

THESIS
FOOD ACCESS ISSUES ON THE SUBURBAN/URBAN INTERFACE
A CASE STUDY FOR LONGMONT, CO

Submitted by
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ABSTRACT

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Traditional literature on food deserts focuses on rural and urban areas, often blaming suburban areas for supermarket abandonment while simultaneously praising suburban areas for their rich food environments. This research shows that despite a dense concentration of supermarkets and other food outlets in the suburban area of Longmont, Colorado, a segment of residents still experience significant challenges in securing fruits and vegetables. However, unlike rural and urban food deserts, distance does not appear to be a significant barrier, perhaps because Longmont exhibits urban center characteristics and suburban characteristics given its proximity to metro-Denver. A community based food assessment complete with a survey, focus groups, and listening session was used to gather data, and then to explore characteristics that explained perceived barriers, ordered probit models and summary statistical analysis were utilized. Results from the models predict that alternative modes of transportation (not one's own car) and ethnicity increase perceived challenges in purchasing/receiving fruits and vegetables. Also, while some primary sources of fruits and vegetables (natural grocery stores, ethnic markets, and seasonal outlets) are associated with increased fruit and vegetable consumption, our expectations that education and income would influence consumption were not

discovered. These findings challenge common notions about food deserts and food access issues, as well as their recommended solutions. Alternative solutions to addressing food access are discussed in the context of areas, such as Longmont, along the urban/suburban interface. Overall, it is suggested that food access issues in Longmont are not due to market failures, but instead due to mismatched infrastructure. Several policy proposals and projects are suggested.

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CHAPTER 1: INTRODUCTION

The words used to describe a problem frame the context of the solution. This is becoming apparent in public discussions of food deserts and how to address them. Initial research on food deserts focused on urban expanses devoid of food retail outlets offering a sufficiently wide variety of products to accommodate a healthy diet. Additional research has incorporated rural expanses completely devoid of food retail outlets. As the research has progressed and the framework for addressing food deserts has taken shape, it has become clear to some that the conversation is missing vital information. Food deserts are largely defined using spatial terms such as distance, mode of transportation, square footage of retail outlets, etc. These terms do address some of the underlying causes of food deserts and some outcomes related to food market access. However, defining deserts only in this way unnecessarily limits the solutions to those projects focused on increasing the number and size of grocery outlets, or the modes and frequencies of travel available to access these outlets. Such narrow conversations and projects have been insufficient, leaving large groups of people and neighborhoods continually underserved.

The research presented in the following chapters seeks to expand the context in which food deserts and food access issues are discussed and addressed. First, an examination of frequently used terms and their definitions will provide a standardized content to use the vocabulary generally used to address questions and concerns regarding

food access. Chapter 2 provides an overview of the available literature and research demonstrating the need to continually research the determining factors of food access, the underlying causes of inequitable food access, and the solutions proposed to address these problems. Chapter 3 outlines original research, which seeks to determine the existence of food access issues at the suburban/urban interface—a community typology often ignored in the food access research— in Longmont, Colorado in partnership with LiveWell Longmont, a non-government organizational partner. Chapters 4 and 5 examine models for addressing food access issues and barriers to their implementation. Collectively, this thesis hopes to motivate more meaningful discussions about food access and food sovereignty in places that have not typically been visible on the food policy radar, while also adding to the greater body of knowledge and laying the foundation for further research.

1.1 Terms and Definitions

1.1.a Food Deserts and Food Swamps

Food desert is the most commonly used term to describe environments that do not foster healthy eating, particularly in cases where one of the barriers to healthy diets is access to appropriate foods. Due to the term's popularity it has seen increasing misuse in common conversations, consequently fogging the lens used to examine the food access and inequality issues at the heart of original food desert programming.

The term food desert was first used in Scotland in the 1990's to describe a public housing sector scheme in an urban area (Cummins & Macintyre, 2002). Early research in Britain provided the first technical definition, defining a food desert as a “poor urban area, where residents cannot buy affordable, healthy food” (Cummins & Macintyre,

1999). In the last decade, the United States has adopted the term to describe any manner of food environments. The following are a few representative examples:

- Morton and Blanchard (2007) classify food deserts as counties in which one half of the population, or more, live further than ten miles from a large food store.
- In the Food, Conservation, and Energy Act of 2008, food deserts were defined as “areas ...with limited access to affordable and nutritious food, particularly such an area composed of predominantly lower income neighborhoods” (U.S. Congress, 2008).
- Mari Gallagher Research & Consulting Group defines food deserts as “large geographic areas that have no or distant mainstream grocery stores, have an imbalance of food choices, and/or a heavy concentration of fringe food (such as fast food restaurants)” (2010).

The related term, “food swamp,” was first introduced in 2009 to capture an area that exhibits an imbalance or complete lack of food choices (Rose, Boder, Swalm, Rice, Fraley, & Hutchinson, 2009). For example, some areas of Los Angeles are known for being particularly bad food swamps because of a high ratio of fast food restaurants and convenience stores to mainstream grocery outlets.

These definitions are fundamentally flawed. They rely heavily on distances to, and the composition and concentration of, private sector businesses as criteria to categorize places and conditions. Only the Congressional definition touches upon socioeconomic factors like household income. It is interesting to note that none of them define what a rich food environment is composed of, only what is lacking. Furthermore, it is not clear what appropriate “access” is, rather it is unhelpfully suggested that the

presence of a supermarket or grocery store within some “acceptable” distance qualifies as appropriate access, regardless of socioeconomic characteristics of the population.

For the purpose of this paper and research, “food desert” is used to describe an area of any community spatial typology (urban, rural, suburban, etc.) that is devoid of traditional large food retail outlets. Areas with an overabundance of fast food restaurants and convenience stores and few to no supermarkets or healthy food retailers are classified as food swamps.

1.1.b Food Security

Before the popularity of the food desert concept, “food security” and “insecurity” were the most commonly used terms in discussions of those segments of the population who get too little food, and in more recent years, inadequate diets to meet nutritional guidelines. Most government documents describe food assistance and programs in terms of food security. The United States Department of Agriculture (USDA) defines food security on a spectrum of factors ranging from “high food security” to “very low food security.” (see Table 1 (2010a)). Other definitions for food security that can be found in the literature are as follows:

- “Food security includes sufficient access to food as well as access to quality food that maximizes health and wellness (Hamm & Bellows, 2003).
- A food secure household has “access at all times to enough food for an active, healthy life for all household members” (Nord, Andrews, & Carlson, 2008).
- Food security exists, “when all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life,” (United States Agency for International Development, 1992).

The framing of food security issues is evolving. The United States Agency for International Development’s (USAID) definition starts to address the multi-faceted complex nature of food security. The policy determination continues to state that food security has three distinct factors:

- 1) Availability- “sufficient quantities of appropriate, necessary types of food from domestic production, commercial imports or donors,”
- 2) Access,
- 3) Utilization- “food is properly used; proper food processing and storage techniques are employed; adequate knowledge of nutrition and child care techniques exists and is applied; and adequate health and sanitation services exist,” (USAID, 1992).

Food access is discussed in more detail in the next section.

Table 1: USDA Definitions for Food Security

	Label	Description
Food Security	High Food Security	No reported indications of food access problems or limitations
	Marginal Food Security	One or two reported indications- typically of anxiety over food sufficiency or shortage of food in the house. Little or no indication of changes in diets or food intake.
Food Insecurity	Low Food Security	Reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake.
	Very Low Food Security	Reports of multiple indications of disrupted eating patterns and reduced food intake.

1.1.c Food Access

USAID defines “food access” as a case when individuals having adequate incomes or other resources to purchase or barter to obtain levels of appropriate foods needed to maintain consumption of an adequate diet/nutrition level (1992). This is one of the only available definitions of food access. Most papers and reports use “food access” without providing a clear definition, however, physical access is implied, and economic access may be implied when the term is bundled with security. In the few papers that have defined acceptable levels of access, urban food access has been defined as a person living within a “walkable” distance of a large food retailer, while suburban food access has been defined as within ten miles (Algert, Agrawal, & Lewis, 2006; Morton & Blanchard, 2007).

Those closer to the issue will insist that access is much more complex than this, entailing not just physical and economic access, but also cultural/social access and nutritional access. It is not enough for a food retail outlet to be located in a neighborhood, this outlet may also need to provide a wide range of nutritious foods and cultural foods relevant to that neighborhood for its residents to feel that they have adequate access. Some would even suggest that speciality items, such as gluten-free products, also need to be conveniently available in order for a neighborhood and its citizens to have adequate food access. For the purposes of this paper, it is acknowledged that food access is an intricate and ambiguous term. The author prefers to assume that appropriate food access is in the eyes of the consumer.

