriculture, technology, and sustainable development, or a collection of local assets to serve the needs of present and future generations (Holmgren, 2002). Permaculture involved alternative agricultural practices, and permaculture is a feature of an urban farm network. Holmgren's view placed permaculture in a broader context to accommodate urban farms and small-scale agriculture for food production.

Agricultural Diversity Summary

Horticulture and agriculture. Permaculture is a growing process that relied on sustainable practices from horticulture, not agriculture (Hemenway, 2011). As such agriculture (industrial agriculture) and *horticulture* (organic agriculture) remained incompatible (Hemenway, 2011). Horticulture was a reflection of patterns in nature (crop rotation, composting), which were complementary processes in an ecosystem (Hemenway, 2011). Agriculture was more resource intensive and highly dependent on fossil fuels (Hemenway, 2011). Further, Hemenway challenged the notion that agriculture was a sustainable process based on its resource intensive nature. As mentioned, the current global food supply chain was vulnerable because it created an imbalance between inputs and outputs (Hemenway, 2011). Compared to industrial agriculture, horticulture could foster social equity, resource conservation, and sustainability (Hemenway, 2011). As such, an urban farm network could apply horticulture practices.

Community supported and small-scale agriculture. Community supported agriculture (CSA) had a twofold benefit: A niche market for local farmers and a means for low-income people to access healthy foods (Andreatta et al., 2008). However, food education programs were critical for successful CSAs: Farmers learn about cultures and traditions important to urban consumers and low-income consumers learn how to cook meals with fresh foods (Andreatta et al., 2008). Urban farms were examples of small-scale agriculture which offered a complementary food resource in the city (Kortright & Wakefield, 2011). An informal food network could be a series of teaching gardens in

schools, prison gardens, and provide a visible food source for community well-being. However, small-scale agriculture needed a loyal customer base, political will, and a strong infrastructure to be successful (Chase, 2011; Dixon et al., 2009; Jarosz, 2008).

Urban Farming

Urban farming or *urban horticulture* was the "science and art of promoting the successful growth and development of ornamental plants, turf, vegetables and fruit in the urban environment" (para. 1, agclass.nal.usda.gov). Environmental Protection Agency officials noted that urban farms revitalize abandoned land, contribute to community well-being, and the urban landscape (www.epa.gov, p. 3). However, urban farmers must meet strict regulations and safety measures when they sell food to the public. This section provided an overview of urban farming research.

Viet Village Urban Farm: New Orleans. New Orleans city officials embraced a rebuilding process for neighborhoods damaged by Hurricane Katrina (Truitt, 2012). Officials selected communities to create economic growth through "a smaller and more efficient post-Katrina New Orleans" (Truitt, 2012, p. 321). One project was the Village de l'Est, a Vietnamese neighborhood in New Orleans (Truitt, 2012). The neighborhood had a well-established urban garden and Saturday food morning market (Truitt, 2012). City officials wanted to rename the garden the Viet Village Urban Farm, and change it into a green technology and sustainable agriculture enterprise (Truitt, 2012). Most of the gardeners were elderly, but the Viet Village Urban Farm was a plan for future generations, commercial growers, a covered market area, and a playground for intergenerational social activities (Truitt, 2012).

While the urban farm project had adequate funding, the project failed to include amenities for the Vietnamese culture (Truitt, 2012). People supported the community garden because it defined the neighborhood's culture and unique qualities (Truitt, 2012). An urban farm was a modern representation of green technologies (recycling, energy efficiency) and future growth (Truitt, 2012). Many gardeners did not favor commercial growth at the expense of losing their community garden and their well-established gardening culture, and young people were not engaged enough to become the next generation of farmers (Truitt, 2012). The Viet Village Urban Farm failed in several ways: City officials implied that the community garden was not sustainable and used contaminated water from a nearby landfill. Also, they favored the urban farm over the community garden, and promoted it as sustainable and capable of growing healthier food (Truitt, 2012).

But members of the Army Corp of Engineers determined that the garden was "jurisdictional wetlands" with options for a land-swap (purchase environmental credits before the land could be used for agriculture) (Truitt, 2012, p. 333). The wetlands designation applied because the area was used as a dumping site after Hurricane Katrina (Truitt, 2012). Project supporters did not want to fund the purchase of environmental credits, and the urban farm never developed (Truitt, 2012). In the end, the area remained a community garden with a Saturday morning market for gardeners to sell fresh produce to neighbors and visitors (Truitt, 2012).

Growing Experience Urban Farm: Long Beach. Urban farming can be a strategy to create well-being, community engagement, and environment justice concerns

in low-income communities (Tijerina, 2014). Environmental justice was defined it as "those cultural norms and values, rules, regulations, behaviors, policies, and decisions to support sustainable communities," (Schlosberg, & Carruthers, 2010, p. 14). The Growing Experience (GE) urban farm was a project to design an urban farm in a public housing unit (Tijerina, 2014). The Carmelito Public Housing Project, a low-income, high-crime neighborhood in North Long Beach, California, was the site for the urban farm (Tijerina, 2014). The Growing Experience began as a community garden on seven and a half acres of land managed by the Los Angeles Housing Authority in 1994 (Tijerina, 2014).

Community space was the stimuli to make the GE urban farm a valued asset for the neighborhood (Tijerina, 2014). Community space is a holistic process of "participation, control, and sense of ownership" (Eizenberg, 2012, p. 106). But it was unclear how to measure the value of the GE urban farm and environmental justice on quality of life in public housing (Tijerina, 2014). The Growing Experience provided workshops on growing food, business training to support the culture and social landscape of Carmelito (Tijerina, 2014). Other trainings included food education workshops to teach people how to prepare culturally appropriate food, understand the cost savings from growing food, and learn simple gardening skills (Tijerina, 2014).

However, people in Carmelito did not support the GE urban farm (Tijerina, 2014). The idea of an urban farm appeared to involve the community, but there was a gap between the programs offered and how people in Carmelito valued space as part of their community (Tijerina, 2014). For example, there were more survey responses from people 20 to 29 years of age compared to people between 40 to 69 years of age (Tijerina, 2014).

This pattern was the opposite of other urban farm studies with higher participation from people 55 plus years of age (Tijerina, 2014, p. 75).

It was possible that there was a geographic discrepancy in urban farming: People of color on the West Coast had less access to land, and therefore, did not participate in urban farming (Tijerina, 2014). In addition, there were more active urban farmers on the East Coast than the West Coast (Tijerina, 2014). Growing Experience attracted new people to the project but could not keep them involved after one year (Tijerina, 2014).

The GE urban farm project might benefit from a marketing strategy that involved people through social media and word of mouth promotion (Tijerina, 2014). Growing Experience suffered from a common pattern in privatized community spaces that excluded people in the community from the governance and decision making process (Tijerina, 2014).

Right to Farm Laws: Detroit, Youngstown and Cleveland. Right to Farm laws impact urban farming in cities such as Buffalo, Detroit, Youngstown, and Cleveland, (Heckler, 2012). Similar to Buffalo, New York, Detroit, Michigan has an abundance of empty properties for agricultural use, although local and state regulations limit the growth of urban farms (Heckler, 2012). For example, there are logistical challenges in Detroit, such as limits on farming operations in a residential area, or restricted use of pesticides near a work zone or school (Heckler, 2012). But the Right to Farm law protects urban farmers from nuisance lawsuits even when they used harmful farming practices (Heckler, 2012).

City officials in Youngstown and Cleveland, Ohio struggle with the "shrinking city syndrome" as many people left the city due to the loss of manufacturing jobs (Heckler, 2012, p. 219). Vacant buildings produce less income lower property taxes, less revenue for the city, and more crime (Heckler, 2012). But city officials are exploring urban farms to build food sources in empty spaces, parking areas, schoolyards, and rooftops (Heckler, 2012). Urban farms could potentially reverse crime rates, provide a source of income, and reduce maintenance costs on vacant land and buildings (Heckler, 2012).

Some of the challenges associated with traditional urban farms included their social value. For instance, city residents questioned the influence of urban farms on the quality of life in cities (Heckler, 2012). As mentioned, farming operations in residential areas can be problematic. Urban farms are temporary when private landowners reclaim the land for development: In such cases, urban farmers had no legal rights (Heckler, 2012). Finally, zoning regulations for agriculture could potentially block the expansion of urban farms because land in the city is limited (Heckler, 2012). Comprehensive legislation might provide a broad, statewide solution to urban farming and clear standards could help local governments design useful zoning regulations to expand urban agriculture (Heckler, 2012).

Produce From The Park: Baltimore. Produce From The Park was a nonprofit that acquired six acres of land to "improve community access to produce, promote localized food consumption, provide experience-based learning opportunities for students, and establish urban farming as a source of community development" in the city

of Baltimore (Hu et al., 2011, p. 70). The nonprofit worked with community groups to gain credibility (Hu et al., 2011).

A summary of interviews with African Americans (between 30 and 50 years of age) about their perception of healthy foods revealed some interesting ideas:

- Food choices involved food culture and preferences, rather than cost and access. Fatty, fried foods were part of their food traditions and to eat healthy meant giving up those traditions.
- People were hesitant to eat "mainstream White" food. There was a negative association with healthy foods but not with sugary, processed foods (p. 70).
- Food preferences were the old school or Southern food that was "overcooked and fried." Southern foods gave a sense of nostalgia. People did not know the different between healthy and unhealthy food, and relied on TV commercials that falsely promoted healthy foods. (p. 70).
- Time was a factor and processed, packaged foods were easier to make than cooking meals with fresh food. However, some people did not see a link between obesity, diabetes, and poor eating habits.
- Engagement in urban farming was perceived as "getting their hands dirty," an association with White landowners and slavery.
- Healthy food was not tasty, and people were too busy to eat healthy food (Hu et al., 2011, p. 70).

Urban farming summary. Common misperceptions about food were some of the barriers and strategies that required a food education program (Hu et al., 2011). Produce

From The Park needed a marketing effort to encourage people to understand the connections between good food and good health (Hu et al., 2011). Farm stands of fresh fruits and vegetables located in high traffic areas can build in the community (Hu et al., 2011). People in the community did not know about Produce From The Park, and the organization needed a word of mouth campaign for community engagement (Hu et al., 2011). More participation from community youth, community leaders, and trust building were critical for Produce From The Park to fulfill its mission (Hu et al., 2011).

Efforts to change eating habits to promote better health are a multiple level process (Hu et al., 2011). Low-income populations could embrace urban farming if provided with creative and respectful practices that recognized the local culture (Hu et al., 2011). Local traditions, cultures, and food education should be part of that process (Hu et al., 2011).

Local Government

Urban planning. Food policy was a cross-discipline specialty in need of creative solutions: Policy makers in local government and urban planning are reassessing their roles in the process (Glosser et al., 2007). Planners from the American Planning Association, a professional organization for city and county planners released its 2007 *Community and Regional Food Planning Guide* (CRFPG) to encourage its members to think about food as an urban planning concern (Glosser et al., 2007).

Favorable urban planning trends can support new policies around local and regional food systems (Pothukuchi, 2009). Planners described some trends in holistic food planning, sustainable food systems, biodiversity, and institutional support

(Pothukuchi, 2009). However, dubious trends included the loss of farmland due to urban-influenced communities, the largest consumers of food, and rural farms at risk of becoming part of industrial agriculture when families lost control of their farms (Pothukuchi, 2009).

Regarding farm policy and health, urban planners were encouraged to consider how industrial agriculture changed nature, human health, and communities (Glosser et al. 2007). The rise in obesity and food-related diseases affected health care costs in states and regions with large poor and diverse populations (Glosser et al., 2007; Maxwell & Slater, 2003; Pothukuchi & Kaufman, 1999).

Urban planning summary. In 2000, over 40% of supermarket sales were in frozen, processed, and baked goods, compared to 9% of sales in fruits and vegetables (Pothukuchi, 2009, p. 4). More recently, consumers explored alternatives in food choices: Major food companies lost sales in prepared frozen meals (Ouimet, Schmidt, Donnan, & Kearney, 2013). Between 2013 and 2014, company officials "experienced sustained volume declines" of three to five percent of their frozen meal divisions, with projections in the double digits in the future (Ouimet, et al. 2013, para. 6). Fresh food is "the ultimate, convenient, ready-to-eat solution" and more people are buying unprocessed and unpackaged foods (Ouimet, et al.2013, para. 6). Urban planners might promote cost-saving measures such as growing food to save money, or healthy eating to lower healthcare costs, to create well-being, and improve local food systems (Glosser et al. 2007).

Traditionally, urban planning changed food production in the city from *victory gardens* to convenience shopping (Pothukuchi, 2009). For instance, food production based on gardening as a food source was transformed into today's supermarket chains as the primary food source (Pothukuchi, 2009). Wal-Mart, Safeway, and niche grocery stores such as Whole Foods and Trader Joe's are examples of this transformation.

There are different types of food plans as discussed in the *Community and Regional Food Planning Guide* (Pothukuchi, 2009). For instance, there are *comprehensive food plans* to supply food for emergencies and to develop local food sources, and *city food system plan*s to support urban agriculture and preserve local food traditions (Pothukuchi, 2009). *Regional food plans* are for local farming, local markets, and connecting farmers and consumers, and *localized native and ethnic food plans* represented cultural and regional biodiversity (Pothukuchi, 2009).

Food Planning Research

Food equation. Historically, urban planners ignored food systems and believed that food was strictly a rural problem (Holmgren, 2002; Pothukuchi & Kaufman, 1999). This was a puzzling omission because of urban planners' focus on tangibles, or the built environment rather than intangibles such as a food system (Morgan, 2009, p. 341). The idea of the city as a farm was not new because people in the city have been starving for a long time (Viljoen, 2005, as cited by Morgan, 2009). A *new food equation* was a tool that identified new challenges in urban food systems (Morgan, 2009). Several challenges included land conflicts as rich countries such as Saudi Arabia, and South Korea colonized land in Africa and Asia to grow food (Morgan, 2009). Urbanization (people moving to

the city) increased the potential for food shortages in cities worldwide (Morgan, 2009). Rising food prices in 2007 and 2008 caused instability and food riots when people could not afford their staple foods and climate challenges burdened poor countries with droughts and flooding (Morgan, 2009).

Multifunctional food systems. The new food equation was a potential solution for the question: "How to feed cities in a just, sustainable and culturally appropriate manner in the face of looming climate change, widening inequality and burgeoning world hunger?" (Morgan, 2014, p. 2). Any solutions relied on the multifunctional qualities (health care costs, environmental destruction, and food culture) of food systems (Morgan, 2014). However, the rewards of these multifunctional qualities were that people came together and underscored the power of food (Morgan, 2014). Also, in the Global North (North America and Europe) the variety of food selection was through farmers' markets, beekeeping, and urban farming, all signs of growth in urban agriculture (Morgan, 2014). The risks of multifunctional qualities were that the segmented nature of food systems (organic, local, food politics, Fair Trade) supported food issues rather than a food movement (Morgan, 2014).

Alternative food geography. The interactions between food policy, farming practices, and consumer behaviors were features of alternative food geography (Wiskerke, 2009) This model was based on urban food strategies to build synergies in the public sector through public health, environmental conservation, and job creation (Wiskerke, 2009). The strategies also included educational programs, food festivals and

events to connect farmers and consumers, and the shared interests of urban and rural communities (Wiskerke, 2009).

Urban food strategies. Trends in new food planning research concern land used to feed livestock rather than to grow food for people (Sonnino, 2009). Hybrid food strategies favored smaller, local farms, and better quality of life for urban populations (Sonnino, 2009). The core of urban food strategies included urban farms, neighborhood gardens, and small-scale agriculture (Sonnino, 2009). The stimuli for new food policies included limited food access, urbanization, consumer demand, and the media influence on food-related problems (Cohen, 2014). In addition, food policies had several dimensions such as environmental harm from pesticides, and waste from food packaging (Cohen, 2014). Also, there is a greater demand for meat in developing countries, and social factors included a staple diet of high-calorie foods combined with little exercise (Cohen, 2014). Other contributing factors were that the military is rejecting obese people from military service, as well as the long-term economic hardships in poor communities and food desert areas with limited choices in healthy food (Cohen, 2014).

Based on these dimensions, food strategies could be sustainable if supported by local food assets (Cohen, 2014). For instance, institutions, schools, and public facilities could develop a *public plate* program (Cohen, 2014). Members of the Center for Ecoliteracy (2012) suggested that the Los Angeles school district switch from canned fruits and vegetables to produce from sources within a 200-mile radius (as cited by Cohen, 2014, p. 64). In 2009, the school district spent 9% of its budget on fresh fruits and vegetables, but increased to 73% in 2012 (Cohen, 2014, p. 64).

However, the sustainability of small-scale agriculture was questionable even with the need for long-term food production (Cohen, 2014). For instance, small-scale agriculture and the proximity of local food does not guarantee that food is ethically or environmentally favorable (Born & Purcell, 2006; Levkoe, 2011, as cited by Cohen, 2014). Also, small producers use more energy to deliver food, and practice poor treatment of animals and farm workers (Angelo et al., 2011). Finally, local foods can be expensive and further widen the gap between poor and wealthy consumers (Clark et al., 2010).

Municipal food strategies. Three cities - Toronto, London, and San Francisco - developed a comprehensive municipal food strategy (MFS) (Mansfield & Mendes, 2013 Other cities (Vancouver, Ottawa, Portland, New York, Philadelphia, Seattle) also have their MFSs, but Toronto, London, and San Francisco actually implemented a formal plan (Mansfield & Mendes, 2013). Toronto, London, and San Francisco city officials have integrated multiple food system challenges into one public policy framework for food production, processing, distribution, access, waste management, and urban agriculture (Mansfield & Mendes, 2013). As such, MFSs were unique as city officials design and control policies that favor a holistic view of the region's food systems (Mansfield & Mendes, 2013).

Municipal food strategies had three policy frameworks: (a) new localism favors non-traditional roles for stakeholders to participate in local government and public policy (Mansfield & Mendes, 2013); (b) local partnerships examine collaborations between government, business, local institutions and community groups (Mansfield & Mendes,

2013); (c) urban governance capacity was the ability of local governments to implement municipal food strategies using available resource (tools, human capacity, regulations) (Mansfield & Mendes, 2013). In addition, MFSs had structural factors including staffing support and a clear mandated role of food policy within local government (Mansfield & Mendes, 2013). The MFS planners favored inclusion of food policy in a regulatory and policy framework - the procedural factors support citizen participation and complementary partnerships in planning and policymaking (Mansfield & Mendes, 2013).