1.1.d Food Sovereignty

Like “food desert”, “food sovereignty” is a relatively new concept in the food system literature. The term was first coined in 1996 by Via Campesina in reference to a policy framework based on the idea that people have the right to define their own food system, a reaction to the “corporate food regime” and free trade agreements (Food First, 2005). Food sovereignty is further defined as “the right of communities, peoples and countries (including regional groups of countries) to determine their own agricultural and food policies and protect and regulate domestic agricultural production and trade in order to meet sustainable development objectives” (Friends of the Earth International, 2001). Food sovereignty continues to be used mostly in international conversations about subsistence farmers and peasants in less developed and developing countries, but may have relevance to food access and security discussions as well.

In the United States, the term has been co-opted by community organizations engaged in community gardens, “public produce” projects, and “food for the people by the people” movements. It appears to be a reaction to the idea that grocery stores are the only solution to food deserts, insinuating that any private sector solutions that are not “of the people” are inherently unjust. Instead, food sovereignty advocates call for community-based solutions to persisting food access issues. The Longmont Community Food Coalition, a project of LiveWell Colorado, is a prime example of how food sovereignty may also be relevant in developed countries like the United States.

1.1.e Food Justice

Food justice is an extension of social justice. It is often discussed and defined in conjunction with food security. Gottlieb and Joshi, authors of *Food Justice*, define the

term as follows: “Food justice seeks to ensure that the benefits and risks of where, what, and how food is grown, produced, transported, distributed, accessed and eaten are shared fairly. Food justice represents a transformation of the current food system, including but not limited to eliminating disparities and inequities,” (2010).

1.1.f Supermarket Abandonment

Mark Winne, author of *Closing the Food Gap*, is credited with coining the term of “supermarket abandonment” that is a new word within food advocates’ lexicon. He uses it in the following context:

...in the case of supermarket abandonment of urban and rural areas, the food gap can be understood as a failure of our market economy to serve the most basic human needs of those who are impoverished, (p. xvi, 2008).

He goes on to describe the widespread re-location of supermarkets and large grocery stores to the fringes of cities and to suburban areas where land is cheaper and readily available, and where average incomes are higher (p. 86, 2008). Although these may be appropriate market reactions to economic forces, if one assumes food-based public health issues are an important policy issue, then access to food could be framed as a public good that requires public investment in order to assure adequate supplies in some communities.

1.1.g Community Typologies- Urban, Suburban, Rural

The U.S. Census Bureau defines urban areas in two parts. *Urbanized areas* have a population of at least 50,000 people at a density of at least 1,000 people per square mile. *Urban clusters* have a population of 2,500 but less than 50,000, at a density of at least 500 people per square mile (United States Census Bureau, 2010a). Rural areas are defined as anything other than an urbanized area or urban cluster.

The Justice Department, however, provides more useful definitions, saying that urban areas have populations greater than 100,000 and/or a population density greater than 2,000 people per square mile and suburban areas are no more than 30 miles from urban areas and/or have a density greater than or equal to 500 people per square mile and less than 2,000 people per square mile. Rural areas are neither urban nor suburban. (The National Drug Intelligence Center, 2008).

Joel Garreau, author of *Edge City: Life on the New Frontier*, argues that our common definitions of suburban and urban are more a matter of function than an accurate reflection of political boundaries. He declares suburban areas as:

...beautiful, affluent, quiet, black and white neighborhoods...that feature trees, lawns, and single-family detached homes. For all practical purposes, they look and function like suburbs...a neighborhood is functionally suburban, regardless of its location within a metro area, if it is predominantly residential, well off, and marked by single-family homes.

He goes on to say, “downtrodden neighborhoods in outlying "suburban" jurisdictions that are nothing but extensions of either urban or rural poverty,” are urban (1991).

For the purposes of this study, it is acknowledged that the boundaries between urban and suburban are neither clear nor distinct. Instead the functional definitions of urban and suburban are used. These imply that suburban areas are predominately residential areas comprised of single-family detached homes, are commuter friendly, typically have higher median household incomes, and are located on the fringe of more densely developed city centers. Urban areas, in contrast, are densely populated areas with a mix of commercial and residential buildings, limited parking, and lower median household incomes.

1.2 LiveWell Colorado and LiveWell Communities

Food deserts and food access issues are increasingly popular topics in public health discussions. The bulk of applied research on this topic, which is discussed in Chapter 2, has been carried out in dense urban areas or vast rural areas where food retail outlets are limited, however little attention has been paid to suburban areas. There are many reasons one could say have contributed to the lack of consideration that suburban areas receive in terms of food access research and projects: assumed higher incomes, greater access to traditional food marketing channels, higher likelihood of car ownership. Despite these generalizations, several community organization leaders in Longmont, Colorado, suspected that there might indeed be persistent food access issues in their community regardless of the area's rich food environment (when defined with traditional food access concepts). Although Longmont has a variety of retail options and low food assistance program participation, it was suggested that these are not necessarily indicators of a successful food system and that there still might be underlying problems related to food acquisition in the region.

In order to examine the Longmont food system and any food access issues, a food assessment subgroup of LiveWell Longmont formed in 2009. This food assessment subgroup commissioned a community food assessment by WPM Consulting, LLC. Some of the data collected during this assessment are the focus of Chapter 3.

LiveWell Longmont is a community initiative funded by LiveWell Colorado and sponsored by the Ed and Ruth Lehman YMCA. This initiative convened in 2007 and started the grant making process. This multi-stake holder, cross-collaborative steering committee and coalition received a Planning and Mobilization Grant through LiveWell

Colorado, making Longmont a LiveWell Community in 2008. This grant, along with participation in the National YMCA's Activate America initiative, and a partnership with the Centers for Disease Control, has made Longmont, Colorado a pioneer in strategically planning and implementing change for a healthier community through a multi-faceted set of targeted programs (LiveWell Colorado, 2010a).

Originally founded in 2007 as a grant making collaborative, LiveWell Colorado became a 501(c)3 in 2009 with support from The Colorado Health Foundation, Kaiser Permanente, the Kresge Foundation, and the Colorado Department of Public Health and Environment. LiveWell Colorado works on policy, environmental, and lifestyle changes in order to remove barriers to healthy behavior, primarily focusing on obesity prevention and reduction initiatives through targeted programming. This organization attempts to reduce health disparities, build synergy and reduce duplication of efforts among organizations while supporting promising practices and ensuring accountability through evaluation and research (LiveWell Colorado, 2010b).

LiveWell Colorado's community investment strategy provides funding, technical support, and learning opportunities for community coalitions that work at a local level to promote and increase healthy eating and active living. These LiveWell Communities receive financial support and technical assistance for seven years (LiveWell Colorado, 2010b). As a result, cross-community collaborations are producing a wealth of information, data, research, studies, and model projects, which further assist other communities in Colorado and beyond. LiveWell Colorado is also connected at the national level through the National Convergence Partnership. This partnership strives to create a framework, establish policies and promote strategies that can be replicated

throughout the country. Additionally, LiveWell Colorado’s efforts are gaining recognition from the Let’s Move! initiative, as well as other obesity prevention efforts across the country.

1.3 Longmont, Colorado

Although Colorado is often heralded as the leanest state in the country, consistently scoring the lowest in obesity ratings, it is experiencing a steady increase over time (see Figure 1; Center for Disease Control and Prevention, 2011). Specific to the region under study, available data show a slight increase in obesity rates and a slight decrease in self-reported health status and level of physical activity for Boulder Metropolitan Statistical Area from 2007 to 2008 (Center for Disease Control and Prevention, 2010).

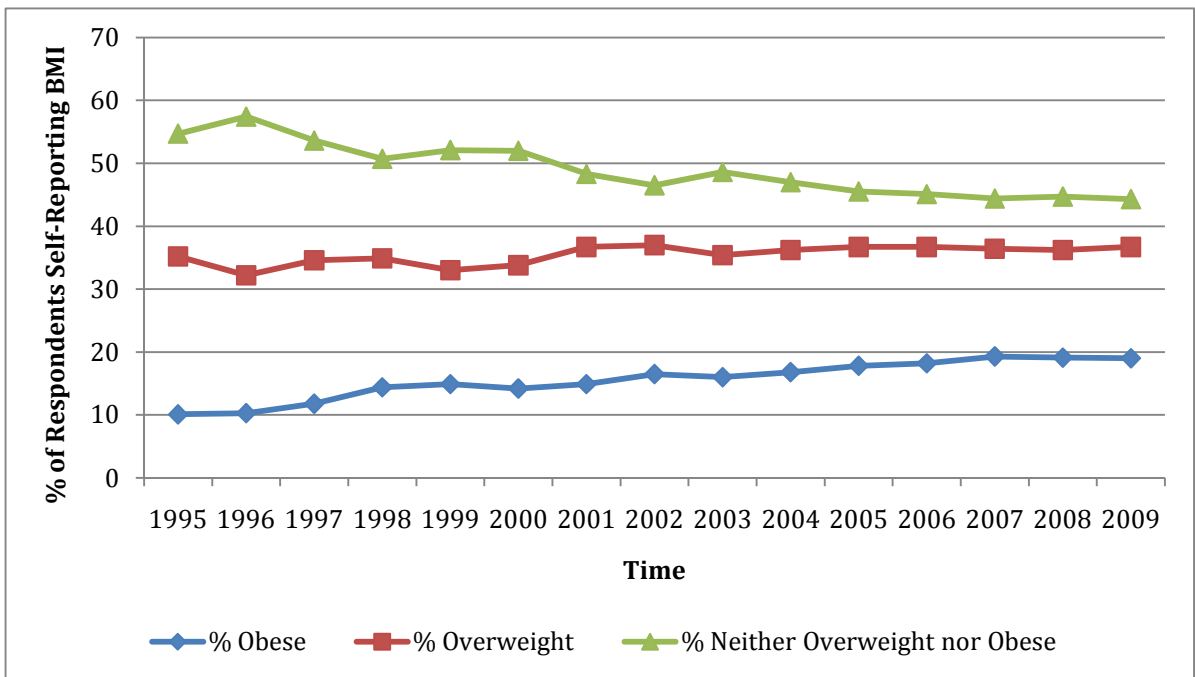


Figure 1: Overweight and Obesity Rates in Colorado by % of respondents’ self-reporting body mass indices.

For Colorado, clearly defined food access and food assistance status is difficult to evaluate. Participation in food assistance programs is a common way to assess need, however, Colorado has the fourth lowest Supplemental Nutrition Assistance Program (SNAP) participation rates in the Country (USDA, 2010c). In Boulder County, 4% of the county population participates in SNAP but 15% meet the income qualifications (Food Research and Action Center, 2010). Data specific to Longmont, Colorado (a metro area located in Boulder County) are not available.

With a population of 88,425 people at a density of 4,019 people per square mile, Longmont is classified as an urban area according to the U.S. Census Bureau (2010a). Interestingly, Longmont's proximity to Boulder (16 miles) and Metro Denver (35 miles) also qualifies the region as a suburban and exurban area. Furthermore, commuting is an increasingly common journey for Longmont residents. So, as local employment by local firms continues to drop from a reported 53% in 2000 to 39% in 2010, Longmont may take on more suburban-like characteristics, especially given housing affordability challenges in the Boulder metro area (Boulder Regional Business Partnership, 2010). Another complexity to note when defining Longmont's identity is a quickly rising Hispanic/Latino population, increasing from 19% in 2000 to 25% in 2010 (U.S. Census Bureau, 2011).

Although Longmont once had a stand-alone city center, it does not have the retail characteristics of most urban areas. Instead, it appears more suburban in nature with large expanses of retail outlets. Some even say that Longmont is overly invested in traditional retail. The City of Longmont supports sixteen supermarkets, sixteen specialty food stores, and eighteen conveniences and liquor stores (Economic & Planning Systems, Inc., 2006).

Such conditions may contribute to the perception of a robust food environment. This means that there are already 1.45 food stores per square mile or 2.27 food retail outlets per square mile including convenience stores. One study examining food environments and perceived food access found an average of 1.4 supermarkets per square mile in select counties in New York, North Carolina, and Maryland (Moore, Diez Roux, Nettleton, & Jacobs, 2008). Although there is no agreed upon “good” density level identified by planners, one food store per square mile is generally used as a target in past studies in urban areas.

The interesting mix of suburban and urban characteristics in Longmont, combined with its robust food environment and changing demographics, make it an excellent city for a food access case study. The results of this study will be used directly by governments and organizations in the immediate area, including LiveWell Longmont. Furthermore, wider dissemination of results of a case study may help to inform other community food assessment and community food access programs in municipalities with similar characteristics across the country, particularly areas at the suburban-urban interface.

1.4 Overview of Research

Using data collected from the Longmont community food assessment, the following questions are asked:

- 1) Is access to healthy foods a problem in Longmont?
- 2) Are a buyer’s perceived challenges influenced by their primary shopping location, distance to shopping location, access to transportation and/or demographics?

- 3) Is an individual's consumption of fruits and vegetables influenced by these same factors?
- 4) What solutions, if any, appear relevant and supported by the data?

These questions will be addressed using summary statistics and ordered probit regression models.

Recent research has already addressed some of these questions in areas other than Longmont but this research has predominately focused on *rural* food deserts, where sheer distance is the primary concern, or *urban* food deserts, where transportation, higher food prices, and safety are the primary issues (Burdette & Whitaker, 2004; Kaufman, 1999). The unique nature of food access in suburban and ex-urban areas, with increasingly diverse ethnic food consumption behavior, has not been explored. It may indeed be the case that these overlooked areas might not fit neatly into the current definitions and programming efforts associated with a food desert, but nonetheless may suffer from an imbalance of food system resiliency across certain demographics. For example, barriers to food access may differ in commuter-oriented suburban areas since appropriate transportation options (i.e. automobile) tend to be the norm. To clarify, population levels in suburban regions are typically dense enough to warrant mainstream grocery outlets, but the assumption that everyone has an automobile might not be accurate. Furthermore, supermarkets and large grocers are often accused of leaving urban areas for suburban neighborhoods (commonly known as supermarket abandonment) in search of wealthier communities (Winne, 2008). This would seem to make it unlikely that these regions be classified as food deserts, but further investigation is warranted if there is evidence that some groups of households are not well served by supermarket models.

CHAPTER 2: LITERATURE REVIEW

World aid and relief efforts focus mainly on providing water and food assistance, but in the United States, most people prefer to deny the existence of these needs for their fellow citizens. Instead, the U.S. Census Bureau and other governmental and nongovernmental organizations track food security, as discussed in Chapter 1. This frames the question not as, what effect does hunger have on public health and the common good, but instead, what effect does malnutrition have? Several studies identify several intermediate and long-term outcomes of chronic food insecurity and poor nutrition, including impaired learning, loss of productivity, increased need for health care, social exclusion, and feelings of powerlessness (Hamelin, Habicht, & Beaudry, 1999; Thomas & Strauss, 1997), diminished resistance to disease (Dallman, 1987), and child mortality (Pelletier, Frongillo, Schroeder, & Habicht, 1995). These physical, psychological, and social conditions certainly have negative implications for economic development.

In the late 1800's and early 1900's school provided meals became part of the English school system for students who were, "unable by lack of food to take advantage of the education provided them," (Vernon, 2007, p. 162). In the United States, children's nutritional requirements and federal policy first intersected in 1946 when President Harry Truman passed the National School Lunch Act in order to "safeguard the health and well-being of the Nation's children and to encourage the domestic consumption of nutritious

agricultural commodities and other food,” (Burghardt & Devaney, 1995). During this post-World War II era, in which the United States was emerging from a period of scarcity and food rationing, the policy makers were concerned that chronically undernourished children made poor soldiers and workers (Gottlieb, 2001). A clear link between nutrition, productivity, and education attainment was realized before micronutrients, vitamins, and proper diets were really understood.

Now, several federal food assistance programs are in place with the goals of preventing hunger, increasing nutrition, and increasing demand for surplus commodity crops. Motivations for food assistance programs are usually humanitarian based- in a land of plenty, no one should go hungry. However, there are greater issues at stake than fairness and equity. The major programs- SNAP, Women, Infants, and Children (WIC), and free and reduced lunch and breakfast programs for school aged children- are mostly based on household income and household size (WIC has additional qualifications). The qualifications and levels of support are determined nationally with no regard to regional costs of living or other regional characteristics. Some state agencies also provide nutrition education, often referred to as SNAP-Ed. By providing lower-income individuals and families with the ability to stretch their food dollars and make more informed food choices, these programs have the potential to close or at least decrease the food gap.

The intended outcomes of these programs and their actual outcomes, however, are very different. Some argue that these supplemental programs only increase total caloric intake, potentially leading to obesity, while others argue that these programs alleviate the “boom and bust” cycles associated with food scarcity thus leading to better nutrition and

health in program participants (Jensen & Wilde, 2010). These issues are the subject of great debate.