Toronto officials adopted the first food strategy in Canada in 2010 with the highest priority to "embed food system initiative as well as food system thinking into existing work and priorities" (Mansfield & Mendes, 2013, p. 48). The MFS planners created opportunities to implement an action plan, and identified roles and responsibilities for city departments (Mansfield & Mendes, 2013). In 2006**,** Greater London Authority officials launched a comprehensive plan that involved local departments and boroughs, but the Mayor of London had no direct control over municipal food strategies activities (Mansfield & Mendes, 2013). San Francisco city officials designed the first comprehensive food strategy in the U.S. in 2009 (Mansfield & Mendes, 2013). The MFS had clear timelines and responsibilities for each city department, staff to implement the plan, and the executive directive came directly from the mayor's office (Mansfield & Mendes, 2013).

The MFS infrastructure in Toronto had a food policy mandate since 1991 that involved the Toronto Food Policy Council (TFPC) (Mansfield & Mendes, 2013). The Toronto Food Policy Council members had strong political support for the Declaration on

Food and Nutrition, a plan to address urban food security (Blay-Palmer, 2009). But political support was not enough as some board members dismissed food policy from any policy development for the city (Blay-Palmer, 2009). Toronto Food Policy Council members opposed food as an element of urban planning and believed that food was a public health concern (Blay-Palmer, 2009). Today, staff from public health and the food policy council monitor activities, but the leading authority is the Toronto Public Health division (Mansfield & Mendes, 2013).

London's 2006 London Food Strategy mandate emerged from the London Development Agency, a division of the Greater London Authority (Reynolds, 2009). London's mayor was a strong supporter of the London Food Board and established the Healthy and Sustainable Food program to increase regional foods and sustainable agriculture throughout the United Kingdom (Reynolds, 2009).

Similar to the Toronto Food Policy Council, the London Food Board was a model for cities in Europe, North America, and South Korea (Reynolds, 2009). In contrast to the Toronto Food Policy Council, London Food Board (LFB) members dismissed urban planning in its policy development (Reynolds, 2009). As a result, LFB policies to reduce the healthcare costs of food-related diseases were stagnant. In time, LFB members designed a robust food plan for the 2012 Olympics to promote local and regional foods, strong environmental practices, more public access to fresh foods, and support for London's food cultures (Heron, 2012). The leading authority today is the Greater London Authority Food Team within the Mayor's office (Mansfield & Mendes, 2013).

The 2009 Executive Directive was San Francisco's food policy mandate. The city's Food Policy Council members (citizen, city staff) and 47 city departments implemented food policy (Mansfield & Mendes, 2013). The lead authority today is the Director of Food Systems who required input from 47 city departments (Mansfield & Mendes, 2013).

Food strategies summary. There were two important municipal food strategy challenges in Toronto, London, and San Francisco: Uncertainty and shifting food policies when a new administration takes the office, and the complex positioning of food strategies within local government (Mansfield & Mendes, 2013). In addition, local governments lacked the regulatory tools and institutional experience to collaborate across divisions (Mansfield & Mendes, 2013). As a result, individual food policies could arise that may not reflect a collective decision. Further, food strategies succeed through coordination, and the critical need for clear department roles and responsibilities (Mansfield & Mendes, 2013).

However, a more important challenge was if local and regional governments could implement municipal food strategies in the first place (Morgan, 2008). Food policy was dynamic, and one policy across multiple departments, sectors, and organizations may not be a practical solution (Mansfield & Mendes, 2013). Due to the recession, local governments have cut back on public services, and a process to explore food policy reform with community groups and nonprofits could be a practical food policy solution (Mansfield & Mendes, 2013).

Food Policy Councils

Food policy councils (FPCs) were an essential resource to "restore the social, economic, and environmental health of local and regional food systems" (DiLisio, 2011, p. 1). Food policy councils are a collection of stakeholders (local, state, municipal, regional, food sector, community groups, individuals, entrepreneurs) working to improve the local food system (DiLisio, 2011). The goals of these organizations include helping communities organize effective food systems that were "environmentally sustainable and socially just" (Harper, Shattuck, Holt-Giménez, Alkon and Lambrick, 2009, p. 2).

The Knoxville Food Policy Council was the first (1982) in the United States and since then, more FPCs have emerged in local, regional, and state governments (Harper et al, 2009). Despite their popularity, there is no central or national resource on food policy councils or food systems (Harper et al, 2009). Each community must design its food system and food policy council. (Harper et al, 2009). In addition, FPCs could be formal (paid staff), or informal (managed by volunteers) (Harper et al, 2009). Both types could receive funding from the Farm Bill under the U.S. Department of Agriculture's (USDA) Community Food Projects Competitive Grant Program (Harper et al, 2009; Ver Ploeg et al., 2009). One hand, the Farm Bill supported policies for large-scale food production which replaced small farms and local food facilities (Hardesty, 2010). On the other hand, Farm Bill policies favored programs such as the Farmer-to-Consumer Direct Marketing Act of 1976 to expand the marketing of local foods (Hardesty, 2010). Farmers who applied to this program were exempt from USDA grading standards for produce (Hardesty, 2010).

The Farm Bill appropriations subcommittees changed funding allocations yearly: Forward thinking FPC members should apply for funding at the local, state, or regional level (Hardesty, 2010). This strategy underscored the political nature of food (Hardesty, 2010). In 2010, a Northeastern state established a food policy council with an Advisory Committee and several members appointed by the Governor. Other members should include new and experienced farmers, urban farmers, farmland protection advocates, organic farmers, nutritionists, youth, and public policy and food policy researchers.

Regional food policy councils. There are limits and opportunities in designing a regional food policy council as seen in a study on Todmorden, a rural community (15,000 people) in the United Kingdom (Lee-Woolf, 2009). Currently, the UK has 40% of its food imported based on consumer demand the nutrition transition diet, in addition to high transport and distribution costs that increase food prices (Lee-Woolf, 2009; Reynolds, 2009). The Incredible Edible Todmorden (IET) project was a regional food policy council of volunteers who wanted a sustainable food system (Lee-Woolf, 2009). The goals were to supplement Todmorden's red meat and dairy production economy and develop food policies aligned with Securing the Future, the government report for robust food systems and sustainable development across the UK (Lee-Woolf, 2009).

In the short term, IET was promoted as a model for other communities as a cornerstone of sustainable societies (Lee-Woolf, 2009). While sustainable development was the focus of IET, volunteers and the community could not define sustainability; Others thought sustainability was a marketing tool to promote Todmorden as a franchise to sell to other communities (Lee-Woolf, 2009). Overall IET had mixed results with

outreach programs that included social interactions for some, but excluded people in public housing units (Lee-Woolf, 2009).

Members of the Puget Sound Regional Council (PSRC) offered a comprehensive food strategy for the city of Seattle. The plan was to develop "multicounty planning policies and certify local comprehensive plans to ensure they are consistent with the Growth Management Act" (PSRC, 2012, p. 5). The Growth Management Act was a mandate for cities to develop strategies for land use, housing, utilities, transportation, and parks and recreation (PSRC, 2012).

Puget Sound Regional Council members included food in the overall strategy (PSRC, 2012). For instance, the PSRC recommended that the city's core values (greater food access, environmental sustainability, support local food economies) guide the creation of a comprehensive plan: Environmental stewardship, community, economic opportunity, and social equity were also part of the food system (PSRC, 2012). The plan included amendments to expand countywide and multiple county decision making opportunities (PSRC, 2012).

Key elements of the plan included removing barriers to urban food production to reduce food waste through composting, and limit unhealthy foods in publicly owned facilities (PSRC, 2012). But the unique quality of the comprehensive plan was that it included a standard of one community garden for every 2,500 household (PSRC, 2012, p. 7).

Food policy plan summary. The Puget Sound Regional Council members recognized other examples of food policy plans including the *City of Madison, WI*

Comprehensive Plan. Members of this plan emphasized natural resources and agriculture with a goal to expand these elements in the local food economy (PSRC, 2012). *Homegrown Minneapolis* combined public health and sustainability to bring awareness to food system concerns (PSRC, 2012). Policy makers tried to connect institutions with local food producers, encourage composting, and support for community empowerment (PSRC, 2012). The Delaware Valley Regional Planning Commission (DVRPC) officials developed *Eating Here: The Greater Philadelphia Food System Plan* in 2011(PSRC, 2012). Their plan was a geographic analysis of economic development, conservation, and health impacts of the food system within a 100 miles radius around Philadelphia (PSRC, 2012). The city of Baltimore officials launched the *Baltimore Sustainability Plan* in 2009, to increase access to fresh fruits and vegetables in low-income communities, and to develop vacant land for agricultural use (PSRC, 2012).

Food Policy Contradictions and Controversies

Contradictions. Food policy research had its contradictions and controversies. One contradiction was that food policy itself was an offshoot of industrial agriculture research that was technology-based, resource intensive, large-scale food production (Brundtland, 1987; Ericksen, 2007). Although industrial agriculture was a source to feed starving people, it was not clear how to limit environmental harm from large-scale food production (Maxwell & Slater, 2003). Further, it was unknown if policy fostered parity between poor and rich countries that choose to exploit their natural resources or ignore any responsibility to limit environmental harm (Blay-Palmer, 2009; Reynolds, 2009).

Another contradiction was that urban agriculture has its set of regulations for food production (Wiskerke, 2009). There were clear tradeoffs associated with urban agriculture as (Taylor Lovell, 2010). For instance, there are height and fire safety regulations for rooftop farms (Taylor Lovell, 2010). Food sold from edible gardens required construction regulations (raised beds, no railroad ties used in construction, geotextile liner) (Taylor Lovell, 2010). Soil testing and food safety concerns were other tradeoffs, and urban agriculture remains highly decentralized and informal (Taylor Lovell, 2010).

Despite its variety in food production, it was unknown if urban agriculture had the infrastructure to become a supplemental food source (Mukherji, 2009). Shared visioning, political will, public sector support, and collective resources were infrastructures needed to create a successful urban farm network (Chase, 2012; Dixon et al., 2009; Jarosz, 2008; Taylor Lovell, 2010). Other contradictions were that permaculture had a holistic quality that combined the invisible structures (culture, well-being), with the variety in food production (urban farms, edible gardens) (Holmgren, 2002; Mariola, 2008). A comprehensive urban farming network may need elements of both industrial agriculture and permaculture.

Permaculture was associated with sustainable food production, organic and small-scale agriculture (Blay-Palmer, 2009; Holmgren, 2002). Permaculture and urban agriculture promoted flexible food production, but it was unknown if permaculture could be the foundation of an urban farm network. Sustainable food production might generate profit for urban farmers, but it was unknown if farmers could make a living selling food

to local vendors (Chase, 2012; Dixon et al., 2009). Further, it was unknown if permaculture helped people change their eating habits to improve their overall health (Andreatta et al., 2008). There is limited research on urban agriculture, which can be problematic when trying to compare and evaluate its risks and rewards (Sonnino, 2009). Urban agriculture research concerned specific types of small-scale agriculture, but a holistic view may be more useful to understand the environmental, social, and health benefits of urban agriculture (Sonnino, 2009).

Controversies: Vague food policy definitions. Historically, food policy was laden with controversies from the beginning because of its vague concepts (Brundtland, 1987; Clemmitt, 2008; Godfray et al., 2010). For example, definitions for sustainability and sustainable agriculture remained unclear even today: *Sustainability* means to balance resources in nature, society, and the economy (Brundtland, 1987). The definition was changed to mean a walkable, mixed-use housing community that provides jobs and limits harm to nature (Corsin et al., 2007; paras. 1-10; www.newurbanism.org). *Sustainable agriculture* had stable agricultural inputs (land, fuel) and outputs (food related activities) (Hiranandani, 2010). But perhaps a vague definition of sustainability was a political strategy that allowed governments to benefit from selective ignorance about sustainable development (Brundtland, 1987). In addition, a comprehensive view may not be possible because sustainable development relied on the unique food resources available in each community (Brundtland, 1987).

Controversies: Tradeoffs in food planning. Controversies included tradeoffs in land use and the use of public land for agriculture (Chase, 2012; Jarosz, 2008). An urban

farm on a vacant lot could attract pests and thieves, and soil contamination was common in many cities (Sonnino, 2009). In another example, a large Northeastern city adopted zoning laws for open space set aside for community gardens (Mukherji, 2009). A good idea became controversial when too many people signed up to be community gardeners (Mukherji, 2009). The controversy concerned land use limitations and failure to explore other ways for people to become urban gardeners (Mukherji, 2009). In the end, city officials' effort to promote urban agriculture required more regulations to monitor soil safety and testing, and programs to teach people how to be urban gardeners (Mukherji, 2009).

Controversies: **Consumers and local food**. Relative to industrial agriculture, consumers believed that any local food was more energy efficient, often described as romanticizing food (Mariola, 2008). But local food could potentially use more energy than industrial agriculture. Farmers used more energy driving to multiple locations in trucks half filled with produce, compared to driving to a centralized drop off location (Mariola, 2008). In addition, consumers who bought local products may not necessarily support local farmers and vendors (Peters et al., 2008). Large competitors such as Wal-Mart Supercenters, access the global food network to bring food to local markets: Consumers may be buying *local* food not grown by local farmers (Courtemanche & Carden, 2011).

Urban agriculture and permaculture summary. Urban agriculture and permaculture are food policies that shared controversies related to their patterns of exclusivity (Taylor Lovell, 2010). Such patterns contradicted urban agriculture and

permaculture goals that tried to balance natural and human activities (Castell, 2009; Holmgren, 2002; Kortright & Wakefield, 2011; Wiskerke, 2009). As such, food equity might be secondary to other agricultural practices (Macias, 2008). Further, any political support was a controversial but necessary feature of food systems (Blay Palmer, 2009; Reynolds, 2009). For instance, in Beijing, China, the government supported a blended urban agriculture model of organic farms, greenhouses, and public land preserved for agriculture (Taylor Lovell, 2010).

In contrast, the former mayor in a large Northeastern city created an agency for food initiatives. The agency decision makers set goals to develop new urban agriculture rezoning regulations to promote an array of agricultural activities including urban farming, beekeeping, and composting. However, the city's long-time mayor retired in 2013, and it was uncertain how the city's urban agriculture initiatives could evolve under the new administration.

Organic agriculture. One controversy about organic agriculture was that it is safe, healthy, and improves a food system (Avery & Avery, 2008). However, organic agriculture was vulnerable to disease, local pests, and bad weather (Avery & Avery, 2008). Organic agriculture could not produce enough food for a large urban population and genetically modified (GMOs) crops and industrial agriculture were the best choices to fill the gap (Avery & Avery, 2008; Godfray et al., 2010). Other controversies included consumer buying habits and organic food (Aertsens, Verbeke, Mondelaers, and Van Huylenbroeck, 2009). Although consumers had a positive feeling about organic food, people did not regularly buy organic food (Aertsens et al., 2009). A popular deterrent to

buying organic food was its high price: In Europe, consumers with more income bought organic food, but in the United States, income was insignificant (Avery & Avery, 2008).

Opposing Views: Permaculture

In terms of food policy, permaculture deserved a special note. The literature review had limited scholarly research on permaculture, and it was necessary to search for other resources from online news sources, blogs, magazines, and social media for more information.

Biomimicry and permaculture. Biomimicry was "a revolutionary new science that analyzes nature's best ideas and adapts them for human use" (Marshall & Lozeva, 2009, p. 1). At the same time, biomimicry was not new because humans have tried to mirror systems in nature for a long time (Marshall & Lozeva, 2009). For instance, the invention of Velcro mimicked the spiny burs from the cocklebur plant that attached to a dog or clothing (Marshall & Lozeva, 2009). From this perspective, permaculture was "an agricultural practice that aims to emulate native grasslands and bushland" (Marshall & Lozeva, 2009, p. 2).

A criticism of permaculture was that projects designed with sustainable qualities favored military research and funding (Marshall & Lozeva, 2009). In an effort to mimic nature, technology-based projects had a negative or unsustainable effect on nature (Marshall & Lozeva, 2009). Experts, rather than local people, controlled such projects and by default, a global perspective prevailed at the local level, and such projects failed to meet the needs of local communities (Marshall & Lozeva, 2009).

Further, permaculture values and principles were open to interpretation, and people remain confused about how to apply these practices (Marshall & Lozeva, 2009). However, remedies could be to provide a natural and social perspective to describe sustainability; share knowledge between experts and people in the community; and encourage decision-making between diverse stakeholders (Marshall & Lozeva, 2009).

Permaculture summary. Permaculture is a toolbox of strategies for people to grow food in different ways (Harper, 2003). But permaculture was not a cult of vague ideas and assumptions (Harper, 2003). As such, smart permaculture was an evolving idea, supported urban food systems, and was a subject worthy of academic research (Marshall & Lozeva, 2009).

Permaculture in the U.S. A literature review of permaculture in the U.S. revealed that it was not a scholarly topic, and there was little communication between environmental science and grassroots permaculture groups (Scott, 2010). Since permaculture's introduction in the 1980s, its principles remained static (Scott, 2010). Current permaculture literature is outdated, without a central database, or a scholarly primer for novice gardeners to learn about the subject (Scott, 2010).

In the U.S., permaculture supporters favored education over agriculture (Scott, 2010). For instance, in 2002 about 1,000 practitioners trained 100,000 people worldwide on the general principles of permaculture (Scott, 2010). The training resource was the *Permaculture Activist* magazine, which presented 69 workshops and 277 permaculture projects in 2002, and articles written by permaculture trainers and practitioners (Scott,

2010). In the U.S. more than 100 farms used permaculture practices, but few were well developed (Scott, 2010).

In addition, a literature review uncovered 49 peer-reviewed journals that mentioned permaculture, 14 had permaculture articles, but articles on agroforestry, urban vegetable gardening, energy, and sanitation barely mentioned permaculture (Scott, 2010). The *Permaculture Activist* was not peer-reviewed, and between 1985 and 2005, there were no citations: Much of the material was collected from blogs and popular literature, rather than from scholarly journals (Scott, 2010).