That obesity is correlated to food insecurity and food assistance programs seems paradoxical, to say the least. Several hypotheses have been put forth to explain this. For starters, one could argue that the prevalence of obesity in SNAP and WIC beneficiaries is in indication that the benefit package is providing too much food money. A corollary to this is that restricting assistance to food items encourages beneficiaries to spend more money on food than they may have without defined assistance. Another hypothesis is that the monthly distribution of funds leads to a feast and famine cycle, which can lead to weight gain, and that funds should be distributed more often (Ver Ploeg & Ralston, 2008).

Recent studies, however, have been linking obesity rates to food environment and food access. Several studies have found that a supermarket in the neighborhood has a negative impact on obesity rates (Bodor, Rice, Farley, Swalm, & Rose, 2010; Morland & Evenson, 2009; Morland, Wing, & Diez Roux, 2002; Powell, Auld, Chaloupka, O'Malley, & Johnston, 2007; Wang, Kim, Gonzalez, MacLeod, & Winkleby, 2007). Other studies have rendered mixed results about the effect easy access to fast food restaurants has on obesity rates, finding either a positive correlation between access to fast food and obesity rates (Bodor et al., 2010; Davis & Carpenter, 2009; Inagami, Cohen, Brown, & Asch, 2009; Maddock, 2004; Mehta & Chang, 2008; Morland & Evenson, 2009), or no correlation at all (Burdette & Whitaker, 2004; Jeffery, Baxter, McGuire, & Linde, 2006; Powell et al., 2007; Sturm & Datar, 2005; Wang et al., 2007).

Although the causes for the correlations between obesity, food assistance and food environment are not well understood or agreed upon, one thing has been confirmed- “bad” food is generally cheap food. Energy dense foods such as grains, fats, and sweets provide much more caloric energy by unit cost than fruits, vegetables, and lean meats (Darmon, Briend, & Drewnowski, 2003). Drewnoski and Specter demonstrate the inverse relationship between energy density and energy costs, finding, for example, that the differential in energy costs between sugar and strawberries was in the order of several thousand percent (2004). Nordahl illustrates this with the following comparison:

In July 2008, one dollar could buy a large, fresh, organic peach at the farmers’ market, or it could purchase a double cheeseburger from McDonald’s Dollar Menu. The peach has 73 calories and less than one gram of fat. The double cheeseburger has 440 calories, and twenty-three grams of fat. (2009, pp. 35-6)

Although this is an extreme comparison, it is one that is made over and over again and is demonstrative of the real choices some families have to make. In the movie *Fresh*, a low-income family is filmed during their trip to the grocery store. While in the produce section, the older girl explains to the younger girl that the family cannot buy pears because of the number of servings in one pound. The family later buys dinner at a fast-food restaurant while stating that the money they spend on diabetes treatments comes out of their household food budget thus limiting their food choices (Joanes, 2009).

This type of diet commonly leads to malnutrition as a result of insufficient, excessive, or unbalanced diets. However, some studies indicate that malnutrition, much like under nutrition, is increasingly a class issue, and that widening learning and health gaps exist between the Nation’s lower and higher socioeconomic classes, regions, and school districts (Darmon & Drewnowski, 2008; Drewnowski, 2004). Additionally, higher rates of preventable diet related diseases, such as obesity, diabetes, cardiovascular

disease, osteoporosis, and some forms of cancer, stroke, and coronary heart disease (CHD) are found among lower socioeconomic classes (Brunner, et al., 1997; del Rio Barquero, et al., 1992; Evans, Netwon, Ruta, MacDonald, & Morris, 2000; Lang & Ducimetiere, 1995; Lantz, et al., 1998; Melchior, et al., 2005; Molarius, Seidell, Sans, Tuomilehto, & Kuulasmaa, 2000; Pearson, Taylor, & Masud, 2004; Reisine & Psoter, 2001; Tang, Chen, & Krewski, 2003).

These non-communicable, lifestyle diseases are considered diet related diseases, including obesity, hypertension, certain cancers, diabetes, stroke and other coronary heart diseases (CHD). These diseases significantly decrease quality of life and often lead to shortened life spans. McGinnis and Foege attribute 14% of all deaths to poor diets and/or sedentary lifestyles (1993). A study by the USDA attempted to calculate the total economic costs of CHD, cancer, stroke, and diabetes, including diet-related medical costs, diet-related productivity losses from disability, and the economic value of diet-related premature deaths before retirement age. They estimate the total economic costs to be \$70.8 billion where medical costs account for 47%, premature deaths account for 39%, and loss of productivity account for 13% of total costs (Frazao, 1999). Unfortunately, most diet-related disease research that has been conducted in the last decade that also estimates the economic costs focuses only on obesity. While there is a correlation between obesity rates and food insecurity (Alaimo, Briefel, Frongillo, & Olson, 1998; Basiotis & Lino, 2002; Ver Ploeg & Ralston, 2008), obesity is a complex, multi-faceted condition that is not well understood.

Regardless, income and household size is not the only predictor of diet quality and food assistance need. Other studies have found education level to be a predictor

(Irala-Estevez, et al., 2000), with higher educated people reporting a better diet. Although these findings are interesting, education might not be the solution to enhancing diet quality. For example, another study found that education alone, through dietary advice and nutrition counseling, is *not* an effective way to increase diet quality (Burr, Trembeth, Jones, Geen, & Roberts, 2007). In fact, many studies suggest that absolute distance to supermarkets and grocery stores is the primary determining factor in diet quality, implying that access to food outlets trumps economic ability and education levels (Lang & Caraher, 1998; Morland et al., 2002; Rose & Richards, 2004; Zenk, et al., 2005). Clearly, these findings would suggest a very different intervention protocol, one that would differ more across regions than traditional nutrition education programs. This idea of food access as a spatial issue has dominated the conversation in much of the public health and built environment literature.

Unfortunately, it may not be that simple. Understanding the underlying causes of food access issues in all communities is necessary in order to promote health and nutrition. At a conference involving this issue, former U.S. Secretary of Agriculture Dan Glickman said, “restricted or limited access undermines the [USDA’s] ability to promote health through nutrition because if prices are too high... or if choices are limited, [Americans] can’t make the choices that nutrition education efforts encourage them to,” (Koralek, 1996). The following section explores areas with increased food prices and decreased access by community typology.

2.1 Typology of Communities, Food Environments, Food Access Issues

2.1.a Urban

Urban centers and cities are known for their diversity, economic competition, marketplaces, and opportunities. These densely populated and highly zoned urban areas tend to have higher concentrations of retail and commercial outlets intermixed with dense residential areas, more general and specialty services, and educational services closer to home. It is this close proximity to a more diverse selection of opportunities that attract most people to cities and urban centers. Typically, this type of built environment is more walk-able than others, parking is limited, and public transit is more available. This type of environment, however, is not conducive to the major retailers or big “box” stores with enormous, identical layouts and designs.

Up until the 1920’s and 1930’s, small, independent, mom and pop grocery stores serviced urban areas. The conditions of the Great Depression created the “stack it high, sell it low” model, which was featured in warehouses, and garages throughout developed areas. The success of these stores led to the first real supermarkets and supermarket franchises in the 1930’s. Shortly after World War II, the proliferation of automobiles and suburban development, increased efficiencies in the food production and distribution systems, along with increasing numbers of food products available led to increasingly larger grocery stores requiring bigger buildings and more parking spaces. The supermarket industry expanded rapidly in developing neighborhoods and suburban areas throughout the 1960’s and 1970’s. The introduction of discount warehouses, superstores, and hypermarkets, such as Wal-Mart, in the 1970’s and 1980’s put the proverbial “nail in the coffin” of remaining independent grocers. This time period was full of hostile take-

overs, mergers, and consolidations. Now inefficient, small stores located within urban centers closed their doors for good, or re-opened at the suburban/urban interface (Gwynn, n.d.). Indeed, a study by the University of Connecticut found that there is 1.6 square feet of supermarket space per resident in urban areas, and 5-7 square feet of space per resident in suburban areas (Cotterill & Frankin, 1995).

A supermarket industry spokesperson makes rational claims to why supermarkets no longer locate in cities, Winne reports:

...operating expenses of inner-city supermarkets, including rent, insurance, and security, are higher than those of non-inner-city stores...they have moved to a cookie-cutter, one-size-fits-all approach to new store development. For efficiency's sake, they need to build larger stores that all look alike and are configured in the same way... Since densely built urban areas do not have sufficient land to accommodate the larger stores, which need huge parking lots and ample turning space for large trucks, new stores are rarely built in cities." (p. 88, 2008).

The wake of supermarkets leaving city centers created an environment ripe for the entry of fast food restaurants, mini-marts, and convenience stores. While there is an abundant amount of papers recording the abandonment of urban areas by supermarkets, there is no research demonstrating that fast food restaurants are disproportionately located within city centers. Morland et al. found no appreciable differences in fast food restaurant concentrations across 221 census tracts (2002). Several papers have found that fast food restaurants and mini-markets are disproportionately located in low-income neighborhoods, while supermarkets and full-service restaurants are disproportionately located in high-income neighborhoods (Block, Scibner, & DeSalvo, 2004; Moore & Diez Roux, 2006; Morland, Wing, Diez Roux, & Poole, 2002).

Other alternatives to supermarkets, such as farmers markets and produce stands, confront a different set of obstacles when trying to service urban areas. Historically, the natures of farming and agriculture have been at odds with the nature of urban areas. Farms, packing sheds, and processing centers are located a fair distance from city centers. Transport vehicles small enough to navigate urban streets systems usually aren't temperature controlled. And if the burden of transporting the produce and food items is not intimidating enough, finding an acceptable site to host a market adds a whole different layer of complexity. These locations need to be open, spacious, centrally located, and with adequate vehicle access. Since farmers markets require farmers, the farmers need to make money. This often requires access to higher-income consumers. Some market associations, the Boulder County Farmers Market for example, use profits from higher income clientele markets, City of Boulder, to subsidize lower income clientele markets, City of Longmont.

Despite all these challenges, farmers markets are becoming increasingly popular. The Agriculture Marketing Service of the USDA reports a 16% increasing in national registered farmers markets from 2009 to 2010 alone, bringing the most recent estimate to 6,132 markets (2010b). A website, SustainLane, regularly ranks cities based on numerous categories, one of which is local agriculture measured by the number of farmers markets and community gardens per capita. Cleveland, Ohio, comes in at 2nd due to its massive growth in this area, touting 12 farmers markets and 225 community gardens for 450,000 residents, a 600% increase from 2006 to 2008 (Sustainable Circles Corporation, n.d.).

Along with farmers markets, community gardens are an increasingly popular trend. Community gardens, or allotment gardens as they are known in Europe, have a

known history dating back to the 1700's. In the United States, they have experienced waves of popularity which seems to ebb and flow with the economy. In times of economic distress, people turn to food production to supplement their food budgets, but in times of abundance, they cannot be bothered with the toils of turning the land. Community gardens are popular in urban areas where most people do not have lawns or considerable space to dedicate to agricultural endeavors.

In declining cities, such as Detroit, community gardens are being utilized as a form of urban renewal. Bonham estimates that there are 500-600 community gardens in Detroit, a city with approximately 65,000 vacant lots (Bonham, Spilka, & Rastorfer, 2002, pp. 4-8). Over the years, community gardens have been met with mixed political support. The efficacy of community gardens to support community food security and public health is also unclear with varying opinions about the true efficacy. These issues will be further addressed in Chapters 4 and 5.

Community gardens, school gardens, meal delivery services, and food pantries are considered part of the community food safety net along with government programs such as SNAP, WIC, and free and reduced price lunches through the School Nutrition Program. The availability of these types of programs and their participation rates are higher in urban areas. One cross community typology study of food access and insecurity found that urban residents reported greater access to alternative food sources, like those mentioned about, than their suburban and rural counterparts. Urban residents were also more likely to be enrolled in SNAP or WIC (Garasky, Wright Mortin, & Greder, 2004). Additional research on this particular topic is unavailable since most studies focus on national averages.

2.1.b Rural

Urban food environments and access issues appear insanely complex when compared to rural food environments. Most rural food deserts are completely devoid of any food outlet of any sort for many miles. Of primary concern is the lack of supermarkets. There are several explanations for this. As rural residents migrate to cities, populations dwindle below a number able to support a grocery store. Competition from new supercenters, such as Wal-Mart, in neighboring towns and counties drive small, independent stores out of business. In Iowa, O'Brien found that the number of grocery stores dropped from about 1,400 stores in 1995 to slightly over 700 in 2005. Over the same time, supercenters increased by 175% (2008). Another study in South Carolina found that of the seventy-seven food service stores in one rural county, 75% of them were convenience stores, and only 28% of the stores carried fruits and vegetables (Springen, 2007). Studies by other researchers and other states have found comparable results (Bustillos, Sharkey, Anding, & McIntosh, 2009; Goforth, 2010; Yousefian, Leighton, Fox, & Hartley, 2011).

A report by the USDA examined food deserts and access, in which access is comprised of physical distances travel, access to transportation, and affordability. This study suggests that vehicle ownership is the largest predictor of food access and that rural residences have a significantly higher rate of vehicle ownership, 95% compared to 88%. The difference between small local grocers and supermarkets is discussed: they report that small grocers are often not included in community assessments, despite their ability to serve their community (2009). Focus groups in rural Maine led by Yousefian et al. discovered that rural residents depend on seasonal outlets such as farmers markets,

roadside farm stands, personal gardens, and trading with neighborhoods, potentially more so than urban and suburban residents (2011). The culmination of papers regarding rural food environments paints a picture of a landscape free of the most common retail outlets, but it is also a picture of a more creative and resilient citizenry. There is no doubt that real food access issues exist in rural America, however, it is possible that local solutions are consistently being overlooked.

2.1.c Suburban

Despite the amount of papers reporting that supermarkets have left urban areas for suburban areas, there is little research on suburban food environments. The Garasky et al. paper mentioned previously notes concerns for affordability and accessibility by suburban residents, however, these are almost consistently lower than their urban and rural counterparts. This paper describes suburbanites seeking emergency food assistance as, on average, being more educated, older, having a higher monthly income, and using less federal food assistance programs while at the same time reporting the lowest levels of food security than other food assistance seekers in other regions (2004). This lines up with most socioeconomic descriptions of the average suburban resident. Bowman and Vinyard hypothesize that it is this greater household income and greater access to fast-food restaurants that lead suburban dwellers to consume more fast-food than their rural and urban counterparts (2004).

From studies that mostly focused on urban food environments, several things can be deduced about the suburban food environments. It is likely that suburban areas have more concentrated levels of supermarkets, grocery stores, and food services outlets than urban and rural areas. Suburban areas should also have less corner stores, minimarts, and

other small, independent retailers with limited variety. Talukdar studied Buffalo, New York, and its surrounding suburbs, discovering a 6-7% price difference between these limited corner stores and major supermarkets. Even after correcting for economies of scale, a 2-5% price difference persisted (2008). This study and many others demonstrate that food prices are less, on average, in suburban retail outlets when compared to rural and urban outlets (Liese, Wies, Pluto, Smith, & Lawson, 2007).

2.2 Previous Research Methods Concerning Food Access and Food Choices

Several methods have been used to address issues of food access and choices. Most of them, however, involve surveying and self-assessment at one point in time. In this vein are community listening sessions, interviews, and other qualitative methods. Some of them involve more quantitative approaches using spatial characteristics. Almost none of them involve any sort of longitudinal evaluation. The following section describes and evaluates common approaches to researching and evaluating food access issues and food choices, including limitations to such methods.

The USDA recommends that a community food assessment consist of multiple components. These components are a summary of current demographic and socioeconomic data for the area of interest; an evaluation of current resources including food assistance programs, food retail outlets, and emergency food assistance centers such as food banks; a food security assessment through consumer surveying; an evaluation of resource accessibility; a food store evaluation to determine varieties and prices of food available; and an evaluation of the production system (Cohen, 2002). Although the USDA's recommendations are inclusive of all aspects of the food system, in practice, community food assessments tend to be limited to the demographic and socioeconomic

profiles and consumer surveys. The evaluation of resource accessibility and food store variety and pricing tends to fall into a different category of assessments, referred to as spatial analysis for the purposes of this paper. An assessment of the production system, including agriculture production, processing, and retailing, is more commonly referred to as a food system assessment.

2.2.a Community Food Assessments, Consumer Surveys

Community food assessments seem to be a popular choice by coalitions of community members seeking to improve their communities as opposed to conducting academic research. The USDA recommends community food assessments to community-based nonprofit organizations and business groups, local government officials, private citizens, and community planners in their Food Security Assessment Toolkit. They also suggest that the process of collecting information as a coalition can be just as valuable as the actual information gathered (Cohen, 2002). Community food assessments are largely tailored to what the community coalition wants to know. For example, if a local government is concerned about the number of small grocers to supermarkets, the assessment may ask questions focused on where residents shop for various items. Are they shopping at the local corner store, or are they traveling to the supercenter in the next town? During a recent discussion on the COMFOOD listserv, Ken Meter, President of Crossroads Resource Center, defined community food assessments as the following:

A Community Food Assessment (CFA) is at some level an assessment of a community and its concerns, best performed when the community itself is involved in the process. Probably the highest form of this is when it is a community assessing its own potential. This also means, however, that a community is free to select the issues it will focus upon, so this does not inherently mean food security is part of the assessment. Inherently, a CFA that addresses food security is making some manner of economic assessment. A CFA can also be performed by a professional or scholar or other researcher who is

outside the community, and these may offer insights the community itself cannot muster, but may also involve such a separation from the community that important local wisdom gets overlooked. (2011).