Scott (2010) was a permaculture intern (2000 to 2008) for an established garden in Wisconsin called the Dreamtime Village (Village). Scott developed the Urbana Permaculture Project (UPP) and over time, the Village gained and lost community gardens, changed from a public to a private garden, and increased its educational programs. Eventually, UPP founders changed their focus to data analysis, and board members included an engineer, architect, farmer, and a food coop manager. Scott noted that the Urbana Permaculture Project began on leased land, but the original owner later reclaimed the land. The Urbana Permaculture Project never purchased the land to develop a farm, and Scott concluded that the decline of the UPP demonstrated that workshops were easier to develop than the true practice of permaculture.

Permaculture of the future. Agriculture was a biological system created from the processes and interactions of life (Noga, 2012). Contemporary large-scale agriculture produces harmful effects in nature and humanity (Noga, 2012). Agriculture of the future should be small scale and in large enough numbers to meet the food production needs of

tomorrow (Noga, 2012). For example, a collection of urban farms could potentially become a supplemental food source. This collective should combine community well-being, horticulture to cultivate plants for food and animal husbandry, with sustainable buildings and community living (Hemenway, 2011).

People active in permaculture had the flexibility to avoid the hard decisions to address the challenges in agriculture to produce high yielding crops, resource consumption, and the environmental harm from animal waste and soil erosion (Noga, 2012). From a local perspective, permaculture was small and relied on local resources including small-scale farms located near communities to allow easy access for consumers (Noga, 2012). Marshall and Lozeva (2009), and Scott (2010) found similar patterns and suggested that even after 20 years permaculture remained a minor phenomenon from a global viewpoint.

Growing Power: A personal view. Harb (2010) described his personal experiences as an intern with Growing Power (GP). The organization was a national nonprofit that taught people about sustainable agriculture and the local food system in Milwaukee, Wisconsin (Harb, 2010). Since 1993, GP's charismatic founder, Will Allen, was a recognized innovator in urban agriculture, and he expanded the GP model into low-income areas in New York, North Carolina, Mississippi, and Colorado (Broadway, 2009). In 2009, GP had over 20,000 pots of vegetables, mostly salad greens from its Merton farm, a network of small family farms near Milwaukee (Broadway, 2009; Hughes, n.d.a, n.d.b.). Growing Power's urban agriculture included greenhouses, aquaponics, beehives,

worm and anaerobic composting, housing for poultry, rainwater recycling and a retail store to sell produce to local vendors (Hughes, n.d.a, n.d.b.).

As an intern, Harb (2010) worked for two weeks at GP and spoke with 40 employees at the time of the blog. Topics included finances, greenhouse construction, job satisfaction, logistics, and planning. A summary of Harb's discussion included:

***Logistics*.** Employees were 'frustrated' with GP's management. Growing Power was growing too fast with few infrastructures to accommodate its growth. With no expansion goals, GP was "way in over its head."

Community outreach. Growing Power received a $150,000 check from Chase Bank to coordinate a partnership with the Milwaukee Public Schools. But the person responsible for community outreach did not follow up, and the partnership never developed.

Volunteer management. Volunteers from local school groups and Americorps arrived daily at GP. However, it was not possible for 40 employees to handle multiple volunteers and projects each day. Growing Power needed external help as it continued to grow beyond its expectations. Each staff member had similar concerns about volunteer management.

Harb (2010) met GP with founder Will Allen to share his insights. The author wrote a letter to Allen based on employee feedback: Growing Power gained recognition as the "best large-scale urban farm in the world," but the nonprofit suffered from its growing success. The burn out rate for GP employees was two years, and a high turnover rate weakened GP's infrastructure and value to the community (Harb, 2010). Allen's

response to the letter was anger; he was an innovator and international role model. But Harb suggested that GP needed restructuring and less micromanagement from Allen. Delegating clear responsibilities and separating units for on-site and off-site activities were possible solutions (Harb, 2010). The author presented an interesting perspective on real world challenges of urban agriculture, and the importance of standardized processes.

Distinctive Food Policy Concepts

Romanticized food. A literature on consumers' perceptions about local food concerned the social factors of their buying habits (Hébert, 2011). In general, support for local economies and small farmers influence consumer-buying decisions more than the price of food (Hébert, 2011). Many consumers did not know if their food came from local food systems or the global food network (Hébert, 2011). Even when people could not identify local foods, they believed the local food was more sustainable or fresher and less harmful to nature than food shipped across many miles (Hébert, 2011).

In addition, people romanticized food, and remained disconnected from their local food source: Mariola (2008) described similar themes. Food system experts (agriculture official, food policy researcher, community-supported agriculture manager) suggested that local food had no objective value (Hébert, 2011). Overall, there was no clear definition for local food and consumers buy food for any reason - if the food was on sale, through word of mouth, or because of food branding (Hébert, 2011).

Lifestyle politics: Old and new. Since the 1800s, there have been social movements around food. Several food movements called lifestyle politics were consumer-based efforts to create social change (Haydu & Kadanoff, 2010). Examples

included consumer boycotts against child labor to today's *buycott* supporting Fair Trade practices (Haydu & Kadanoff, 2010). Older food movements included (a) food riots popular during tie Colonial period and during the Great Depression of the 1930s, as a protest against rising food prices (Haydu & Kadanoff, 2010); (b) healthy food movement advocates of the1830s and 1840s who encouraged people to cook homemade vegetarian meals (Haydu & Kadanoff, 2010); (c) pure food supporters of the 1890s and 1900s who favored political reform for strong food safety regulation (Haydu & Kadanoff, 2010).

New food movements included (a) the organic food movement (1960s to the present) that was against pesticides and industrial agriculture and was now a profitable niche market (Haydu & Kadanoff, 2010); (b) the anti-GMO supporters (1980s to today) favored stronger testing for health hazards in GMO crops, mandatory labeling of GMO foods, and lobbying efforts (Haydu & Kadanoff, 2010); (c) the locavore movement (1990s to the present) included alternative sustainable agriculture such as urban farms, local food systems, Slow Food, farmers' markets, organic food, and small-scale agriculture (Haydu & Kadanoff, 2010); (d) technology-based food supporters promote food loyalty using digital technologies such as flash mobs and social media used to draw people into grassroots efforts around Transition Towns, social equity, and food safety concerns (Haydu & Kadanoff, 2010).

However, remains unclear if lifestyle politics was a practical form of civic engagement or if it would help or harm the process of social change, a question raised in other studies (Johnston, 2008; Glickman, 2009; Nava 1991; Schudson, 2007; Shah, McLeod, Friedland, and Nelson, 2007; Putnam, 2000, as cited by Haydu & Kadanoff,

2010). In addition, the new food movements were exclusive, and attracted wealthy people, more than lower income people (Castell, 2009; Kortright &Wakefield, 2011; Wiskerke, 2009).

Summary

Today's primary food system is a collection of large-scale agriculture processes (Zerbe, 2010). Traditional food policy research emerged from industrial agriculture based on high volume food production, and unsustainable processes that harmed plants, animals, and people (Wiskerke, 2009). This system is problematic because a complex food supply chain, urbanization, and externalities from weather and unstable food prices were potential threats to urban food systems worldwide (Morgan, 2009).

Major themes in the literature concerned food policy as a process open to many ideas and solutions (Macias, 2008; Morgan, 2009; Taylor Lovell, 2010). However, one model does not fit every community. Levels of agricultural were urban, industrial, permaculture, and small-scale (Harper et al., 2009; Zerbe, 2010). Urban agriculture practices are organic and food production is less harmful compared to industrial agriculture, or technology-based, high volume food production (Lutz et al., 2010; Taylor Lovell, 2010).

Food policies activities were formal infrastructures, social movements, and informal food production (Mayer & Knox, 2009; Wiskerke, 2009; Zerbe, 2010). The effect of food policies were contradictory and promoted social inequities such as limited food choices in some communities compared to others (Hutson, 2001; Macias, 2008). Policies such as upfront fees to gain access to fresh food were additional burdens for

people with limited incomes (Glosser et al. 2007; Hébert, 2011; Pothukuchi & Kaufman, 1999). Food policy was the framework to explore alternatives ways to grow food.

I explored food policies from a small-scale or mini agriculture point of view through the literature review. The phenomenon in my study was the creation of an urban farm network as a supplemental food source in a large Northeastern city. The advantage of food policy lies in its range of ideas from agriculture, public policy, public health, urban planning, research, and other disciplines. Food policy was a framework to study the creation of an urban farm network. Urban agriculture included urban farms, community gardens, and simple food production practices (Jarosz, 2008; Wiskerke, 2009). Permaculture was less harmful to the ecosystem of plants, animals, and people: It added the invisible structures of culture, food traditions, and community well-being that were missing in food policy alone (Harper et al, 2009; Holmgren, 2002; Zerbe, 2010).

Urban farmers supported simple farming practices, add resilience through sustainable agriculture and could be a supplemental food source for the city (Follett, 2009). Simple farming practices were very different and provide more food choices, encourage people to participate in food production, and promote new markets for the local food sector (Follett, 2009). I applied a case study approach to this qualitative study explore the processes, qualities, and influence of an urban farm network in a large Northeastern city.

Industrial agriculture remained the foundation for today's global food network (Brundtland, 1987). Some researchers questioned if large-scale agriculture could adapt to processes that were less harmful to the ecosystem (Brundtland, 1987; Maxwell & Slater,

2003) While urban farms used organic agriculture, low food production might not serve the needs of a large urban population (Avery & Avery, 2008; Godfray et al., 2010). Permaculture had informal and unstructured practices, but it may not be possible to design a complementary food source around agriculture that was too fluid (Blay-Palmer, 2009; Holmgren, 2002; Mariola, 2008). Permaculture may not have the ability to change eating habits and help people improve their health (Andreatta et al. 2008; Sonnino, 2009)

City officials of the future may struggle with potential threats from urbanization, limited space to grow food, weather extremes, and price instability (Lang, 2010; Morgan, 2009). Food policy should include local assets as a supplemental food source (Ericksen, 2007; Lee-Woolf (2009). My qualitative study on in alternative food production could fill a gap in food policy literature. In Chapter 3, I examined the methodology and research design for this process.

Chapter 3: Research Method

Introduction

Food policy is an important public policy concern. Cities such as Vancouver, Portland, New York, Philadelphia, and San Francisco are developing food strategies, and local and regional food plans to feed their growing populations. As mentioned, the American Planning Association released the *Community and Regional Food Planning Guide* to encourage its members to re-evaluate the role of food as a basic infrastructure in the city (Glosser, 2007).

My research explored a process to design an alternative food source in a large Northeastern city. Urban farms could potentially evolve as a supplemental food source if supported by adequate infrastructures, community interest, and political will. My study provided an understanding of public policy in the context of urban agriculture, which is food production in communities with limited space (Chase, 2012). My research intention was to understand the phenomenon of the food-related activities needed to develop urban farms as food source (Dixon et al., 2009).

Forward-thinking decision makers found that the relationships between food and public policy (Hiranandani, 2010; Harper et al., 2009). A qualitative methodology would guide the research question about the public policy limits and opportunities for a supplemental food source for the city. The main sections of Chapter 3 were the research rationale, methodology, data collection and data analysis plans, ethical procedures, Institutional Review Board requirements and summary.

Further, I examined the main problem of long-term food production in the city. Conditions that changed the quality of the food system included a dependence on one type of agriculture, urbanization, and threats from weather extremes or civil unrest (Ericksen, 2007; Kortright & Wakefield, 2011). As a result, food shortages could be a reality (Ericksen, 2007). My research considered the phenomena of the interaction of processes needed to create an urban farm network.

A case study approach was a reasonable choice to find the rich details to answer the research question. My study on urban food policy applied the qualitative tradition and was "relying on direct experience" of the participants as the foundation of qualitative studies (Janesick, 2011, p. 24; Patton, 2002). In addition, Trochim and Donnelly (2007) noted that this tradition included information that was meaningful to people. Data from multiple sources could guide the meaning and understanding of the phenomenon. Other qualitative traditions were possible, but my research used a case study approach to understand the process to develop a supplemental food source for the city (Stake, 1995, as cited by Patton, 2002).

Research Design and Rationale

Research question: What are the public policy limits and opportunities that support urban farms as a supplemental food source?

Many urban food systems do not absorb the internal threats from urbanization, or external shocks from weather extremes or infrastructures failures (UNFAO, 2011). The traditional food system relied on industrial agriculture practices or technology-based agriculture for high volume food production (Godfray et al., 2010; Ericksen, 2007). There

were several problems related to this type of food system including its centralized infrastructure, ability to spread food borne diseases quickly, and there was no alternative food resource if the system failed (Maxwell & Slater, 2003; Zerbe, 2010). In relation to public policy, food policies offered alternative solutions to the challenges of a complex food system (Dunn, 2004).

A case study approach favored a broad understanding of food policies for an urban farm network (Trochim & Donnelly, 2007). Data collection included material from interviews, field notes, archival records, and qualitative research favored exploration to find solutions to real-world problems (Patton, 2002; Yin, 2009). In my study, the phenomena were the food-related activities and processes that support an urban farm network. Such activities were called as (a) *agriculture,* either organic or commercial farming; (b) *economic* as food branding or consumer buying choices; and (c) *structural* as land use or zoning laws (Maxwell & Slater, 2003). An urban farm network was the setting to explore these interactions and the creation of a supplemental food source for the city (Dixon et al., 2009).

In my study, I defined a supplemental food source as small-scale agriculture (Jarosz, 2008; Wiskerke, 2009). Examples included informal infrastructures such as Slow Food or Fair Trade, and formal infrastructures known as food policy councils and regional food planning boards (Hiranandani, 2010; Harper et al., 2009). Niche markets that supported local growers, food trucks, or farmers' markets were also supplemental food sources (Jarosz, 2008; Zerbe, 2010). As such, my study explored urban farming as a supplemental food source.

Problems in the public domain need decision makers with a multidisciplinary focus (Dunn, 2004). In general, the process to develop a supplemental food source could be a small, continuous change rather than a large, discontinuous change (Dunn, 2004). Good policy is the result of strong data collection from different sources, sound analysis, and realistic policy recommendations (Dunn, 2004). As such, the rationale for my study was to present a framework that described events in their natural setting within a stated time, place, and condition (Patton, 2002).

Role of the Researcher

As the primary data collection instrument, my role as a researcher was to record details of events. The role is dynamic but should remain neutral, avoid bias and undue influence (Patton, 2002). For instance, participant observation could "simultaneously combine document analysis, interviewing of respondents and informants, direct participation and observation, and introspection" (Denzin, 1978b: 183, as cited by Patton, 2002, p. 265). However, the researcher's role had a weakness in the potential for bias if the researcher changed an event or participant behavior. The research questions were vague, or the participant said what they thought the researcher wanted to hear were other concerns (Yin, 2009). Further, I should have a clear purpose, time limits, and maintain a scope that was either wide (an overview) or narrow (a small part of the event) Patton, 2002). More importantly, I should be aware of what was not said, or what did not happen. The use of multiple data sources could avoid the risk of bias.

My study provided opportunities to collect data from different settings. For instance, one setting could be a typical office environment for interviews, private areas,

offices, conferences and meeting rooms for formal and informal conversations. The office setting had space for each interview, be comfortable for the participant, and accommodate audio recording equipment. There may be some email communications or phone interviews if needed. Another setting might include onsite visits to urban farms, rooftop or hydroponic farms, and community gardens. Although the natural environment presented opportunities to watch participants and collect rich details about urban farming practices, there were no observations in my study.

The sample participants included stakeholders in the public, private, nonprofit, community groups, and academic sectors. The sample contained approximately 15 to 20 people (three or four from each sector) and continued until saturation was reached. Additional participants for this study came from my professional network and people active in some area of sustainability and food policy. Such activities could be urban agriculture, urban farming, planning, public policy, community development, recycling, and green roofs. Other participants might be involved in conferences on urban agriculture and urban farming, and interviews might include city government officials and other state and local professionals.

My overall network was wide enough to gain access to people and information from different sectors. There may be personal relationships within this group, but I remained neutral and professional throughout the study. There were no concerns about supervisory relationships since workplace participants were not included in my study. LinkedIn, dissertation support groups, craigslist.org, meeting minutes from public forums such as the city's food program, or the state Food Policy Council could be other resources

to find participants. Each participant received a Letter of Introduction that outlined the purpose and goals of the study, length of the interviews, communication preferences, and timeframe to reply to the letter. As mentioned, I used a snowball sampling procedure to reach a saturation point.

Other sources of names included material from urban agriculture conferences, seminars, and workshops. For example, a scholarly lecture series on food in the urban landscape provided the biographies of panelists and speakers who were potential participants. The series presented an overview of problems in the urban food system. The speakers' biographies, website information, handouts, and program information were helpful to determine if a person fit the sampling criteria.

Methodology

The qualitative tradition was selected as a scholarly resource with the tools needed for my study. Interviews, recordings, and document analysis could support meaningful ideas described by participants (Trochim & Donnelly, 2007). Data collected from multiple sources could explain the research problem (Trochim & Donnelly, 2007). I reviewed each qualitative approach to determine their fit for a study about creating a supplemental food source. For instance, I reviewed the purpose, goals, and research question to refine the search for the best qualitative method for my study (Patton, 2002; Trochim & Donnelly, 2007; Yin, 2009). Finally, I selected the case study as "the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances" (Stake, 1995, as cited by Patton, 2002).

A summary of other qualitative methods included ethnography that evolved from anthropology, in the context of the culture of a social group (Patton, 2002; Trochim & Donnelly, 2007). Ethnography did not fit my study because the focus was a process that could potentially contribute to local food policy, and the culture of the community was a secondary concern (Patton, 2002). Grounded theory is a collection of ideas (field notes, new information) that expand the original concept. However, Patton, Trochim, and Donnelly suggested that grounded theory was not suited for a study on the processes or activities related to food policy.

A narrative is a collection of stories that recognized the life and culture of one person (Patton, 2002). A narrative study relied on one data source. However, research on a supplemental food source needed multiple data sources. Phenomenology described "how the world appears to others" (Trochim & Donnelly, 2007, p. 180). According to Patton, meaning, essence, structure, and the lived experience described the focus of phenomenology. My study on the processes to create a supplemental food source was not a lived experience. The case study approach was the logical choice as a means to explore an activity or event. Data collection included various sources to find answers to the questions concerning the opportunities, limitations, and potential for urban farms to become a supplemental food source (Trochim & Donnelly, 2007, Yin, 2009).

The sample size included three or four people from the public, private, nonprofit, and academic sectors to recruit approximately 15 to 20 people a manageable sample size (Patton, 2002). In addition, validity, meaningfulness, and insights were more a feature of the data collection process than the actual sample size (Patton, 2002). For example,

potential stakeholder titles included: (a) senior managers from the state urban agriculture program, urban planning, and economic development; (b) senior and mid-level managers for nonprofits that operate urban farms and provide training for new farmers; (c) entrepreneurs and small commercial growers from the private sector; and (d) coordinators, program managers, and students involved in food policy, sustainable agriculture, and food system planning at universities in the northeast and the northwest.

A small, carefully selected sample could offer the rich, in-depth details needed to answer the research question. Participant criteria depended on a person's knowledge and skills in urban agriculture. More specifically, the participant criteria might include knowledge and skills about food-related policies, planned any food production project, or contributed as a participant or presenter at a conference, workshop, or seminar on growing food in the city. Other experience included implementing a formal plan, strategy, or program related to urban food production, gardeners experienced in growing food at home, urban farms, community gardens, or other similar activities. In addition, researchers in food policy, urban agriculture, food systems, or food policy councils may fit this criterion. I used a snowball sampling procedure to reach the saturation point.

Participant recruitment. The recruitment process applied a snowball sampling procedure. Each participant received an introduction letter that described the purpose of the study, an invitation to participate, the selection criteria, time commitment, and the possible benefits of the study to their profession (Yin, 2009). The consent form outlined all researcher and participant expectations and options to end the study at any time. As mentioned, data collection included multiple sources. Yin suggested that alternative

theories and rich details from multiple sources could create a sound data collection strategy.

Data sources may include interviews about events and processes, and document analysis of organizational plans, meeting minutes, research documents, government reports, letters, or emails (Patton, 2002; Yin, 2009). Archival records of public documents, charts, budgets, or survey data, as well as online videos, blogs, news releases, audio recordings, and public comments were other sources (Yin, 2009). My study relied primarily on interviews and some documents.

Data Collection

My data collection plan described each source in the context of the research question. Further discussion included the frequency of data collection, duration, data recording process, debriefing sessions, and any follow-up interviews. In addition to the data collection plan, coding results, explanation building, theme comparison, interview protocol, and the audio recording log was included in this section (Yin, 2009).

Sample interview questions were:

- What is your idea of food policy and can you give an example?
- What activities in your job focus on the food system in the city? Can you describe those activities?
- What are some of the food policies challenges you see in the city?
- Where do you see the gaps in the food system in the city?
- What are your ideas to fill the gaps?

- What role to you see for urban agriculture and how does it fit the food policy plans for the city?
- Do you see any threats to the food system in the city? If so, please describe them.
- What are the public policy risk and reward you see in designing a supplemental food source for the city?
- How does your organization address some of these threats?
- What do you think about small-scale, locally based solutions to supplement the food system in the city?
- How might our local government support your organization in a sustainable urban farming effort?
- What is your vision for a sustainable food system in the city?

A data collection plan was the starting point to determine what data was needed to answer the research question (Yin, 2009). Rich details and alternative theories might be revealed through distinctive data collection strategies (Yin, 2009). Yin suggested four data sources:

Interviews. This data could provide detailed materials to answer the research questions. Although a primary data source, interviews were supported by other data resources (Yin, 2009). The three types of interviews were *in-depth* (ask about events and opinions of participants), *focused* (short, conversational), or *based on a survey* (to produce quantitative data) (Yin, 2009). My study included people with experience (design, implement, contribute, planning) in urban agriculture. I planned to recruit 15 to

20 people, with a realistic expectation that half of them would participate. The interviews would be in person, by phone, or electronically if needed, over four to six weeks for approximately one hour. All participants signed consent forms that described the expectations and an option to leave the study at any time. I scheduled additional time for another interview if needed. My research notes would supplement the recorded and transcribed data.

Documents. Organizational plans, meeting minutes, reports, conference papers, research documents, government reports, letters, and emails were samples of potential data sources, as well as a research journal (Patton, 2002). Some of the documents were online, and local libraries and newspapers were other resources (Yin, 2009). The document analysis and timeline for completion followed the interview process. Further, many documents were written for a specific audience, and they may be less than truthful (Yin, 2009). I was aware of these objectives and potential biases, and read between the lines when interpreting data from any document.

Observations. Two types of observations were *direct* (formal, in a natural setting) and *indirect* (casual or informal). Internal meetings, public forums, town hall meetings, conferences, workshops, seminars, videos, and other social settings were opportunities for observations. I reviewed materials from past lectures, conferences, and meetings, as well as notes from conversations and informational interviews with people in food planning, public policy, and urban agriculture. The observation period depended on the length of the meeting or observation activities. Patton (2002) suggested taking notes on the physical surroundings and described the activities as they unfold.

Archival records. These data included public or government documents, charts, budgets, company records, or survey data (Yin, 2009). Archival data could be quantitative but not necessarily accurate. My data collection plan helped me decide if material was relevant. As mentioned, archival records can serve an objective for a specific audience, and may not be accurate. I drafted a schedule and reviewed archival records along with the document analysis. Journal notes were also another data source. The follow up plan for each data source was flexible to accommodate more time for interviews, documents, and archival records reviews.

Content validity (measures the content it was intended to measure) relied on rich, thick description from interviews, and document analysis. According to Trochim and Donnelly (2007) and Yin (2009), validation strategies included triangulation, data collection from different sources, pattern matching, chain of evidence, and member checking based on the participants' point of view. However, I recognized that the participant views were subjective, and needed support from document reviews and common themes.

Data sufficiency was determined when the information can answer, support, and challenge the research questions (Yin, 2009). Overall, data was adequate when there was enough material to answer the research question. A focus on thick descriptions from various data sources favored transferability. Patton (2002) noted that transferability applied similar findings to different contexts, but case studies had limited transferability. For my study, transferability was contained only to cities similar to a large Northeastern city in climate, population, agricultural resources, and political support. As such, I can

only speculate on the transferability of urban farms as a supplemental food source in communities outside of a large Northeastern city. However, more information was available after the data analysis.

My ability to integrate new data further supported dependability (Patton, 2002). Data from alternative theories, other explanations, and an audit trail were other means of dependability. In addition, Yin (2009) suggested reviewing data through triangulation processes such as *data triangulation* based on various data sources, and *investigator triangulation* using different evaluators. Other processes included *theory triangulation* that reviewed the same data from other points of view, and *methodological triangulation* using various methods. While triangulation was not a new process, Krefting (1991) recommended coding the data multiple times to compare the results (double coding) as part of the triangulation process (as cited by Baxter and Jack, 2008).

Data Analysis

The search for solutions to public problems is a holistic process of interconnected and inseparable parts of a larger system (Dunn, 2004). In other words, any supplemental food source was also part of the overall food system. Therefore, data collection should be robust and include multiple sources. Data analysis included transcriptions of audio recordings of interviews and feedback from participant debriefings (Dunn, 2004). Transcript analysis involved a search for common themes and patterns of words and ideas. Journals, reflection logs, interview logs, and organizational documents were part of the analysis (Yin, 2009). My coding process used HyperResearch software to organize words, themes, ideas, and patterns, and I manually coded the transcripts twice.

Issues of Trustworthiness

My plan for trustworthiness was to maintain a neutral perspective and keep an open mind. The goal of my study was to develop an understanding of the situation, not to prove or predict the outcome (Patton, 2002). I included multiple points of view and recorded the data exactly as it happened. Further, I evaluated and reviewed the reporting process for possible biases and mistakes (Patton, 2002). Trustworthiness involved reflection and examining any personal views as expressed in interview logs, journals, and the research diary.

Yin (2009) recommended a credibility strategy that included data analysis to find patterns and themes from interviews and documents. For my study, I used explanation building to understand how and why results occurred (Yin, 2009). In addition, I asked interview questions and looked for documents that provided the rich, thick descriptions to address transferability (Patton, 2002). To demonstrate dependability, I triangulated and compared data from different sources such as historical documents, and interviews to adequately describe the process to develop an urban farm network (Trochim & Donnelly, 2007). Further, an external auditor also evaluated the data for confirmability and dependability (Patton, 2002).

In addition, I planned to gain a holistic and useful understanding of data by applying the triangulation process discussed under the Data Collection section of this chapter. Applying data from different sources favored a holistic understanding of the phenomenon of my research: The interaction of processes that created an urban farm network (Baxter & Jack, 2008). I ensured trustworthiness in several ways: (a) interview

different stakeholders in an organization to gain a broad perspective of the situation. The preliminary interviews with mid-level staff provided useful information in drafting the interview questions for senior staff. Rubin and Rubin (1995) noted that overlapping of narratives was a useful means to check and compare information; (b) develop a priority list of preliminary interviews with mid-level decision makers (managers, program coordinators) to gain background information. A secondary list also included senior staff; (c) use document analysis to check and double check data from interviews. I organized the data by themes, keywords, situations, or other common elements (Rubin & Rubin, 1995); (d) carefully prepare follow-up questions to guide the interview. For instance, wording of the questions could help the participant and not make them feel uncomfortable. Rubin and Rubin suggested using phrases such as "What types of challenges did you experience?" rather than "Why didn't that work?" The purpose was to avoid implications of problems or blame on the participant (Rubin & Rubin, 1995, pp. 224-225); (e) find the background information needed to understand a challenge or situation. I reminded the participant that the interview was anonymous and should talk honestly about a challenge or situation (Rubin & Rubin, 1995); (f) use honest and descriptive language. (Patton, 2002). My obligation involved personal reflections and perspectives on the situation. It is up to the reader to decide on the meaning, value, and use of the research outcomes (Patton, 2002). Therefore, I carefully evaluated the terms, context, and conditions in understanding a process.

I assigned a pseudonym or number to protect the participant's identity. The Letters of Introduction and consent forms also contained this information. Electronic and

offsite storage will protect all data collected for this research. Storage of all data including hard copies, flash drives, and audio tapes, will remain in a locked file cabinet for five years as suggested by the Institutional Review Board.

Ethical Procedures

The participant Letter of Introduction (LOI) described the purpose of the study and expectations of the participants and researcher. The LOI requested access to participants and any site visits. The LOI included a timeline or schedule based on the availability of participants, site access, and myself. I saved copies of the LOI electronically. Snowball or chain sampling required more than one round of interviews, the first round with the critical stakeholders, and the second round with the people identified by the key stakeholders (Trochim & Donnelly, 2007). If needed, a third round of interviews could identify additional key stakeholders.

The second agreement was an informed consent form stating the confidentiality matters, related rewards and risks of participation, and any ethical concerns. Yin (2009) suggested additional explanations concerning voluntary participation including the participant's option to withdraw from the study at any time, refusal to answer any question, participant and researcher expectations, and the selection criteria of all participants.

As outlined in Walden University's Institutional Review Board (IRB) application, the LOI and consent forms underscored the need for transparency, participant and data protection, and the importance of communicating any concerns with the researcher. Participants who completed the study had debriefing sessions to revise and correct their

interview transcript. There were no community partners in this study, and the IRB application did not include Letters of Cooperation. The data collection process began after I received written IRB approval.

I respected the wishes and requests of all participants. Any participants did not have to answer any questions if they felt uncomfortable. The data collection proceeded exactly as described in the IRB application. Participants may initially agree to confidentiality, but some material might not remain confidential when published in the summary (Patton, 2002). As mentioned, the participants had an assigned number or pseudonym, and all names remained anonymous. Pseudonyms and alphanumeric coding could ensure anonymity and confidentiality.

All data were stored electronically in separate locations. A locked file cabinet housed all hard copies, audiotapes, documents, flash drives, and archival materials for at least five years, as recommended in the Institutional Review Board application (Patton, 2002). I addressed the ethical concerns such as building a rapport with participants and avoiding making promises lightly. For instance, I used my personal and professional networks as a sampling resource. A participant might ask to delete information from the recorded interview (Janesick, 2011). I could refer them to the LOI which outlined the importance of anonymity. All participant identities remained anonymous and protected, and there was no need to delete any data.

Most likely, I had a rapport with the participant, and expected a response to my interview request. I reminded the person about the expectations of the study that were outlined in the Letter of Introduction, including what can and cannot be confidential.

While the participant could refuse to answer any questions, it was my professional responsibility to record all data accurately, and assure the person that their identity would remain anonymous.

Another ethical concern was to assure that the language in my study was understandable to all participants. I found an outside person (committee members, local administrators, experts in food policy) to be a sounding board to review the research questions and to address any ethical problems that might arise (Janesick, 2011). Other concerns may be the possible risks and liability of all participants, such as a breach in confidentiality, or too much information that could identify the participant or their organization. I planned to avoid these risks by maintaining anonymity in all field notes, journals, and transcripts. All raw data was password protected, safely stored, and job descriptions were generic to retain participant confidentiality (Fritz, 2008). My workplace was not part of this study, and any conflict of interest concerns were eliminated.

The nature of my exploratory study was to expand ideas of food policy for future research (Yin, 2009). This element was parallel to the research purpose, to understand the food policy interactions in creating an urban farm network. The relationships between food policy, public policy, urban agriculture, urban farming, and permaculture were speculative at best, as there are many known and unknown processes in building a network. According to Trochim and Donnelly (2007) qualitative research favored exploration and a diversity of ideas. For example, an urban farm network may address new food policy research regarding the transferability of urban farms in small

neighborhoods and communities, rather than the overall urban landscape (Randolph & Eronen, 2006).

My study can included a presentation of tables, graphs, charts, and described a chronology of events (Yin, 2009). Data collection from interviews, documents, and archival records included coding, explanation building, and comparing and contrasting themes. Other presentations included a case study protocol, codebook, and database. Discrepant material (divergent, convergent) was part of the data analysis. For instance, complex pattern matching could explain alternate theories, reveal conflicting outcomes, and build a holistic view for designing an urban farm network in the city (Yin, 2009). Any discrepant cases revealed different perspectives and outliers. Yin suggested backtracking to evaluate the definitions of initial and subsequent codes. The process could assure that the initial definitions were still meaningful throughout the research design.

Summary

My qualitative research examined the public policy implications for a supplemental food source. The main points of this chapter explored food policy solutions for a complementary food source in a large Northeastern city. As a *blueprint* to examine the research questions, the case study approach applied multiple data sources to support validity and dependability (Yin, 2009). The data collection plan included purposeful sampling and careful selection of participants for a series of open-ended, conversational interviews. Criteria for sampling selection included participant experience in urban agriculture, urban farming, urban planning, and implementation strategies to produce

food in a community. Trochim and Donnelly (2007) noted that the value of qualitative research lies in its variety and exploratory nature.

The data analysis could address different theories, evaluate details from multiple data sources, and interview transcripts for themes and rich descriptions. My analysis supported trustworthiness to accurately reflect the potential to develop an urban farm network in a large Northeastern city (Yin, 2009). In addition, my data presentation included a chain of evidence in data collection, coding and organizing all data in tables, maps, graphics, and in chronological order.

Ethical procedures followed IRB approval prior to any data collection, well-designed consent forms, and secure treatment and storage of all data (Patton, 2002). All procedures including data collection timeline, and case study protocol, were available in the Appendix section of this study, or saved electronically. Other details identified any professional and personal relationships and researcher biases. My study might fill a gap in public policy literature by exploring the role of urban farming in local food policy. These urban farms could potentially offer a supplemental food source for a large Northeastern city. My interpretation and a summary of the findings were presented in Chapter 4.

Chapter 4: Results

Introduction

The purpose of my research was to explore policies that limit or expand urban farms as a secondary food source in a large Northeastern city in the United States. In addition, my study examined food-related activities such as food policies, procurement, food production, farming practices, and technology-based agriculture. I used the embedded case study approach (multiple units of analysis) to understand food policy concepts in urban farming. Urban agriculture, permaculture, and alternative food systems are examples of food policies related to urban farming (Dixon, Donati, Pike, Hattersley, 2009). According to Chase (2012) and Holmgren (2002), urban agriculture was the overall food policy for food production. Permaculture is a type of small-scale agriculture best suited for city living (Holmgren, 2002). Alternative food systems included food-related activities (Andreatta et al., 2008). In my study, urban farms were alternative food systems that support environmental, social, and economic sustainability (Andreatta et al., 2008). Understanding these concepts helped me to answer the research question on the public policy limits and opportunities the support urban farms as a supplemental food source. I described the setting, demographics, data collection process, data analysis, evidence of trustworthiness, results, and summary in Chapter 4.

Setting and Conditions

The setting for my research was the public, private, nonprofit, and academic sectors. Each sector was selected based on its role in urban agriculture. For example, the public sector included key food policy decision makers while the nonprofit sector

managed many urban farms. The private sector included the business and entrepreneurial element of urban agriculture, and the academic sector represented research, technology, and formal food policy programs. Collectively, these sectors provided a snapshot of the urban agriculture and urban farming landscape in a Northeastern city.

The organizational conditions in the public sector include personnel changes as a new governor appointed new commissioners, secretaries, and other cabinet posts throughout state government. These changes were significant because the leading stakeholder in the state agriculture department (known as an important supporter of urban agriculture), was replaced after eight years. Long-term food policies, zoning laws, and the city's urban agriculture plan may also be in transition. A similar transition occurred in city government when a new mayor was elected. For instance, the head of the city's food projects was replaced, also a key supporter of urban agriculture in this Northeastern city and a founding member of the city's urban agriculture plan. In addition, the state is developing a food system plan for a snapshot of agriculture processes in regions statewide. In the end, there will need to be new networks, partnerships, and alliances between the new city and state stakeholders in urban agriculture and urban farming.

The organizational conditions in the private sector supported a relatively small segment of the food landscape. For example, there are less than 25 urban farms in this Northeastern city, most operated by nonprofits, compared to over 6,000 conventional farms across the state. Market demands, a targeted customer base, and distribution streams were critical in this sector. Public grants or foundation support was not an option in this sector, unless a commercial business had a nonprofit unit, or perhaps if the

business was a social enterprise. My study included two types of commercial farms and a mobile food market structured as a social enterprise. In this sector, technology and agriculture were a means to expand urban farming that could include rooftops, aquaponics, hydroponics, or raised bed gardens. Overall, this sector was small because public and private investments favored the nonprofit sector over commercial urban farming.