Since community food assessments rely heavily on the interests of the community coalition, it is difficult to compare one assessment to another. There is little standardization across assessments. Furthermore, community coalitions may lack a member with adequate surveying experience, leading to questions that are themselves leading or unclear. Community food assessments may yield satisfactory information for the community itself without yielding robust information worthy of scientific examination or cross-community comparison. However, the process itself can inspire action and change that has lasting effects on the community.

One of the more recent examples of a community food assessment evaluated six rural towns in Maine. The assessment used focus groups composed of participants in MaineCare, a form of Medicaid. The assessment asked the following questions:

- 1) Where do you go to get food for your family?
- 2) What problems, if any, do you face when trying to buy food for your family?
- 3) How far away are you willing to travel to buy food? How often do you travel these distances to buy food?
- 4) Where else do you shop for food other than supermarkets or grocery stores?
- 5) Describe the quality and variety of the foods available at the places you shop.
How does food quality affect what you buy?
- 6) How do you decide what food to buy for you and your family?
- 7) When people talk about healthy food, what does that mean to you?

- 8) Is there anything else you would like to share about food in your community or your family food choices?

The results of the study are outlined in the description of rural food environments. The authors note the presence of a self-selection bias since almost all the participants knew what healthy foods were and went out of their way to get them in creative ways. They speculate that only health conscience parents came to the focus group and that there was also a group bias since there is no anonymity in a focus group or a small rural town (Yousefian et al., 2011).

Similarly, a study by Garasky et al. in Iowa used a paper survey to collect information about food insecurity and access at food banks in urban, suburban, and rural areas in Iowa. Although this study allowed the researchers to compare food insecurity across different community typologies, they caution that a serious selection bias makes the results inappropriate for generalization (2004).

Pothukuchi, a planner who worked on the Detroit community food assessment, argues that planners and government officials need to be involved in the assessment process, and even to lead it in some cases, in order to enhance the process and strengthen the results. She argues that community food assessments are inherently a planning tool and that lessons learned through the process can only strengthen a city's approach to its future. This is due to planners bringing a systems perspective to the assessment, whereas community led assessments without professional support tend to focus on one particular issue, such as farmers markets, instead of the whole food system. Her evaluation of nine community food assessments suggests that when a planner is involved, the assessment is

more likely to involve some sort of spatial analysis like mapping food outlets in order to explore greater linkages in the food system (2004).

2.2.b Spatial Analysis and Store Assessments

Perhaps the latest innovation in the community food assessment is the spatial analysis component. The USDA's Community Food Security Toolkit and the Community Food Security Coalition's Guide to Community Food Assessments only mention spatial analysis and mapping in regards to the Milwaukee food assessment, even though they both evaluate several food assessment case studies. More recently, it seems like most community food assessments include some sort of spatial analysis such as mapping all the food stores in an area, the distance between stores and neighborhoods, the concentration of stores in an area, the presence food stores in census tracts, the accessibility of stores by public transportation, or the residences of survey respondents reporting food insecurity. The prolific use of geographic information systems (GIS) for these types of analysis is likely due to the increasing availability of open source software on the Internet in the late 2000's.

Although GIS mapping is common in food assessments, there is not an agreed upon method for classifying different types of food stores, neighborhood boundaries, or even distance. Most mapping exercises start with collecting geographic information for stores from departments of agriculture or health and then "truthing" these classifications with store visits or phone calls. The actual classifications, however, differ greatly. Liese et al. used a store manager's stated classification (supermarket, grocery store, or convenience store) and gross sales to characterize stores (2007). Morland, Diez Roux, and Wing used NAICS codes for supermarkets and grocery stores versus convenience

stores; and food-service restaurants versus franchised fast food versus limited service restaurants (2006). The USDA Community Food Security Assessment Toolkit uses the definitions in Table 2 (Cohen, 2002). A study on rural food deserts, classified stores based on the number of employees (greater than 50 employees is a supermarket) (Blanchard & Lyson, 2006). None of these definitions actually indicate access to fresh, healthy, affordable food or the availability and quality of fresh produce, even though the groupings are meant to evaluate such outcomes comparatively.

Table 2: USDA Definitions for Store Classifications

Store Classification	Definition
Supermarkets	Offer a full range of foods, \$2 million or more in annual gross sales (including nonfood items)
Groceries	Offer a full range of foods, annual gross sales (including nonfood items) less than \$2 million
Convenience stores and grocery/gas combinations	Offer a limited range of foods, usually excluding fresh foods. These stores are generally aimed at supplementing larger stores and providing convenience in terms of proximity to shoppers and hours.
Other food stores	Includes health food stores, co-op food stores, produce routes, produce stands, general stores, and combination stores that sell food in addition to other goods
Specialty stores	Specialize in one or two product lines, such as produce, meats, or baked goods

More recent studies have chosen to perform food store assessments and audits with a rating scale based on the number of pre-selected food items available and their relative affordability. These food items vary across assessments, but are usually considered a healthy diet “market basket” or the USDA’s Thrifty Food Plan (Algert et al., 2006; Baker, Shootman, Barnidge, & Kelly, 2006; Block & Kouba, 2005; Bodor et al., 2010; Hendrickson, Smith, & Eikenberry, 2006; Horowitz, Colson, Hebert, & Lancaster, 2004; Short, Guthman, & Raskin, 2007). Some of these market baskets are extensive,

consisting of seventy-eight items, including high-fiber breads, low-fat dairy products, and lean meats (Baker et al., 2006) while others use a shorter list with less specific items. For example, Horowitz et al. looked at stores with diet soda, 1% or fat-free milk, high-fiber bread or low-carbohydrate bread, any fresh fruit, and green vegetables or tomatoes (2004). Hosler, Rajulu, Fredick, and Ronsani characterized stores based on the number of different fresh fruits and vegetables available in the stores (2008). It can be easily argued that these later indicators hardly represent a healthy diet, however, it is generally accepted that adequate access to fresh fruits and vegetables could proxy for adequate access to other healthy food items.

Compounding the lack of consistency in food access assessments is the disagreement on how to classify neighborhoods and what effect these classifications have on determining proper access. Most studies use census block tracts as neighborhoods (Baker et al., 2006; Berg & Murdoch, 2008; Morland et al., 2006) or zip codes (Alwitt & Donley, 1997). Within these studies, some measure distance to grocery stores and supermarkets from the tract boundaries (Block et al., 2004; Bodor et al., 2010; Kaufman, 1999), while others use the centroid of the tract for calculating distance (Blanchard & Lyson, 2006; Sharkey & Horel, 2008). Others still, rate access to fresh, healthy food based on whether or not a supermarket is located within each tract boundary (Bodor et al., 2010). Most of these studies are criticized for using this type of definition of neighborhood since it does little to capture any person's actual access. Someone could live across the street from a full-service grocery store but be classified as underserved according to these definitions. Instead, with the use of GIS, researchers are starting to map store locations and draw a boundary around the store, indicating that anyone living

outside of that boundary has inadequate fresh, healthy food access (Algert et al., 2006; Apparicio, Cloutier, & Shearmur, 2007; California Center for Public Health and Advocacy, PolicyLink, and the UCLA Center for Health Policy Research, 2008; Clarke, 2002; Morton & Blanchard, 2007).

An appropriate distance for a boundary around a store is also a matter for disagreement. As a general rule of thumb, researchers use “walkable” distances for urban food areas and ten miles (Blanchard & Lyson, 2006; Morton & Blanchard, 2007) or five miles (California Center for Public Health and Advocacy, PolicyLink, and the UCLA Center for Health Policy Research, 2008) for rural areas as an acceptable amount of travel burden, but walkable has many definitions. For example, Algert et al. define 0.8 km or 15 minutes as a walkable distance in Los Angeles (2006); Apparicio et al. use 1.0 km in Quebec (2007); Bodor et al. use 100 m in New Orleans and Berg and Murdoch use 1.0 mile in Dallas (2008), but several use 0.5 miles. (Block et al., 2004; California Center for Public Health and Avocacy, PolicyLink, and the UCLA Center for Health Policy Research, 2008). Assigning a concrete distance to these studies certainly makes the anlysis easier and more objective, but “walkable” depends on so much more than distance. It is also a product of health, neighborhood safety, and age. While a healthy adult may be able to walk fifteen minutes to and from a store carrying groceries, taking a two-year old along makes the trip exponentially more difficult. These distances also do not account for public transportation options or car ownshership. In this regard, the idea of “travel time” burden is more comprehensive, but harder to measure. Some papers argue that an acceptable amount of travel time is 10-15 minutes, regardless of mode of travel (Helling & Sawicki, 2003).

The definitions used in a study greatly affects the results of the research. As an example, in a study of post-Katrina New Orleans, several different definitions were used, resulting in as low as 17% and as high as 87% of the studied neighborhoods being classified as food deserts depending on the construct used (Rose et al., 2009). Regardless, poor food access is almost always correlated to poor diet in lower income populations. However, the way a problem is defined ultimately affects the way a solution is defined and implemented. If the problem is defined as a lack of large corporate supermarkets, then the only solution can only be additional supermarkets. Instead, if the entire food system and community is examined and consumer perceptions are incorporated into a study, additional opportunities for alternative forms of food access that contribute to community sufficiency and resiliency may be revealed.

CHAPTER 3: METHODOLOGY AND MODEL RESULTS

3.1 Longmont Community Food Coalition and Assessment

As discussed in Chapter 1, LiveWell Longmont is a multi-stakeholder coalition supported by LiveWell Colorado. One of LiveWell Longmont's subgroups was convened in the spring of 2009 in order to develop and carry out a community food assessment. This subgroup is comprised of City of Longmont staff, Bolder County staff, local organizations, food assistance groups, food-based business owners, the LiveWell Longmont coordinator, and food systems consultants from WPM Consulting, LLC. This subgroup oversaw the Longmont Community Food Assessment as carried out by the WPM Consulting staff over the course of 2009 and 2010.

The entire assessment consisted of small focus groups at community organizations and meetings throughout the city, community listening sessions and interviews at community events and then a paper/internet survey. The focus groups and listening sessions were analyzed separately from the survey in order to better inform the survey questions. The final report for the community food assessment, however, incorporated the results of the survey, focus groups, listening sessions, and some mapping activities. The final report is available by request from WPM Consulting, LLC.

The findings of the assessment and additional funding in 2011 led to the transition of the community food assessment subgroup into the Longmont Community Food Coalition. This coalition is responsible for the development and implementation of

community food projects and initiatives based on the results of the assessment. These collective efforts are currently being visualized and referred to as a “neighborhood based food system.” During the visioning process, it became clear that a deeper understanding of the Longmont food system and underlying food access issues was required. Therefore, the survey data was re-examined and re-evaluated to gain additional information. This re-examination is the focus of the research presented here.

3.2 Survey and Data Collection

The 2010 LiveWell Longmont Community Food Assessment survey was influenced heavily by the goal of increasing fruit and vegetable consumption in Longmont since fruit and vegetable consumption is consistently reported to be far below the USDA’s recommended nine servings per day. Previous studies have measured food access using a household dietary diversity score, for which fruits and vegetables make up four of the twelve food groups evaluated (Swindale & Bilinsky, 2005). However, for the purpose of the current research project, self-reported fruit and vegetable consumption was used to indicate adequate food access. The survey was informed by the collection of existing reports about healthy eating, hunger, and food systems, as well as the key findings of Longmont based focus groups and community meetings. The community food assessment subgroup of the LiveWell Longmont working group identified common themes for the survey and a food assessment consultant (from WPM Consulting, LLC) researched other food assessment tools.

With the idea of project affordability in mind, the subgroup decided to create a web based survey through Student Voice and disseminate it through email lists, community connections, newsletters and survey stations, and advertised it in newspapers.

An early evaluation of the survey's demographic data showed an under representation of the Spanish-speaking Latino and Hispanic population when compared to the 2008 American Community Survey of Longmont. To remedy the lack of information from this population, a self-administered paper survey was created in Spanish and English which was disseminated at a community soup kitchen, a Cinco de Mayo festival, health clinics, and parent-teacher association meetings. A copy of the Internet survey is available in Appendix 1.

3.3 Research Questions and Models

Summary statistics are useful to show overall averages and frequencies of responses, but to explore the interactions of key variables (how income influences access issues), more structured statistical modeling is important. In this case, ordered probit regression analysis (a maximum likelihood estimation conducted in Stata 9) was utilized in order to determine whether or not distance to a primary shopping location or mode of travel affected the (1) level of perceived challenge in purchasing or receiving fruits and vegetables and (2) consumption of fruits and vegetables.

A characterization of an ordered probit model is as follows:

$$y^* = x'\beta + \varepsilon$$

which is interpreted as the probability of observing choice y given a set of attributes x , as follows:

$$\tilde{P}_i = F(\tilde{z}_i) = F(x_i\tilde{\beta})$$

The exact research questions for ordered probit modeling are:

- 1) Are a buyer's perceived challenges influenced by their primary shopping location, distance to shopping location, access to transportation and/or demographics? (see Model 1)
- 2) Is an individual's consumption of fruits and vegetables influenced by these same factors? (see Model 2)

$$Model(1) : \tilde{P}_{Challenge} = F(\tilde{z}) =$$

$$F(\tilde{\beta}_0 + \tilde{D}_{1-9} Store + \tilde{D}_{10-13} Trans + \tilde{\beta}_1 Dist +$$

$$\tilde{D}_{14} Gender + \tilde{\beta}_2 Age + \tilde{\beta}_3 Edu + \tilde{\beta}_4 HHI + \tilde{D}_{15} Lang + \tilde{D}_{16-20} Ethn)$$

Dependent Variable:	Independent Variables:
Reported challenge in acquiring fruits and vegetables (Challenge)	Primary source of fruits and vegetables (Store)
	Approximate distance to a primary source of fruits and vegetables (Dist)
	Mode of transportation (Trans)
	Select demographic information (Gender, Age, Edu, HHI, Lang, Ethn)

$$\text{Model (2)} : P_{F\&V} = F(\tilde{z}) =$$

$$F(\tilde{\beta}_0 + \tilde{D}_{1-9} \text{Store} + \tilde{D}_{10-13} \text{Trans} + \tilde{\beta}_1 \text{Dist} + \tilde{\beta}_2 \text{DistBarr} + \tilde{\beta}_3 \text{BudBarr} + \tilde{D}_{14} \text{Gender} + \tilde{\beta}_4 \text{Age} + \tilde{\beta}_5 \text{Edu} + \tilde{\beta}_6 \text{HHI} + \tilde{D}_{15} \text{Lang} + \tilde{D}_{16-20} \text{Ethn})$$

Dependent Variable:	Independent Variables
Reported consumption of fruits and vegetables (F&V)	Primary source of fruits and vegetables (Store)
	Approximate distance to their primary source (Dist)
	Mode of transportation (Trans)
	Reported challenge in acquiring fruits and vegetables (TransBarr)
	Frequency of household budget as barrier to healthy diet (BudBarr)
	Select demographic information (Gender, Age, Edu, HHI, Lang, Ethn)

These dependent variables were selected based on the Longmont Community Food Groups interests. The independent variables in Model 1, however, were selected based on previous research. As discussed in Chapter 2, most studies on food access focus on types of retail food outlets available, distance to retail food outlets and access to transportation. The independent variables in Model 2, however, were chosen to align with Model 1 with the addition of the reported challenge of acquiring fruits and vegetables and the reported frequency of household budget acting as a barrier to healthy diet. These additional variables were chosen in order to examine the potential role challenge to access fruits and vegetables has on fruit and vegetable consumption, and also because of the continuous role household budget plays in household decision making. Families facing household budget constraints may view fresh fruits and vegetables as luxury goods, especially in light of less expensive, more processed alternatives. Furthermore, the combination of the

access to transportation and distance to a primary food retail outlet variables touch upon transaction costs associated with securing a healthy diet.

Using the results of the modeling exercise, descriptive statistics, and the summaries from the focus groups and community sessions, the following additional questions are answered:

- 1) Is access to healthy foods a problem in Longmont?
- 2) What solutions, if any, appear relevant and supported by the data?

3.4 Analysis

At the close of the survey, sixty-one paper surveys were completed in Spanish, one hundred thirty-one paper surveys were completed in English, and a total of seven hundred forty-eight surveys were completed by Longmont residents (eight hundred seventy one surveys were completed in total). ‘Very low’ and ‘low’ income populations and women were slightly over-represented in the survey results. Some surveys were incomplete or it was noted that an abundance of “Choose Not to Respond” were selected, so these observations were dropped. This is likely due to the incentives associated with completing the survey- a raffle entry for an iPod. All respondents that did not live in Longmont were also dropped. This results in approximately 525 observations for Model 1 and 517 observations for Model 2.