In this Northeastern city, conditions favored the nonprofit sector as the domain of urban farms. The primary mission of most nonprofits was to help society by housing the homeless, providing youth programs, or helping the sick. In addition, urban farming was another program supported by many nonprofits as a way to grow their food, teach others to grow food, provide job skills, or improve community well-being. City and state officials supported nonprofits in different ways. For instance, nonprofits could buy or lease city land at a substantial discount, receive public funding through grants, and participate in food policy and zoning decision-making. Nonprofits were active in planning urban agriculture projects, public-private partnerships, and included in an extensive network of resources across different sectors. As such, nonprofits evolved into the primary source of urban farms in this Northeastern city.

Academic stakeholders provided a way to explore technology and sustainable agriculture practices. The conditions in this sector supported new processes to grow food through aquaponics, vertical farms, greenhouses, and educational programs in environmental science, food culture, food system planning, and nutrition. This sector is also critical to the urban agriculture network as a research partner for local governments,

and nonprofits. Stakeholders in this sector revealed that while some programs were very popular (food culture, environmental science, urban agriculture) career choices were limited.

Demographics

The population of this Northeastern city was approximately 600,000. There was limited public land available to grow food in the city. According to Participant 5:

> "There are a total of 2,646 publicly owned vacant parcels, but many of them are at the micro level. Public land that exceeds 10,000 square feet (one-quarter acre), there are 717 of those, for a total acreage of 564 acres."

Most urban farming projects were located in communities where people from Ireland, Vietnam, Haiti, Cape Verde, and the Caribbean live. These ethnic communities were historically and culturally diverse and low-income. Nonprofits that had urban farm programs also had a well-established reputation, a definite presence, and were well known to people in these communities. There was a keen interest in farming from immigrant populations, and new farmers might include urban, suburban, and rural communities.

Stakeholders included public officials in agriculture, urban and regional planning, community economic development, environmental protection, food system planning, and related food policy projects in city and state government. Private sector stakeholder represented commercial businesses (for-profit urban farmers) and a social enterprise business (mobile food market). I excluded retail vendors such as food trucks and restaurants since they did not fit the parameters of my study. Nonprofit stakeholders

included organizations that served the food needs of urban communities. Sample groups had programs on urban farming (grow food for themselves, to sell, donate, teach others to grow food), and included a land trust and a farmers market group. Academic stakeholders represented various roles. For instance, some universities focused on food policy, were active in food-related projects in their communities, or had resources to explore sustainable agriculture to grow food in different ways.

The political landscape in this Northeastern city was that the former mayor was a loyal supporter of urban agriculture and passed the *City Ordinance* (Ordinance). Officials described the Ordinance as the document that changed zoning regulations and identified standards for urban agriculture practices within city limits. Rezoning changes included public land for growing food, on the ground and above ground, technology-based agriculture, farm-to-school programs, and beekeeping. The state agriculture department has an urban agriculture division and a state-run food policy council. As mentioned, these practices and programs were in transition as the result of a new city and state administration in 2014. For example, the new governor recently signed a $2 billion environmental bill. Some of those funds were for grants through the state's agriculture department. But there was also a government-wide hiring freeze. It would delay hiring new staff to expand the state's urban agriculture program. At the same time, the new mayor announced the first urban farm under the new Ordinance for commercial farming. See Table 1 for definitions used in each sector.

Table 1

Definitions by Sector

Sector	Urban agriculture	Urban farming	Sustainable agriculture
Public sector	"Growing food in the city for commercial purposes" (Participant 1)	"If you want to call it agriculture if you want to call it farming, it can fall into commercial or non-commercial [farming]' (Participant 1)	"Growing practices that maintain the ecological health of the land…and address a livable wage for farm workers" (Participant 13)
Nonprofit sector	"Agricultural practices that enrich the land…the growers, neighbors, people who buy the food" (Participant 20)	"Connect people to the process of growing food." (Participant 17)	"Take ownership of your community, to build more community feeling." (Participant 8)
Private sector	"Very intensive agricultural practices…growing on really small amounts of land and …understanding pest control, rotations, very intensive planting." (Participant 14)	"Commercial production levels for home consumption" (Participant 11)	"The nonprofit sector and the private sector…food lends itself to good people that are genuine in their mission to do whatever it is that they're doing, whatever element of food system sustainability there is." (Participant 19).
Academic sector	"A social, cultural tool, a way to build community" (Participant 5)	"Any food that is grown in those areas [city].not necessarily produced for sale or consumption. (Participant 9)	"Development of food…in a way that is not detrimental to the long-term health of …the environment" (Participant 5)

Data Collection

Twenty participants were included in my study representing different points of view in the food landscape in a Northeastern city. I reached the maximum sample size (20) and included participants from the public, nonprofit, private, and academic or education sectors. I conducted most of the interviews from my home office in the Southeast region of the state, and one recorded off site in a small room. The length of the interviews was between 45 to 60 minutes. I recorded 18 interviews and two people requested an email interview. All participants agreed to the audio-taped interviews. The participants received their interview transcripts to review, made corrections, and returned them to me.

In Chapter 3, I predicted that the interviews would be in person, but most of them (18) were phone interviews to save time for the participants, and they were easier to arrange. Also, the Letters of Consent was signed electronically. The interviews were predicted to occur over four to six weeks, but they were completed between November 30, 2014 and January 24, 2015. Finally, there were no observations made in my study. Occasionally, there were technical problems on the speakerphone. Otherwise, conditions were normal during data collection. My study was approved (Walden University's approval number for this study is 11-10-14-0118647 and it expires on November 9, 2015) before any data collection was performed.

Data Analysis

My analysis began with a first round of reading the transcripts to develop a cursory and extensive list of codes using HyperResearch software. The first round of

coding the transcripts produced an exhaustive list of codes. A second coding round was used to organize the coding units into larger themes and patterns again using HyperResearch, and the transcripts were re-coded. As a result, the data was organized into five categories: Policy and Planning, Agricultural Activities, Processes - Food Sources, Trends, and Outliers. Themes within the categories were Local Food and Land Policy, Food Production, Procurement, Innovation and Creativity, and Outliers.

Many codes were repeated and an iterative process further narrowed the list to three themes. The final themes were Local Food and Land Policy, Food Production, and Procurement, with a final list 49 codes. Next, I used HyperResearch to design a word cloud of the 50 most popular words, and then used the cloud to check if any new words appeared. The common words were urban, farm, people, food, and agriculture, and the pattern agreed with the codes revealed in the transcripts. I did not discover any new ideas the word cloud, and believed that the coding process was adequate.

Prior to the data collection process, my committee chair suggested that I send a list of sample interview questions to decision makers in different areas of food policy. The suggestion was an important step to get feedback on the questions, and I learned that each sector had its unique language. Although the interview process was intentionally open-ended, I tailored the questions for each sector.

For example, when talking to participants from the nonprofit sector, the interview question was: What are some of the gaps you see in the city's food system? "Poor access to unprocessed foods, and poor utilization of empty or under used areas." (Participant 8). A response to the question: What is the mission of your work? was

> "The original purpose of the organization was to help support the initiation of farmers markets in order to provide a retail option for farmers to transition out of wholesale into retailing. And we've essentially accomplished that mission and have transitioned our focus now to doing things that are more related to health and wellness in general." (Participant 2).

When asked about the long-term goals for a private company (described as a social enterprise business) Participant 19 revealed:

> "Like I said for the company to grow, the highest level objective for [Our] Truck is to get it to a place where we can transition it with a larger organization that can really accelerate our impact…And other than that, our mission is simple, we're just trying to feed people. It's bottom line, we're selling fruits from a truck, we're trying to feed people too and improve community health."

Concerning policy work in the academic sector, Participant 16 said:

> "Yeah, I have been doing the policy track learning about the history of food policy in the United States and where it has the potential to go, and what private and public groups are doing to make changes to work within food systems or develop new food systems."

When asked about the changing agricultural landscape in the city, a public sector participant replied:

> "You know, unique and non-traditional partnerships have to be formed to really get these things on the ground, and I think that is really the only way the movement is going to continue in [the city]. Because you know, it's [the city] and

> there's just so much pressure for development and innovation in all sorts of different areas of development. So if we don't gobble up these big parcels, they'll be gone. So not to sound doomsday or anything, but I definitely think that we have a good foundation, let's use it."(Participant 3).

Although policy concerns were central to my study, funding and space limitations in the city were the common responses. The interview questions about gaps in the overall food system prompted a series of replies from each sector:

> "I mean, if you accept that there are any gaps. It's really a case of available funding, available land, and there's other things we'd like to see in the future. But we're just trying to foster as much innovation as possible." (Participant 15, Public sector).
>
> "Just looking more generally at the food system, looking at the urban agriculture component of it, as I mentioned before, the availability of land, and the lack of capital for urban farmers to buy or create those farms, is the biggest challenge to urban farming right now." (Participant 5, Nonprofit sector).
>
> "And so at the end of 2012, we had a signed lease for 10 years at that building, and zero money in the bank. So we did a crowdfunding campaign through Kickstarter which helped pay for the initial installation of the farm." (Participant 11, Private sector).
>
> "I worked in nonprofits for a long time…and the way that nonprofits are funded these days can be very, very frustrating. Because a lot of these foundations all they want is…they don't like giving money for general operations, which is what

> nonprofits need. So I'm always a little worried about when nonprofits fund things like this [urban farms], you know, how financially viable is it? How are they going to pay the farmers? They have to pay a living wage or it's not going to be sustainable." (Participant 9, Academic sector).

Initially, I used five categories as the basis for an overview of the food system in a Northeastern city. For example, the Policy and Planning category included the themes Local Policies - Food and Land. The codes were Food Policy: Local, City, Regional, State. Sample comments were: "So feeding people that need feeding, solving food security needs to happen with the entire food system. That's why we're very pleased that the [state] is going through that planning process for its own food system." (Participant 5). "I would say we have yet to reach our demand [for local food], particularly being a three-season climate, maybe similar to the Northeast."(Participant 4). Land policies comments included:

> "The most consistent issue that continues to be a problem is land access. City Ordinance (Ordinance) has done a lot with that (better land access) in terms of actually getting the government to think about it and creating systems to find farmers who are looking for land, being able to match them with either city land and/or private owners who are willing to sell or lease to a farmer." (Participant 17).

The codes in this category also described land use policy, zoning and city ordinances. Participant 17 noted that: "There's a zoning article [Ordinance] is great but that means there's a whole permitting process that is fairly archaic and requires going

through multiple municipal departments to make anything to happen." And "In order to obtain land it's possible to purchase or lease land from the city, which has been the most method for obtaining land" (Participant 4). The Agricultural Activities category covered the Food Production theme. Codes included urban agriculture, urban farm, conventional farming, technology-based, suburban farms, and food quality (organic, conventional). Some quotes from participants were: "But you know, I'd like to push beyond that and see what's possible for maximizing space, identifying crops that have a higher, you know, yield, or are better for generating revenue in smaller spaces." (Participant 4). "We're trying to figure out efficient ways of continuing to do our job and also grow crops that work better than others, and what we can get more money for." (Participant 11). "We're always saying global agriculture trade but that obviously also has to be reformed so that small organic producers can still survive and participate, and that's where the fair trade movement comes in." (Participant 13).

Finally, the Processes - Food Sources category included the Procurement theme and codes such as Farmers market, Local food sources, CSAs, and Corner store/Bodega. Some comments were: "Sometimes our locally grown carrots are organically grown …We would rather our students eat all the carrots on the menu (local, organic or frozen conventional) rather than just the organic ones that are sometimes on the menu." (Participant 18). "Some [food service providers] that have these giant contracts, with institutions like CPS [City Public Schools) will begin you know, to consider locally sourcing foods." (Participant 4).

Some of the codes in the Outliers or discrepant category were Extensive farm experience, Unique type of farm, and Institutionalized sustainable practices. Sample comments included: “And I’m in that space of providing reflection, insight, observation. Not so much on the production side of the coin, although I do bring that when asked, because of 30 years of farming and 30 years of greenhouse growing.” (Participant 2). “Urban farming is part of what we call a community agriculture program in [the state] which is focused on getting 15 to 20 farmers onto farms in the next five years. That’s in both in rural, urban and suburban settings.” (Participant 5). “Sustainable agriculture must be just also, that you can’t call it sustainable if it’s only ecologically sustainable and not addressing issues of equity.” (Participant 12).

Another interesting note was that each sector had a unique outlook on public funding for urban agriculture. Comments included:

> “In terms of policy, continuing to invest financial with supporting grants. Also working with our sister agencies and figuring out where there is land. Once we get this anchored in, the next piece of this puzzle is to support urban farmers who live in the city but can’t get access to land in the city, but want to farm outside of the city, and bring that food in. But that won’t be seeing that happening this year. But just getting that conversation in after we build those bridges with our rural farmers is something that I see as a natural next stop.” (Participant 1, Public sector).
>
> “Over our 40-year history, we developed an expertise in real estate, but also in a host of other areas such as conservation finance and advocacy for funding at the

public level, for conservation, at the local, state, and federal level." (Participant 5, Nonprofit sector).

"So I think we need funding to grow, but I think vertical integration with a larger group like that would streamline our operations, cut costs, would help us grow in a sustainable fashion." (Participant 19, Private sector).

"But if you go to a farmers' market within the city environment and look at the food that's actually being grown and sold, in an urban environment, too often there are very few organizations that are for-profit, that are not grant funded, that are not part of a larger organization. And I think that just kind of points to where we are in developing sustainable agriculture in the urban environment. It doesn't always make economic sense." (Participant 4, Academic sector).

See Table 2 for a summary of the interview process.

Table 2

Summary of Interview Process

Process	Outreach	Follow up	Problems	Solutions
Email invitation	Emailed professional network, craigslist.org, LinkedIn, and food-related listserves for community groups, institutions, universities, state and local agencies, students	Sent at least two emails until the person accepted or declined the invitation, stopped after three emails with no reply	Some people were key stakeholders but ignored or declined the invitation	Applied snowballing, emailed other key stakeholders for additional names
Letters of Intent and Consent Forms	Emailed to anyone who accepted the invitation	Email explained that these documents must be returned before the start of the interviews	Sent multiple emails reminders to return the documents	Emails continued until all participants signed and returned their Consent Forms, Forms logged and saved
Scheduled interviews	Each person sent a choice of dates and times	Multiple emails until date and time confirmed	Sent multiple emails reminders	Emails continued until all participants scheduled and completed interviews, log updated
Debriefing	Participants debriefed	Participants encouraged to ask questions at the end of the interview	N/A	Summary of findings to be distributed to participants
Transcript process	Interviews transcribed and sent to participants	Transcripts emailed with a preferred response date	Sent multiple emails reminders	All transcripts reviewed, corrected, returned, log updated
Final steps	N/A	Participants sent "Thank you" emails	N/A	N/A

An interesting outlier was that no participant mentioned the word "permaculture" in any conversations. I explained permaculture principles in Chapter 2, but maybe participants used *sustainable agriculture* or *integrated agriculture* to describe processes similar to permaculture. Another interesting point was that many participants did not see a place for urban farms as a supplemental food source. But Participant 4 emphasized that: "I would argue that they [urban farms] already are a secondary, you know, area of procurement for the city and always have been in some level."

Document analysis. A nonprofit report written on the food system in a Northeastern state suggested several policy and zoning revisions to advance urban agriculture. Some examples included revising existing zoning laws to include land for agriculture, urban agriculture in the food system plan, and streamline permitting requirements for agricultural land. Food production policies favored evaluating the food system workforce and developing a regional conference on food and the agriculture workforce. The budget for new farmer programs (USDA's Beginning Farmer Program, Farm Service Agency's microloan program) should increase. Procurement options might include incentives for institutions (hospitals, universities, colleges, state agencies) to buy local food, buy directly from local growers without the formal bidding process, and food education programs to teach youth about healthy foods.

The food system report evaluated policies that limit food production from local sources in this Northeastern state. The target audience was local food growers, nonprofits active in urban farming, public and private stakeholders in the food landscape, and people who want to farm. Policy solutions favored job growth, public-private partnerships, and

public investment. However, my transcript analysis did not agree with the goals of the food system report as described in the Results section of this chapter.

The state food policy council meeting minutes (December 2014) described the comprehensive nature of a food system plan. The meeting focused on the tasks of the Working Groups (urban agriculture, rural and urban farmers, land management, fisheries) under the overall title of Production. The meeting minutes underscored the role of cross-sector participation, and moving forward, although not all sectors were represented. Key stakeholders included retail and farmers, and the changes in food safety and regulatory concerns around local food production were critical to the overall food system plan. There is growing interest from the public in local foods including urban, suburban, and rural agriculture, as well as sustainability and long-term planning for a stable food system. Finally, the difference between access and hunger should be clear if the planners also want to address social justice concerns.

I kept a research journal on the data collection process and wrote a summary following each interview to record thoughts, highlights, and any unusual conditions. My interview journal discussed why certain organizations (food trucks, restaurants, bakeries) were not included in the study, and some individuals did not respond to an email request for an interview. There was some concern about reaching the minimum sample size (15). But the snowball process, posting an ad on craigslist.org, LinkedIn, and food and agriculture-related list serves resolved that problem.

Evidence of Trustworthiness

The research question concerned the public policy limits and opportunities that support urban farms as a supplemental food source. I collected data from the public, nonprofit, private, and academic sectors to address the research question from the standpoint of three themes: Local Food and Land Policy, Food Production, and Procurement.

A review of the themes and patterns from interviews and documents helped build credibility into my study. HyperResearch software revealed themes and organized patterns and codes. Yin (2009) suggested this process (analyze themes, patterns from interviews) to establish credibility in qualitative research. I provided transferability through the research question and document analysis described in Chapter 3. The participants supplied the rich, thick descriptions needed to answer the research question (Patton, 2002). Dependability came about through the triangulation process and comparing data from different sources (documents, comparing transcripts from different sectors, public documents) (Trochim & Donnelly, 2007). Finally, member checking and an external auditor addressed the confirmability and dependability of my study (Patton, 2002).

Results and Themes

In this section, I described the results of three central themes related to the research question across four sectors. See Table 3 for a summary of the themes in each sector.

Table 3

Comparing Themes Across Four Sectors

Sector	Local Food and Land Policy	Food Production (Grow food)	Procurement (Get food)
Public sector	Both policies could help or harm urban farms	Source of vacant public land (primary) and Brownfields, underutilized, abandoned land (secondary sources) for food production	Supports cross sector alliances with local growers, institutions, and funding for nonprofits and large food producers
Nonprofit sector	Both policies had a positive impact in this sector	Mission includes social programs and food production (urban farms, backyard gardens, partnerships with other farmers)	Procure food from large growers for CSA memberships, also sell in lower income and higher income communities
Private sector	Both policies had a negative impact in this sector	Commercial food production using technology, conventional farming, or creative business models	Procure food from local or non-local producers, distribution stream in premium markets (higher end restaurants, farmers' markets) or lower income communities
Academic sector	Both policies can evolve internally (on campus) or external (in the community)	Experiment with trial and error crop production and technology-based agriculture	Procurement fuels consumer demand for local foods, and improves season extension practices for more crop variety

Theme 1: Local Food and Land Policy

Public sector. Participants in this sector implemented and designed food and land policies at the local and state level. For example, this Northeastern city drafted the City Ordinance (Ordinance) that changed zoning regulations and identified standards for urban agriculture practices within city limits. Officials used the Ordinance to describe different urban agriculture practices, design, maintenance, and public safety regulations for growing food. The Ordinance stated "urban agriculture means the use of a Lot the cultivation of food and/or horticultural crops, Composting, Aquaponics, Aquaculture and/or Hydroponics."

Further, state officials are developing a food system plan for regions statewide to serve as a baseline of agricultural processes, their significance to the rest of the state, and mechanisms to help local officials protect agricultural practices. The current food system plan has not been revised in over 30 years, and policy input should include urban farming and urban agriculture groups, local and state officials, nonprofits, environment, food policy, and water resources. A participant noted that:

> "This is an entirely different [type of] sector planning and not a lot of people are doing this right now. There's like three college programs in [this state] that have food system planning degrees or something like it. This was a planning process that needs to be facilitated pretty heavily to get it accomplished across the state." (Participant 3).

Sector stakeholders also maintained the [State] Food Policy Council, a formal governing body (public, private, community members, local leaders, organizations) to help

communities organize environmentally and socially just food systems. However, there is minimal public land in the city for agriculture.

Nonprofit sector. These participants are key stakeholder engaged in partnerships with local and state agencies and served leadership roles in the several communities. Sector participants were the main recipients of valuable food and land policies. For instance, city officials offered public land at a significant discount for nonprofits to buy or lease. Nonprofits stakeholders were also favored by an important land trust organization. The land trust bought public land, cleaned it up, sold and transferred the land rights to nonprofits for urban farming, community gardens, and other urban agriculture operations. Participant 5 explained that:

> "But we know now that the [state] food system relies heavily in the kinds of growers that are close to urban centers that can deliver produce to people directly. And those farms are just really expensive to own. What we do is go in and buy the farm if a farmer is looking to sell, conserve that farm, and resell it to a farmer at a discounted price."

City officials supported a unique process for a community and resident-owned nonprofit to have complete autonomy to manage and control land for urban farming. This sector had a strong historical and cultural presence as well as deep connections with businesses, foundations, community groups, and public agencies throughout the city.

Private sector. In this sector, some of the stakeholders served on the State Food Policy Council, and remained active in food policy decisions. Other stakeholders were involved in the preliminary discussions when the Ordinance was under development in

early 2010. These stakeholders gained a clear understanding of food policies and integrated this knowledge into their business planning for a commercial farm. In one case, the rooftop farming business used a simple farming practice. The farmer applied for a temporary annual permit with fewer structural and public safety regulations and less waiting time for approval. Participant 11 explained that:

> "We farm in portable container planters. So because they [containers] are removable from the roof and not something, that was changing the structure…we were able to apply to the City for the short form permit, which is very different process. It's much quicker."

Another stakeholder created a commercial mobile food market based on the model of a social enterprise (a tax structure of a nonprofit combined with generating revenue for financial sustainability). However, sector participants were at odds with city and state food policies. Business owners did not receive public subsidies or discounts, struggled with evolving food safety and public safety regulations, and additional fees related to commercial urban agriculture and organic growing practices.

Academic sector. Participants in this sector had an ancillary role in food policy. For instance, stakeholders were involved in contributing comments to new federal food safety legislation, designed curriculum or studied food policy, environmental science or food culture, and organized student-run food projects. Some individuals worked on food policy issues in their communities or applied for internships or fellowships in a nonprofit with programs in urban agriculture and urban farming. In addition, these stakeholders had

resources to explore technology-based agriculture on campus or worked on projects through their business and community networks.

In one case, an individual worked on an urban agriculture ordinance in a different Northeastern city and performed a case study a year later to assess the positive and negative impact of the new policy.

> "I went into last year to do this case study of the impact urban agriculture ordinance. I think the real issue is going to be when the [subway] extension gets to ABC Square in the next few years, because that's going to bring in a lot of money to the area. And I think that may be in conflict with the sort of, urban community around here. So it will be interesting to see." (Participant 16).

In addition, another individual studied the interaction of food and transportation. This person was concerned about the impact of an expanded subway line on the urban agriculture landscape in another Northeastern community. "When I think about infrastructure and food (just because I've done so much research on it) I do tend to think of transportation first because I think it's huge piece that the people don't talk about enough." (Participant 9).

Also, an individual in a mid-western city discussed plans by the city government to help schools pass the food safety regulations to grow, harvest, and consume food on public school property.

> "And it is basically a phonebook style manual…of how exactly you can navigate the policies around food safety in order to grow and harvest on school property - specifically [City] public schools - and then actually consume it, actually bring in

into the cafeteria and part of snack or lunch or anything else for students." (Participant 5).

See Table 4 for a comparison of sector features.

Table 4

Comparing Sector Features

Sector	Features	Organizational Conditions	Sector Conditions	Other Factors
Public sector	Design and establish food and zoning policies	In transition, new leadership in city and state government	Implement policy, urban agriculture and urban farm programs	Source of selective public funding, assorted government mandates
Nonprofit sector	Social service programs and urban farms	Training for seasonal, low paying jobs, many tasks really on volunteers	Urban farming is secondary to social service programs	Key recipient of public funding, access to partners and networks
Private sector	For-profit and commercial farms, social enterprise	Urban farming business opportunities, struggle with low pay, lack of funding, limited access to public land	High start-up costs, benefit from solid farming skills, creative farming practices	Need for new partnerships, community presence, few public funding opportunities
Academic sector	Technology-based agriculture, institutional support	Formal education in sustainable agriculture, food policy, entrepreneurship, career choices are unclear	Resources for urban agriculture demonstration projects	Potential leader in the food sector, innovations in urban agriculture

Theme 2: Food Production

Public sector. Individuals in this sector recognized that food production included urban farms and gardens. Both were critical because many urban farmers start out as urban gardeners. These stakeholders understood that farming was a business and should

include a business plan, hands-on farming experience, and collaboration with different stakeholders.

> "You know I think that there's interest out there, even across [the state]. There are more people than before who you know, have gotten into farming. There is a level of demand out there, there are also newcomers, like the Cambodian community etc. That's what they know, that's what they do. And so for them, it's not the 'in' thing to do, it's sustaining themselves." (Participant 15).

Further, innovation in food production might include areas overlooked such as Brownfield sites (land previously used for commercial or industrial processes). Participant 10 noted that Brownfields can become "'Healthfields', which include urban farms, as one of the Brownfields redevelopment options after the area is assessed and cleaned up for agricultural use. The traditional redevelopment options are sustainable development (i.e., solar on Brownfields). While remediation of these sites was costly, they offered a real alternative to finding land for food production.

Participants noted that a food system plan included a vision for overall food production in regions statewide:

> "[The vision included] Northeastern states in terms of where all states are at with food system planning, including baseline data about what each of the states contribute, and what is the vision for [the region] in terms of our production potential." (Participant 3).

Nonprofit sector. These stakeholders were working on plans for a community agriculture program to expand food production in urban, rural, and suburban

communities. They supported collaboration between different types of farmers, such as growing food outside the city to deliver to farmers markets, community-supported agriculture groups, or food stands. While the nonprofit stakeholders offered various social programs, food production could be part of their mission. This strategy meant that managers grow food for the nonprofit, try to improve food access in communities in which they serve, sell food at affordable prices in low-income areas, or at a premium price to restaurants, and benefit from public subsidies and access to land.

For instance, Participant 6 noted that "[We are] an innovative community-based urban agriculture project. We grow our own food to provide access to affordable, nutritious and culturally appropriate food to residents of our [XYZ] Family Home and our extended community." Participant 20 said, "We have our own urban farms, but then we also offer support to urban gardeners. That is local people who want a little bit of space to grow food. We get them started with a raised bed in their own yard."

Private sector. For these participants, there is a need for new farmers to grow more food through conventional, above ground farming, and a mobile food market. One farmer was near retirement and hoped to keep the farm in the family: "This farm has been in your family for multiple generations correct. We need to grow, and we need some blood that is more iron rich. It's time for me to move on." (Participant 14). Participant 19 explained an innovative business for a mobile food market:

> "We are a mobile food market. Yeah we are not very similar at all to a traditional food truck. We make the distinction, we're not a mobile food truck. We're a mobile food market because we don't source all of our food locally."

The individuals who developed a rooftop farm worked other part-time jobs because the farm was not generating enough profit. These farmers sold specialty crops (salad greens) at premium prices but struggled with low volume production. Farming and financial viability may be at odds because of the overall low wages associated with the agricultural workforce. While there was a growing interest in farming, this sector might expand through hobby farming where people grow food with no expectations of making a profit. Participant 11 revealed:

> "You know, we're not a huge company with all this money and it's really us (two people). And right now it's certainly a job and but it's still kind of more of a hobby in ways because we aren't getting paid for it, you know?"

Academic sector. Individuals in this sector may be the likely leaders in food production because they have the resources to experiment with different growing practices. The trial and error element of food production is critical because of unforeseen factors (weather, pests, disease, equipment failure) which can quickly destroy a crop. Further, these stakeholders applied technology-based agriculture through greenhouses, aquaponics, hydroponics, above ground farming, raised bed farms and other innovations. Participant 4 noted that:

> "So we definitely increase spaces [on campus], work on aquaponics, we'll create aquaponics. We're not exactly doing research…we're always learning from aquaponics, it can always be improved upon, our season extension, the quality of our harvest, the produce that's coming out of it, our ability to grow fish at a quicker rate."

Universities also benefit from outdoor spaces available for agriculture, beekeeping or growing specialty crops.

> One interesting example described a workaround to grow a specialty crop: "We have two aquaponics systems in our greenhouse and we sold tilapia at our last farmers market at the end of October. And we were actually the first group to sell tilapia in [a Northwestern state] at a farmers market .we were lucky to fall under this thing called the "cottage food laws. And that meant if we follow a certain process and didn't fillet the fish in any way, we wouldn't have to go under sort of, the processes that larger business have to go under for food safety." (Participant 7).

Theme 3: Procurement

Public sector. Public sector participants favored procurement between local growers and institutions. For example, by federal mandate, public schools need a Wellness Policy. Schools must provide healthy and nutritious foods, exercise, and food education for students. Stakeholders in a Northeast school system try to buy food from local growers. Participant 18 noted: "We source through our primary produce distributor and they're sourcing from farms within a 100-mile radius of the [city]. So most of the produce is coming from [the western part of the state]."

But the challenge for small growers was to reach high volume production and consistency to feed over 20,000 schoolchildren daily in this Northeastern city. The school system buys organic, fresh and local food when possible and frozen and conventional foods as needed. In reality, local food was expensive, with a low volume capacity. The

participant acknowledged that local food cannot provide all the food needs of urban areas.

Also, farming subsidies favored large growers, which was another reason to create local food sources in urban areas. Participant 13 suggested that:

> "Local food producers, small producers, are not subsidized by the government, only the large extensive capital producers are subsidized by the government. So that's the playing field that we have to develop local agricultural systems. It's really astonishing the number of young people who seem to be rallying to the cause [urban agriculture]. And understand that in various ways, at the various level of why local food systems have to develop."

Nonprofit sector. Stakeholders in this sector acknowledged the public interest and demand for local food. But the ability to procure fresh, organic foods was concentrated in wealthy neighborhood. Even nonprofit participants recognized that people pay more for quality food and priced the foods at farmers markets differently based on location (poor and rich communities). For instance, more variety of food was available for wealthy consumers who can pay more, compared to low-income consumers who struggle with less money and fewer choices in food.

As such, the link between procurement, distribution, and access described the economics of a community. Participant 20 recognized that:

> "And so we kind of have this disconnect…in terms of local and fresh, and very, very high quality produce. But often it's available in these boutique settings. And I see this myself because one of the farmers markets that I deal with is in the

> [urban] neighborhood. And the other one is in a more affluent neighborhood. And in terms of what's there with the vendors and in terms of even what we offer at this farmers market is different. So there is a lot out there. But it's a matter of where it's being distributed, who has access to it . and it's not just who receives food, but also if there's money involved in all of it."

Private sector. Procurement in this sector may depend on the communities in which the farmers serve. Creativity and a good business model are critical. For example, the mobile food market owner bought from one source and had multiple distribution streams in low-income Jamaican, Irish, or Asian communities. The mobile food market provided unique fruits and vegetables based on the food culture of each community. Participant 19 explained:

> "We don't source all of food locally. The majority of our food comes from [The Produce] Market. We worked with [a commercial farm] a little bit in the past. I mean, basically for us, the challenge we encounter too is that the wholesale price of local food at the volume that we're buying is prohibitively expensive for our families."

Sourcing food from local and nonlocal suppliers was a practical business model for a small business such as a mobile food market. Higher end restaurants buy food (specialty crops) from the rooftop farm and a commercial farm. The rooftop farm sold primarily to restaurants, "Right now it's restaurants, and then we do have a couple of retail stores. And last year we added a farm stand that's at ground level [in the building

where the farm is located].” (Participant 11). The commercial farm had a limited distribution stream (within 10 miles):

> “I sell within probably 10 miles of the farm. Other than my restaurant deliveries, I don’t deliver at all…We do one farmers’ markets, one Saturday a week. We do 25 small white tablecloth restaurants and a 400-member CSA (community-supported agriculture).” (Participant 14).

These participants demonstrated the need for different sources of food, as the mobile food market served low-income communities, and the rooftop farm and for-profit farm worked in wealthier areas.

Academic sector. Stakeholders in this sector stated that U.S. cities procured some of their food from urban farms while Havana, Cuba, procured more than half of its food from urban farms. In addition, food procurement is a basic concern for human survival. One individual worked on The Real Food Challenge project designed to help college students create a sustainable food procurement plan. Participant 7 explained that procurement was also a concern for food suppliers:

> “There is a new cafe on campus run by [a large food service supplier]. They have food producers come in to explain their product to students, and the seating is made of recycled Coke bottles or reclaimed [local] wood. Seeing the procurement change is certainly encouraging.”

Academic participants suggested that procurement was a big part of the demand for local foods, and there were business opportunities for companies to promote urban agriculture or local food in general. Local procurement could improve by using season

extension practices and technology-based agriculture. For instance, Participant 16 noted: "Computer programmers get together to see how we can get things to the right places. How can we make sure that people are contributing things that will actually be used for giving to a food bank?"

Trends and Discrepancies

Public sector trends. One trend was that food policy planning should be transparent. In planning for a statewide event that celebrated Food Day in October, a participant said:

> "I'm on the periphery of that [state food system plan process]. I got myself into that because of Food Day. It [Food Day] was sort of a great vehicle for people to learn about what's going on. So I pushed [another public official] and said "Listen, why don't you have regional meetings that are focused around Food Day in the month of October?" There are people that I know…who are looking to get plugged into policy stuff [and] will get engaged." (Participant 1).

As a result, state officials held public meetings in different regions to allow people to learn about the regional food system plan, comment, and engage in decision-making.

Another trend from this sector was that people should think about farming as a business. Land in the city is expensive, and farmers need a plan, start-up capital, and infrastructure. Participant 1 noted:

> "I can speak from the perspective of urban agriculture. It's really about capital because number one, you need land and land costs money. Right after that, number two, to grow food on that land, is the whole soil issue: Is the soil toxic?

> You will be responsible for remediating that soil. And that's hundreds of thousands of dollars. And then it's just capital for infrastructure, number three. The groups that we fund are nonprofits. Farming food is one piece of what they do."

A report from a university in a Northeastern city revealed that urban farming opportunities estimated start-up costs for a half-acre plot (21,780 square feet) was about $10,000 a year for equipment, sales, and marketing. Operating costs could vary from $5,000 to $10,000 for seedlings, bags, transport, and labor. These numbers reflect gross revenue of $60,000.

The discrepancies in this sector were that although the city and state government want to expand urban agriculture and urban farming, most of their practices support nonprofits rather than individuals. It appeared that new farmers might need a connection with a nonprofit to access their resources (government and business networks, land, and infrastructure) or consider farming as a hobby rather than a commercial business.

The main limitation of urban food production was few areas of public land to grow food. As such, there may be a practical reason that the city offered subsidies to nonprofits that already grow food. Nonprofits can buy multiple small acreage parcels of land (one-quarter acre or 10,890 square feet) and slowly expand the number of urban farms (buy multiple plots of small acreage).

> "And I see people growing food on a quarter acre parcel. You're not going to feed a city on a few acres of land. You're going to be a solution. You're going to be filling in the gaps for the community that you're serving." (Participant 1).

Although food production may be small, nonprofits can feed the populations they serve, and sell or donate surplus crops. Further, these participants support local growers but acknowledged that local foods may not serve the wider needs of the city, and urban-rural-suburban farming partnerships could be a solution.

At the same time, new sources of land may be available through brownfield sites converted for agricultural use. While brownfield sites have a reputation for being unusable land, a demonstration urban agriculture project can show people that these sites could be another land source for agriculture. "[These sites are resources to] develop underutilized or abandoned land including Brownfields into urban farms which redevelops sites while providing a healthy food source for the local community." (Participant 10).

Nonprofit sector trends. A nonprofit trend was to grow food to serve communities and feed people, not to make a profit. Nonprofits offer different social programs (job training, shelter for the homeless and domestic violence victims) in addition to growing food. While urban farming was a value added element, it was a secondary funding source to help nonprofits survive. Other nonprofit have social service programs that allowed them to apply for funding from foundations or public grants.

Another trend was that nonprofits had a funding advantage for urban agriculture projects more than individuals or private businesses. Participant 4 revealed that in a northwestern city:

> "…the city tends to work with and grant land to institutions, organizations, and less to individuals…there's an issue of nonprofits and grant-funded programs that

> are running the [urban agriculture] industry in the city…it's very difficult, some would consider it nearly impossible, to get the same sort of treatment as a nonprofit or the institution would get as far as buying land for a dollar or leasing it for nothing, or some of these sweet deals."

A noticeable discrepancy in this sector was that nonprofits teach people how to grow food and learn urban farming. However, as mentioned, it was not clear what role these new farmers will play in urban agriculture. For instance, the farmers might become commercial farmers and a source of competition for nonprofits. New farmers could also become future volunteers, mentors, and alumni of the nonprofits, or employees of the nonprofits.

Private sector trends. One private sector trend was that new farmers should have extensive farming experience before working for a commercial farm or starting their own. Many new farmers were immigrants who want to grow food from their homelands and increase the local food supply. These farmers were sophisticated, knowledgeable, and understood agricultural processes. As a commercial farmer, Participant 14 said that the farm workers

> "…came to America to get away from the violence in El Salvador. But they all know [how to farm], I don't have to train them. Basically, I give them a tool and show them the field. And I try to compensate them in as many ways as appropriate and affordable. But you know, these guys, it's not like I have to tell them what's a weed and what isn't a weed, or when to pick what."

Another sector trend was that most growers used organic agriculture practices although they were not certified organic. Certification, regulations, and fees were expensive for small growers. Consumer demand for organic is increasing, and it is a common practice to grow organic without the certification. In addition, a new regulation such as the Food Safety Modernization Act [FSMA] was another financial burden for small growers. Participant 14 further explained that:

> "[The FSMA] is a problem…for any farmer in the Northeast. Even though they've raised the exemption to $1 million, anybody…you don't have to be a very big farm to gross $1 million. But the testing requirement…the number that floats around in [this Northeastern state] is that for a farmer to fully comply with the new rules is gonna cost them $30,000 a year. That's a lot of money since the medium farm income in [this state] is less than $50,000. So that's a business killer, that's going to create a lot of open space for housing (laugh), not food for production."

A discrepancy in this sector was that there are existing resources that can improve the local food system. For instance, one Participant 9 suggested that:

> "I know that a lot of people are very down on the corner stores. And there are a lot of initiatives to get healthier foods into corner stores and bodegas and that type of spaces that are everywhere in the city. In particular, in areas where more lower income people live and shop. I think a lot of the corner stores actually do have some healthy options that people kind of overlook for various sociocultural

> reasons [such as accepting public assistance of SNAP and WIC benefits for discounted food]."

Academic sector trends. One academic trend was that students were interested in sustainability, but many do not have basic knowledge about environmental science. A northwestern university developed an institute on sustainable agriculture, conservation land restoration, and environmental policy. There are opportunities for students to learn farming and the core concepts of a sustainable food system. Students also participated in internships and fellowships to gain first-hand experience in farming for nonprofit organizations.

Another trend was that although there are opportunities to create urban agriculture projects in a northwestern city, most of the projects happened on campus. By comparison, people in other cities could legally grow food independently for sale in corner stores and farmers' markets. But Participant 4 acknowledged that:

> "[This city] is pretty far away from that. But those types of ideas I think are really what it takes to grow urban agriculture and to include all facets - whether it's a revenue generating area, whether it's people growing it for themselves."

Discrepancies in this sector were curious. On one hand, there is a growing interest in urban agriculture and urban farms, but career choices were quite limited. Graduates in food and culture programs favored starting a restaurant over creating an urban farm. On the other hand, resources included funding for student-run food projects, facilities to grow food in different ways, specialties in food policy development, entrepreneurship, environmental science, and institutional leadership. Participant 9 revealed that:

> "Actually my research project this semester was talking to [food culture] students and figuring out how and why they made the career decisions that they made. This is a question I am very actively struggling with because I am not sure - to go into policy I think I would need another degree…"

While serving the interests of students in the food culture, this sector seemed to favor culinary entrepreneurship over commercial urban farming. In addition, academic stakeholders also worked with groups in the public, nonprofit, and private sectors through community-based farming, internships, or policymaking roles.

Sector discrepancies. Each sector has its own discrepancies as well, starting the definitions of terms. For instance, the academic sector defined urban agriculture as a "social, tool, cultural tool and a way to build community" (Participant 4). For this stakeholder, urban agriculture had different roles, and its value was less about economics and more about the its value in a community. In contrast, nonprofit stakeholders provided a formal definition of urban agriculture or sustainable agriculture as "agriculture practices that enrich the land rather than depleting it, they actually enrich it, as well enriching the people who are involved in it. So it's the growers, the neighbors, and the people who are buying that food." (Participant 20). Public stakeholders identified urban agriculture as "growing food in the city for commercial purposes."(Participant 1).The private sector stakeholders defined urban agriculture in terms of "commercial production levels, for home consumption…either through farmers' markets, CSAs, wholesale and retail restaurants." (Participant 11).

When asked about the disadvantages of urban agriculture, one participant replied that it was "A weird question" and "…didn't know how to think about it [urban agriculture] as a disadvantage of having an urban farm." (Participant 6). This response was in stark contrast to participants in other sectors, who acknowledged that urban farming was hard work, required start-up capital, and access to public land. Responses included "She [daughter] doesn't want to farm long-term because it's so hard." (Participant 13). "Even land, the land in the city can have issues related to contamination, pollution, whatever the case may be. Very frequently, the solution is to import soil and raised beds. But that's very expensive."(Participant 2). "Well that's the big problem is access to decent land, never mind good land. And that's a huge problem in the urban core." (Participant 14).

Summary

The answers to the research question provided a combination of solutions and problems. For example, the public sector stakeholders in this Northeastern city offered funding and visible support for nonprofits to expand urban farms. But commercial farms and private stakeholder opportunities had limited support from the public sector. Also, nonprofit stakeholders had a monopoly on the urban agriculture industry, based on multiple levels of support from city and state government and other nonprofits created to access public land at a discount. Nonprofit stakeholders also had a long and well-known history in this Northeastern city. As such, commercial and private growers need to build a reputation, creative networks, and have a proof of concept in hand to attract attention.

Compared to the public, nonprofit, and private sectors, the academic sector may have the most resources to expand urban farming. Sector stakeholders have more technological resources (aquaponics, hydroponics, greenhouses, rooftop farms, facilities). Academic stakeholders can perform research (white paper, studies on urban planning, food system), and remain a key member of the food system planning effort in this Northeastern state. In Chapter 5, I presented my interpretation of the findings and recommendations in the conclusion of my study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of my qualitative study was to understand policies that help or harm urban farms as a secondary food source in a large Northeastern city in the United States. The nature of my study was to focus on the potential of urban farms as a food source. Food policy was the foundation for my research. For instance, food policy provided the guidelines for food activities and urban agriculture described food activities, unique to the city (Andreatta et al., 2008; Bates & Hemenway, 2011). I conducted the study to understand the limits and opportunities for urban farms to evolve as a supplemental food source in the city.

In Chapter 1, I introduced the background on urban farms, their related challenges, definitions of key terms, and the potential contribution of the study to public policy. I followed with Chapter 2, the literature review on food policy concepts and the analysis of contemporary urban agriculture literature. In Chapter 3, I described my research methods, including the research design, data collection strategy, data analysis plan, and interview question. Next, my results, demographics, data collection and analysis were detailed in Chapter 4. In Chapter 5, I presented my conclusions, recommendations, interpretation of the findings, and implications for social change.

My key findings included several food policy concerns such as limited urban spaces zoned for agriculture and high start-up costs for new farmers. As such, my findings reflect the interconnected challenges, contradictions, and selective practices in public funding and investment. While consumer and market demands for local foods

were on the rise, there were questions about higher prices and barriers to access in lower income communities. In addition, urban farms presented opportunities and limitations in the landscape of urban agriculture. Some key findings in my study included (a) outliers or discrepancies such as institutional leadership that supports various urban agriculture projects; (b) business opportunities that favored a distribution culture versus food production; (c) the need for new farmers; and (d) a limited infrastructure that supports (capital, access to land, public funding).

Interpretation of the Findings

My findings explored the central processes regarding urban farming as a supplemental food source. Urban agriculture was the specific food policy that described the opportunities and limitations to expand urban farming. In my literature review, I included several definitions of urban agriculture: Food production in the city, a collection of agricultural and city development concerns, and food production, transport, and distribution (Chase, 2012; Duchemin et al., 2009; Taylor Lovell, 2010).

However, participants understood that urban agriculture has a wide social influence and is also a local, small-scale resource. Participants described urban agriculture as "a smaller level attempt at sustaining a food source for an urban setting" or "any food grown in the city, specific locations that don't include the suburbs or towns." One participant explained, "Agriculture is not only rural farms but should include rooftops, technology-based food production. Rhetoric supports different types of growing processes, but it should not be about rural versus urban agriculture, just agriculture." Another believed that "geographically speaking what is called the city versus maybe a

suburb. I think any food that is grown in those areas, would be called urban agriculture, in general." One participant explained that "What urban agriculture's role should be is to connect people to the process of growing food, and to understand why they should pay their small, local farms for their produce rather than letting it ship from monoculture farms in the middle of the United States."

Through my literature review, I learned that mainly in the city (the built environment), urban agriculture is considered food production. However, based on the findings, I found a deeper meaning of urban agriculture: Food as a local resource, as a way to build community, and as means to encourage support for local food and local farmers. I used the research question as a guide to compare the literature review to the findings. The central themes of Local Food and Land Policy, Food Production, and Procurement revealed the similarities, differences, and insights in my study. A curious element of my study was in understanding how the participants applied policy in their daily work in urban agriculture and urban farming.

Overall Findings

In general, my findings agreed with the literature review in the areas of alternative food systems, creative partnerships, and procurement (Chase, 2012; Dixon et al., 2009; Kortright & Wakefield, 2011). For instance, alternative practices in food production might stabilize urban food systems. There is limited space in the city, but urban agriculture supports food production through urban farms, rooftops, vertical farming and technology-based agriculture.

Forward-looking policy makers might consider creative partnerships, public investment, and brownfield sites as resources to grow food. New zoning alternatives could also expand urban agriculture and provide more ways to grow food. Procurement was critical to urban agriculture as a pathway for economic growth (commercial farming), personal consumption (backyard farms), and to improve food access in lower income communities. Finally, political support was another key element of food systems. Urban agriculture would not develop without the political will of stakeholders and decision makers. In addition, it was essential for small growers to foster community networks, develop a good reputation, community presence, and trust building to gain visibility in urban agriculture.

Local Food and Land Policy

My findings confirmed that the layered complexities of food policy relate to limited space to grow food, the need for political will, and the importance of creative zoning for agriculture. Brundtland (1987), Ericksen (2007), and Wiskerke (2009) found similar results. The challenge of food production included interactions between food producers, distributors, and consumers. From my findings, I realized the problematic nature of small food producers who struggled to find a stable customer base and distribution stream. A solution was to find alternative ways to grow food as specialty foods, value-added products, and ethnic crops (Lang, 2010; Tregear, 2011). In addition, my findings underscored the challenges of building cross-sector partnerships, high start-up costs, and low wages, also described by Zerbe (2010) and Tregear. These challenges

have the greatest effect on the nonprofit and private sectors, but many partnerships favored one sector over another.

For instance, public sector stakeholders offered urban agriculture grants for community food projects: “Eligible entities include public food program service providers, tribal organizations, or private nonprofit entities.” Such organizations include experience in (a) community food work small and mid-sized farms, including providing food to low-income communities) and developing new markets in low-income communities for agricultural producers, (b) job training and business development experience for food related activities in low-income communities, (c) programs to reduce food insecurity in the community, including food distribution and improving access to services (www.nifa.usda.gov).

The 2014 Farm Bill will fund $125,000 for one year and up to $400,000 over four years. Nonprofits also had to “collaborate with 1 or more local partner organizations to achieve at least 1 hunger-free goal” as listed above (www.nifa.usda.gov). I suggested that most nonprofits in the urban agriculture or urban farming industry, have deep connections with state and city agencies, foundations, and other nonprofits. They possess clear advantages over private sector businesses, due to their access to public funds for job training, pilot projects, and existing partnerships.

An interpretation of my findings might be that public stakeholders are driving economic development through the nonprofit sector, rather than through small business growth in the private sector. I found this pattern confusing for several reasons:

Jobs and urban agriculture. Research participants understood that urban agriculture, in general, did not create jobs. This pattern was part of the rhetoric associated with urban agriculture. Many nonprofit jobs in urban farming are seasonal, low paying, and rely on volunteers. It was not clear how this public sector strategy can generate long-term economic growth.

Training for new farmers. While nonprofits offer job training for new farmers, it was unclear how these new farmers would create jobs. For example, new farmers might volunteer for a nonprofit, start a backyard farm, or form a collective of small-scale farms. Again, my findings were vague about how this process generates economic growth.

High start-up costs. Start-up and operating costs are prohibitive for most new farmers. Again, it was uncertain how new farms can grow if they are not associated with a nonprofit to gain access to existing resources.

Economic growth. If the public sector favored nonprofit job growth, the pattern was in sharp contrast to the reality that the private sector is the basis of economic growth. According to the Bureau of Labor Statistics (February 2015), construction, health care, professional and technical services were the prime areas of job growth. There was no mention of job growth in the nonprofit sector.

Further, my findings might also reveal that nonprofits have a monopoly on the urban farming segment of urban agriculture. Small growers in the private sector must be creative in finding start-up money and targeted distribution streams. While public-private partnerships should include all types of business entities, my findings revealed that such

partnerships were selective, supporting nonprofits over small growers in the private sector.

Food Production

I found that food production opportunities were concentrated on low volume, micro farms. The literature described urban farms as a farm with at least 100 acres. However, I discovered that most urban farms (residential, commercial) were one-quarter acre to one acre in size. These small farms included rooftops, aquaponics, hydroponics, freight, containers, vertical, and mobile farms. On one hand, low volume production was typical because of the limited plot size for urban farms. On the other hand, small growers faced the challenge of a narrow distribution stream for a niche market or series of niche markets (farmers' markets, high-end restaurants, ethnic foods).

Specifically, nonprofits stakeholders developed urban farms as a teaching tool, to grow food for themselves, or to donate food. As mentioned for nonprofits, urban farming was a secondary funding source compared to their social service programs. But small commercial farmers grow food for profit, and selective marketing was critical. While a nonprofit had choices in growing food, commercial growers had fewer market opportunities. For instance, the for-profit farmers in my study served a higher end market (restaurants, specialty foods, high-end retailers). The farmers wanted variety and choice in selling food in different communities, including lower income areas. But the return on investment for selling food on lower income areas was minimal. The business model for private commercial growers was to offer specialty foods to wealthy consumers in order to make any profit.

Another finding concerned growing food from one sector. Although nonprofits had more resources to feed the populations they served, small volume food production remained a challenge. Local foods alone may not serve the wider needs of the city. With additional support from other sectors, urban-rural-suburban farming partnerships could be a solution.

Procurement

Procurement included getting food from local and nonlocal sources. Participants acknowledged that despite the popularity of local foods, communities could not rely on local foods alone. They understood that there was not enough local food to serve the needs of most large cities. The biggest challenge was to find small growers with the capacity for high volume production. But this stipulation is not practical for most small growers. For example, one commercial urban farmer (over 100 acres) sold exclusively to high-end restaurants with limited delivery to within 10 miles of the farm. The other commercial farmer (one-quarter acre) also sold to high-end restaurants and made deliveries by bicycle. The mobile food market business bought nonlocal food and specialized in selling ethnic foods in lower income areas. Sourcing from multiple growers relied on production levels, variety, and the demands of the target market.

An interesting finding was that some of the larger institutions were exploring local food sourcing. Food suppliers for universities and public schools were looking into the benefits of locally grown foods. There is a federal mandate for public schools to buy from local growers. The idea was to help children eat healthy, learn where food comes from, and to change their eating habits. But again, low volume production was

problematic when schools need consistency in large amounts of the same food. As a result, some schools were buying food from conventional growers and creating school gardens to grow local foods.

Interesting Findings

Some of the more interesting findings that added to the scope of my study were the things that the participants did not say. For example, the public sector was the primary funding source for urban agriculture projects, in the form of federal, state, and local grants. Money from the Farm Bill was available for urban agriculture, but access to funds was uneven because nonprofits qualified for and received most of these public funds. In addition, this Northeastern state had a department of agriculture and only one person staffed the entire urban agriculture division.

The private sector had a mixed presence in the urban agriculture landscape. These growers provided both local and nonlocal foods but had limited access to public investments. Small commercial growers struggled to find financial support through traditional sources (bank loans, friends and family, online fundraising campaigns). On the other hand, the academic sector was the potential leader in urban agriculture and urban farming projects because of its access to resources. These stakeholders could experiment with various growing practices, and build facilities for vertical farms, aquaponics, or hydroponics. In addition, there was available land on many campuses to convert into small spaces for growing food.

Most interesting, it seemed that there was little competition between sectors. Perhaps urban farming is so new that there are opportunities for anyone. On the other

hand, start-up costs for urban farms are high, and very few individuals have the resources or motivation to develop a formal urban farm. As mentioned, nonprofits developed urban farms as a secondary source (to feed themselves, sell at farmers' market, donate) while small commercial farmers grow food for profit. Economic growth does not appear to be the role of nonprofit urban farms.

Sector Findings

Throughout my study, no one used the word "permaculture" Although there was some discussion in the literature about permaculture, maybe the word was too general. An alternative term was sustainable agriculture or holistic farming practices to grow food within the limits of nature. While no participants describe farming this way, they expressed permaculture-like qualities such as "Growing food for future generations." "Providing healthy, affordable, and environmental sustainable foods." "A nutrition component, a cost component, and an environmental component of growing food." See Table 5 for a summary of sector findings.

Table 5

Findings by Sector

Sector	Food and land policy	Food production	Procurement	Outliers
Public sector	Key stakeholders in policy design and implementation	Guide urban agriculture and urban farming projects through funding opportunities	Support local and nonlocal food producers	Big efforts to promote agriculture practices in state (City Ordinance, food policy council) but only one person in urban agriculture division
Nonprofit sector	Influence land and food policy through the land trust nonprofit	Urban farming secondary to mission and social service programs	Grow food to feed self, people in social service programs, donate to community groups	Deep network across multiple sectors, strong support from local and state government
Private sector	Active on state food policy council, and involved in planning stages of the City Ordinance policy for urban agriculture	Grow food on the ground, above ground, only sector for small commercial growers	Mainly source locally, but also get food from nonlocal sources to bring ethnic crops to low-income areas	Best opportunities to engage new business and new farmers, but little access to public investment

Limitations of the Study

Initially, the constraints of my study included the case study approach itself and the small sample size. For instance, the small sample might limit the views concerning the food policy concepts under investigation. However, I designed the methodology to include data from the public, nonprofit, private, and academic sectors. The study evolved

around purposeful snowball sampling, which provided the rich details needed to answer the research question.

The limitations of dependability and confirmability might include the document reviews. It was possible that the documents had a definite purpose and point of view. But comparing transcripts and public documents improved the dependability of my study. In addition, member checking and an external auditor further addressed dependability and confirmability. Credibility included an iterative coding process and review of different perspectives from the participants. Anonymity of all the data can foster truthful responses from the participants in the open-ended interviews. Themes and patterns emerged as a result of the data collection and analysis plan. In addition, the content validity involved a review of the rich, detailed description from interviews and document analysis.

The transferability of my findings might be limited to cities that have a clear presence of urban agriculture projects. Transferability can change based on the population size, political will, available resources, and policies that support or challenge urban agriculture projects. For example, in my study, the urban agriculture community was relatively small with less than 25 urban farms in this Northeastern city compared to more than 6,000 conventional farms statewide. These urban farms were located in small (over 60,000 people) or large (over 600,000 people) communities in the Northeast. In addition, transferability relied on the sector because nonprofits managed most of the urban farms described in my study.

However, an important element of transferability could be the presence or absence of a formal urban agriculture plan. City officials in this Northeastern community

implemented a public ordinance as a legal document to encourage people to grow and sell food. More likely, an official plan could limit food production to personal consumption and sharing food between neighbors. I designed the study to gain a holistic understanding of the data through triangulation. Overall, I was aware of trustworthiness through reflection and examination of any personal views expressed in field notes, journals, and my research diary. Despite these limits on transferability, urban agriculture remains an attractive resource to improve the local food supply.

Recommendations

The overall nature of urban agriculture included growing food in a variety of ways. This process favors segmented, and decentralized food production, and urban farming was an obvious example. These factors provide opportunities for additional studies in creative collaboration. Future studies might evaluate new partnerships that benefit each sector. Research could explore agriculture in urban, rural, and suburban farming and design a database of best practices. The information can be a valuable resource for urban farmers to learn how rural farmers grow food in small spaces, or how new farmers can develop a business strategy around food production. The information might also increase opportunities for urban, rural, and suburban farmers to serve a niche market in the food industry.

Other research ideas can be a pilot project to start an urban farm. For instance, small commercial farmers could teach nonprofits about alternative ways to start an urban farm. Rather than buy or lease land, nonprofits could learn to grow food in portable planters for easy transport from backyards to indoor spaces. Other small growers can use

a strategy to apply for short permits (no structural changes to a building) to grow food on rooftops or other industrial spaces in the city. Another study of interest might be to examine the funding practices of local and state government. Research comparing the distribution of public funds between nonprofits, private commercial growers, and urban agriculture projects in the academic sector might also be useful.

I found gaps in urban agriculture literature that presented opportunities for comparison studies on urban agriculture plans in different cities. Large and small cities may likely have some type of formal or informal plan. A comparison study of such plans might examine the resources, partnerships, networks, strategies, limits, and opportunities that help or harm the implementation of those urban agriculture plans.

Finally, another study might look at designing a network of specialized urban farms that grow food on very small plots of land (less than one-quarter acre). It might be interesting to learn if a collective of specialized, urban farms can successfully produce value added products (honey, jams and jellies, specialty greens, ethnic crops). As mentioned, various niche or boutique markets can be a way for urban farms to feed different populations. A food hub around value added products from urban farms might be an interesting study for the future.

Implications

My research on urban farming may have policy and organizational implications within the boundaries of growing food in a city with similar resources, political support, and land shortfalls. Food is in the landscape of every society and community. From a policy perspective, my study explored the challenges of urban food systems in general.

While this Northeastern city had a formal urban agriculture ordinance (City Ordinance), the implementation process was uneven. For instance, it appeared that local and state government favored nonprofits as the resource for urban farms rather than small commercial growers. Urban farmers can be anyone who wants to grow food to sell (compared to community or urban gardens used mainly for personal consumption). Food and zoning policies can be adapted to streamline the permitting process, and support inclusion of food production across sectors. The implication for policy change supports food policies designed to help different types of growers and food production practices. In addition, zoning policies can evaluate different ways to turn underused land (Brownfields, empty commercial and industrial spaces, open spaces) into spaces for agriculture.

The implications for social change from my research included:

A snapshot of an urban food system and the influence of food policy in communities and neighborhoods in a Northeastern city. This influence supported entrepreneurship (new farmers, immigrant farmers), access to fresh food (ethnic crops, farmers markets), and healthy eating (creating food culture around fresh foods).

Awareness that urban farms may already be a supplemental food source. Although land in the city is limited, urban farms can grow food on micro plots (less than one-quarter acre) of land on the ground, above ground, and with technology (aquaponics, hydroponics). Urban farms can be a value added food source limited by its segmentation and decentralized qualities. Their value in society might be overlooked because of these factors.

Urban farms as a means for collaboration across sectors. I learned that there was little competition in urban agriculture because the urban farming landscape is relatively small (less than 25 urban farms in this Northeastern city versus more than 6,000 conventional farms statewide). Organizational change might support mentoring, learning new growing practices, and innovations between the public, nonprofit, private, and academic sectors. Collective learning can help organizations improve their programs, services, and society overall.

An understanding of food and land policy, food production (growing food), and procurement (getting food). These themes are the foundation of urban agriculture and they have a wide influence throughout society. A change in any area of food policy (zoning, growing food, getting food) will affect people (food access, food quality, pricing) and society (food production, transport, distribution) in general. The implications for social change can be evident when there is a deficit such as a natural disaster (Hurricane Katrina) or a break in the food supply chain (transportation strike, limited access and distribution).

A theoretical implication might include the need for food policies designed specifically for different types of urban agriculture practices. For instance, each segment of urban agriculture (on the ground, above ground, technology-based) has different challenges and rewards. On-the-ground farms need soil remediation, pest control, crime prevention. Above ground farms need shelter from wind, birds, and solid building structures. Technology-based agriculture needs a stable water supply, waste removal, and space for the tanks. Theories that address such difference can be useful in understanding

the unique food demands of the urban environment. Another theory might explore simplicity in food policy, to learn if there is a foundational model that might apply to both small and large urban communities. Each community has a unique food culture (food resources, funding, space, community interest). But it might be helpful to learn if a simple model could work in different communities.

Conclusion

The purpose of my study was to understand the role of urban farms as a supplemental food source. The state of urban agriculture is in flux, and urban farming is also changing. Participants expressed their passion: "Our mission is simple, we're just trying to feed people" and frustration: "It's all this fighting for funding, and replicating programs and not really concentrating on developing a holistic intervention in collaboration with other stakeholders and other groups doing complementary work." Stakeholders in the public, nonprofit, private, and academic sectors enjoy their work, but want to be more efficient in feeding people.

The collective work of these stakeholders, opportunities for entrepreneurship, and effort to provide food in lower and higher income communities presented a snapshot of the food system in a Northeastern city. The essence of my study was that urban farms are already a secondary food source**.** But the challenges remain in building a solid infrastructure if urban farming is to become a financially viable and stable food source.

Infrastructures include: (a) equity in distributing public funds and new allies for different sectors to access those funds; (b) mentoring between urban, rural, and suburban farmers

new business models (such as a mobile food market) to serve ethnic communities, schools, offices, health centers, and residential areas; (c) small growers partnering with large food suppliers to provide local foods; and (d) food and zoning policies that streamline processes for urban farming to expand. Streamlining may include simple farming practices using portable planters, access to public lands (underutilized, abandoned land developed specifically for food production). Urban farming is a good idea in need of support from multiple sources.

A closing thought on my study is that local foods cannot feed a large population. As mentioned, urban farms are notoriously low production farms, and some only grow specialty crops. When people demand nonlocal foods from their home countries, outsourcing for those foods is the only way to fill that demand. At best, urban farms can be a valuable supplemental food source, if given adequate support and creative infrastructures.

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Appendix A: Case Study Protocol (Yin 2009)

1. Overview of the case study: Background, project issues, current literature review

- Objectives: Examine urban food policy that help or harm the creation of a supplemental food source.
- Background: Project information, purpose, something about participant, sponsorships.
- Background: key issues of research: rationale of picking these cases, assumptions of study, policy relevance of study, include current literature review
- Include purpose and setting, summary that describes project.
- Case study issues: "not simple or clear"
    - Social: People need food education, prefer "nutrition transition diet
    - Political" Need political support to develop urban farm project
    - Economic: Financial viability of urban farms
    - Environmental: Impact on neighborhood/community
    - Land and zoning issues
    - Community will: Local interest in food, support for urban farms
    - Audience for case study report
    - Dissemination of results, presentation about the topic

2. Field procedures: Define major tasks in data collection

Procedure reminders, location of data sources, equipment to bring and checklist (batteries, two recorders, paper, etc)

Prepare for interviews:

- Review Interview Guide
- Make list key participants
- Write open-ended questions
- Focus questions that answer the research question

Setting: Neutral and few distractions, little noise for recording

- Record interviews
- Ethics and protect participants
- Conduct interview
- Review purpose of study, review confidentiality with participants
- Answer any questions from participants
- Listen more, talk less

3. Case study questions: Focus on research question

- Research question drive the resource process and structure of the study
- Remember what data is needed to answer research question and why
- Keep interview on track as data collection begins

4. Guide for case study report: Outline and format

- Basic outline, format and audience for case study
- Focus on collecting relevant data
- Keep data organized with a database for case study
- Keep documents, articles, etc in annotated bib and keep itemized

Appendix B: Interview Guide (Patton, 2002)

Interview guide

- Make list of question or issues to explore during interviews.
- Set guidelines for each participant
- Sets framework of topics or subject that I am free to explore, probe, or ask questions about during interviews
- Conversational style within a subject area to ask questions
- Focus on priority of questions
- Order of questions
- Remember time limit of interviews (60 minutes)

Goal of interview questions: Open-ended interview

Get people to describe themes, images/words they use to discuss feelings, ideas, and solutions. *What do you think of…*? *What is your opinion of...?*
Interview goal is to elicit relevant data to understand the person's point of view.

Format and interview strategy

- First part of interview: focus on key questions
- Second part of interview: open to subjects of interest, new topics brought up by participants.
- Ask clear questions, not complex questions
- Combine informal conversation with open-ended interview
- Start with simple questions about activities, projects, experiences.
- Encourage people to talk descriptively
- Set priority questions to get the important data to make best use of interview time.

Language

Find out about special terms commonly used by people in that organization, what language participants use among them, and avoid using labels

Feedback

Support and recognition response
Provide reinforcement and feedback; let people know they can keep talking. "You mentioned program challenges, can you talk more about the complex nature of food policy."

Closing or final question

"What should I have asked you that I didn't think to ask?"
"That covers my questions. Is there anything else you want to add?"

Mechanics of data collection for interviews

Recording
Data interpretation and analysis to make sense of what people said, look at patterns, themes, and integrate new information.

Equipment
Have outlet and external microphone
Check batteries and bring spares

Before interview:
Find quiet place for interview
Keep microphone close to person
Tell people to speak loudly to record responses
Put recorder in stable place
Test recording system

During interview:
Say "This is the interview with person XB."
Speak clearly and not too fast and people will do the same
Ask people to speak up if voice gets soft
Don't rustle papers etc.
End of interview say "This is the end of the interview with person XB."

After interview:
Listen to entire interview and mark files

Notes during interviews

- Notes help me draft new questions as interview proceeds, can check back on something said earlier.
- Review field notes and completed transcripts, make sure interview is going in good direction, new insights for future interviews.
- Take notes on what is said to stimulate later analysis, locating important quotes.
- Save notes in case something happens.
- [] for my ideas v. interviewee's ideas, for synonyms
- "" for direct quotes
- Keep a checklist of questions asked and responses

Notes after interview

- Write notes on everything I can remember, setting, my responses, ambiguous stuff, and clarification
- Setting: where, how interviewee responded to questions, what about rapport? How did I do with interview?
- Reflect on quality of data received: Did I find out what I wanted to find out? Useful? Reliable? Authentic?

Interviewing "experts"

Need an interactive style, and open-ended questions to show their knowledge, imagination. I need to show knowledge about the topic.

Types of questions

Question	Example	Purpose
Experience	What were the results of the project?	What person does, action, activities
Knowledge	What is your idea of food policy?	Factual information, regulations, policies, programs, projects
Opinion/values	What is your vision for a sustainable food system in your city?	What people think about something/experience
Demographic	Please describe your job title, unit, etc. stuff	Occupation, job title, standard background questions

Appendix C: Case Study Report (Yin, 2009)

Outline

1. Case study questions: Setting and conditions: Note any personal or organizational conditions the influence participants.

2. Demographics: For participants and qualities important to study.

3. Data collection: Number of participants, location, frequency, and duration of data collection, variations in data collection as described in Chapter 3

4. Data analysis: Describe coding process to refine large ideas into categories and themes (using quotations for emphasis), specific codes, categories, themes that appear from data, include opposing views and their role in analysis. Include pattern matching (internal reliability), explanation building (iterative process, other points of view). Focus on exploratory nature of case study.

5. Evidence of trustworthiness: Describe credibility, transferability, dependability, and confirmability of the study.

6. Results: Discuss results by theme or research question, support findings (using quotations for emphasis), discrepancies, and provide tables or figures.

7. Summary: Address the research question.

Appendix D: Case Study Database

Database 1: Interview log (dates, time, length of interviews, conditions of data collection)

Database 2: Participant log (anonymous and by sector)

Database 3: Notes from research journal, interview summaries, any unusual conditions.

Database 4: Consent Form log

Database 4: Member checking log

Database 6: Expert feedback on interview questions

Appendix E: Inventory Log

Interview Materials	IRB Approved Materials	Chain of Evidence	Data Collection Materials
Initial interview questions	Letter of Introduction	Case Study Protocol	Consent Form log
Expert feedback on interview questions	Consent Form	Interview Guide	Interview logs
Audiotapes of interviews	Sample ad for craigslist.org and LinkedIn	Case study report	Anonymous participant logs
Transcripts of anonymous interviews	Email invitation to participants	Case Study Database	Research journal, interview notes and reflections
Interview questions by sector	IRB approval number	Inventory log	Member checking log

Appendix F: Public Sector Sample Interview Questions

1. Let's talk about the work of the state agriculture department concerning urban agriculture and urban farming.
2. Tell me more about your role in the state urban agriculture program.
3. How do you define urban agriculture? How does urban farming fit into that definition?
4. You said that the program itself is less that a year old. So how did the agency decide to start an urban agriculture program?
5. Thank you for that history about the program. That's very exciting. Let's talk about the state food system plan. How is the agency involved in that?
6. What do you think about technology (rooftop gardens, hydroponics) and urban agriculture? Do you think it's a good idea?
7. Do you think there is a role for public funding to promote urban agriculture?
8. You mentioned the magic word, infrastructure. Can you talk about the infrastructures needed for urban agriculture?
9. The more you talk about it, the more I realize that an organization may be more successful at urban agriculture than an individual. What type of policy do you think the state will support to expand urban agriculture?

Appendix G: Nonprofit Sector Sample Interview Questions

1. Tell me about your work and the mission of XYZ nonprofit.
2. Did you start out as a volunteer or were you always interested in urban farming and urban agriculture? How would you define an urban farm?
3. Can you give me an overview of how urban farming has developed in the city?
4. One of the things I'm interested is the role of nonprofits. As you mentioned a lot of the organizations that have urban farms are nonprofits.
5. So let's talk more about the financially viable of urban farms. I'm thinking about a network of urban farms. Do you think a network would make urban farms more financially viable for the city?
6. In terms of the needs of urban farms - What kind of infrastructure urban farm need? Where do you see the gaps?
7. Can you tell me about the advantages or disadvantages from farming on multiples lots in the city?
8. Tell me about the food system in the city. What works, what doesn't work?
9. What is your long-term plan for your urban farming skills? Start a business? Do you want to be an urban farmer?

Appendix H: Private Sector Sample Interview Questions

1. How did you come up with the idea of a rooftop farming business?
2. Now let's talk about your infrastructure needs. What do you really need to help your business grow?
3. Let's talk about your distribution stream. Do you plan to expand beyond restaurants?
4. How do you manage your day in balance with your other jobs?
5. Tell me about some of the biggest challenges you have as a farmer in this state.
6. As part of your business model have you thought about partnerships with other commercial businesses and provide specialty foods for them?
7. But are you seeing more people looking at rooftop farming for production?
8. What kind of trends are you seeing in the bigger picture of urban farming?
9. Nonprofits can get grants, but they can't necessarily get Farm Bill funding. As a commercial farm, do you get any Farm Bill funding?

Appendix I: Academic Sector Sample Interview Questions

1. You talked a little bit about some of the projects your food system projects, and some of the gaps. What kind of gaps to you see in the food system in your city?
2. Can you tell me more about the work that you do to involve the community to help people learn about urban agriculture?
3. How would you define a food system?
4. You mentioned sustainable agriculture - can you define that term?
5. Let's talk about the food system in your state. Does your city have a formal food system plan?
6. Tell me about some of your food policy work.
7. When you talk about urban agriculture and foodways, how do you define those terms?
8. I'm curious to learn how the city can overcome its barriers to grow food . Can we supplement ourselves with an alternative food supply? What would be that source? What barriers do you see in growing food in the city?
9. Do you think about urban agriculture as a commercially viable industry?

Appendix J: Word Cloud and Coding List

Sample of initial coding list (32 categories, 560 codes)

Code	Total
Awareness about fresh food	38
Business model	73
Forward thinking	90
Implementation	42
Institutional vision	126
Knowledge about food system	86
Knowledge about urban agriculture	28
Land use policies	31
Leadership	101
Political support	88
Sustainable practices	26
Trust building	75
Understanding sustainability/urban agriculture	89
Urban agriculture visible to people	77