The survey questions of most interest, relating to the respondent’s primary source of fruits and vegetables, was written as a “check up to 3” with nineteen possible options. For this question (Question 2, Appendix 1), several possible answers were condensed to broader categories. The answers to Question 2 were then coded as dummy variables for individual categories (1=Grocery store, 0=Other, etc.). These categories and their

components are outlined in Table 3. Where the respondent chose “Other” and provided an answer, these answers were coded as categories, when appropriate. For example, a common “Other” answer was “Wal-Mart”, which was coded as a grocery store. Remaining “Other” answers, “Not applicable”, and “Choose not to respond” were dropped.

Table 3: Condensed Categories for Fruit and Vegetable Sources

Broad Answer Category	Possible Options on Survey
Grocery Store	Grocery Store
Natural food store	Natural food store
Ethnic outlet	Ethnic markets, fruterias
Fast food	Fast food restaurants, mobile vendors
Convenience store	Convenience stores/gas stations
Food aide	Food bank/pantry, given/donated to me
Meal delivery	Meal delivery program
Seasonal/Local	Farmers’ market, produce stands, community supported agriculture (CSA)
Gardens	Home garden, community garden
Other restaurants	Other restaurants

The same basic treatment was given to ethnicity. In this case, however, “Native Hawaiian and Other Pacific Islander,” “Black or African American,” “Multiracial,” and “Other” were condensed into “Other” due to their extremely low response rate (< 1%). Summary statistics for all variables used in the modeling exercises are shown in Tables 4 and 5.

For the purpose of ordered probit modeling, answers with clear ordering were kept as one variable. For example, as income categories increase so do their codes. Answers without a clear order or ranking were separated into different dummy variables, just like the responses to Question 2, outlined above. The predominate category for the

dummy variables served as reference group and were therefore dropped for the analysis.

The results of the modeling exercises are displayed in Table 6.

Table 4: Summary Statistics for Model 1, n= 525

Variable Name	Description	Freq.	% of Respondents	Mean	Std. Dev.	Var.	Min.	Max.
Stated Challenge to Access F&V	0=Not at All	318	60.60%	1.192	1.548	2.392	0	4
	1=Slightly	0	0.00%					
	2=Moderately	51	9.70%					
	3=Considerably	100	19.00%					
	4=A Great Deal	56	10.70%					
Primary Outlet F&V (1/0)	Natural Food Store	151	28.80%	0.288	0.452	0.205	0	1
	Ethnic Outlet	55	10.50%	0.105	0.304	0.094	0	1
	Fast Food	18	3.40%	0.034	0.182	0.033	0	1
	Convenience Store	6	1.10%	0.011	0.106	0.011	0	1
	Food Aide	79	15.00%	0.15	0.358	0.128	0	1
	Meal Delivery	9	1.70%	0.017	0.13	0.017	0	1
	Seasonal/Local	135	25.70%	0.257	0.438	0.191	0	1
	Gardens	85	16.20%	0.162	0.369	0.136	0	1
	Other Restaurant	44	8.40%	0.084	0.452	0.205	0	1
Distance to Primary Outlet	0=1-5 Blocks	61	11.60%	1.733	1.013	1.024	0	4
	1=1/2-1 Mile	143	27.20%					
	2=1-3 Miles	227	43.20%					
	3=3-5 Miles	63	12.00%					
	4=Over 5 Miles	31	5.90%					
Mode of Transportation (1/0)	An Other's Car	25	4.80%	0.048	0.213	0.045	0	1
	Bike	8	1.50%	0.015	0.123	0.015	0	1
	Walk	14	2.70%	0.026	0.161	0.026	0	1
	Bus	8	1.50%	0.015	0.123	0.015	0	1
	It is Delivered	2	0.40%	0.004	0.062	0.004	0	1

Variable Name	Description	Freq.	% of Respondents	% of Population Compared to 2008 ACS or 2010 Census	Mean	Std. Dev.	Var	Min	Max
Age	In Years	--			45.251	12.249	150.25	18	88
Ethnicity (1/0)	American Indian or Native	11	2.10%	1.1%	0.02	0.141	0.02	0	1
	Asian	4	0.80%	3.2%	0.017	0.131	0.017	0	1
	Latino or Hispanic	88	16.80%	24.6%	0.208	0.406	0.165	0	1
	Other	20	3.80%	2.5%	0.038	0.192	0.037	0	1
	Choose Not to Respond	4	0.80%		0.008	0.087	0.008	0	1
Education	0=Some High School	44	8.40%	6.5%	3.154	1.973	3.913	0	7
	1=High School Graduate/GED	78	14.90%	19.3%					
	2=Some College	114	21.70%	24.4%					
	3=Associate's Degree	48	9.10%	7.5%					
	4=Bachelor's Degree	118	22.50%	23.9%					
	5=Some Graduate School	22	4.20%						
	6=Graduate Degree	83	15.80%	13.3%					
HH Income	7=Post-graduate Degree	18	3.40%						
	0=Less than \$2500	44	8.40%		4.55	3.028	9.156	0	9
	1=\$2500-14999	63	12.00%	10%					
	2=\$15000-27499	50	9.50%	9%					
	3=\$27500-39999	70	13.30%						
	4=\$40000-52499	59	11.20%						
	5=\$52500-64999	42	8.00%						
	6=\$65000-77499	30	5.70%						
	7=\$77500-89999	48	9.10%						
8=\$90000-99999	17	3.20%							
9=\$100000 and Over	102	19.40%	25%						

Language Survey Was Taken In (1/0)	0=English	492	93.70%		0.063	0.243	0.059	0	1
	1=Spanish	33	6.30%						
Gender (1/0)	0=Male	115	21.90%		0.781	0.414	0.171	0	1
	1=Female	410	78.10%						

Table 5: Summary Statistics for Model 2, n=517

Variable Name	Description	Freq.	% of Respondents	Mean	Std. Dev.	Var.	Min.	Max.
Stated Frequency of Consumption	0=Everyday	95	18.38%	2.605	1.158	1.340	0	5
	1=4-6 days a week	146	28.24%					
	2=1-3 days a week	188	36.36%					
	3=1-3 days a month	57	11.03%					
	4=Less than 1 day a month	18	3.48%					
	5=Never	13	2.51%					
Primary Outlet F&V (1/0)	Natural Food Store	151	29.21%	0.292	0.455	0.207	0	1
	Ethnic Outlet	54	10.44%	0.104	0.306	0.094	0	1
	Fast Food	18	3.48%	0.035	0.183	0.034	0	1
	Convenience Store	6	1.16%	0.012	0.107	0.011	0	1
	Food Aide	78	15.09%	0.151	0.358	0.128	0	1
	Meal Delivery	9	1.74%	0.017	0.131	0.017	0	1
	Seasonal/Local	135	26.11%	0.261	0.440	0.193	0	1
	Gardens	85	16.44%	0.164	0.371	0.138	0	1
	Other Restaurant	44	8.51%	0.085	0.279	0.078	0	1

Distance to Primary Outlet	0=1-5 Blocks	58	11.22%	1.745	1.008	1.016	0	4
	1=1/2-1 Mile	140	27.08%					
	2=1-3 Miles	226	43.71%					
	3=3-5 Miles	62	11.99%					
	4=Over 5 Miles	31	6.00%					
Mode of Transportation (1/0)	An Other's Car	24	4.64%	0.046	0.211	0.044	0	1
	Bike	8	1.55%	0.015	0.124	0.015	0	1
	Walk	14	2.71%	0.027	0.162	0.026	0	1
	Bus	7	1.35%	0.014	0.116	0.013	0	1
	It is Delivered	2	0.39%	0.004	0.062	0.004	0	1
Stated Challenge to Access F&V	0=Not at All	316	61.12%	1.176	1.542	2.378	0	4
	1=Slightly	0	0.00%					
	2=Moderately	49	9.48%					
	3=Considerably	98	18.96%					
	4=A Great Deal	54	10.44%					
Frequency of Household Budget as Barrier	1=None of the Time	201	38.88%	2.451	1.471	2.163	1	5
	2=Less than half of the time	105	20.31%					
	3=Half of the time	58	11.22%					
	4=More than half of the time	83	16.05%					
	5=All of the time	70	13.54%					

Variable Name	Description	Freq.	% of Respondents	% of Population Compared to 2008 ACS or 2010 Census	Mean	Std. Dev.	Var.	Min	Max
Age	In Years	--			45.306	12.291	151.065	18	88
Ethnicity (1/0)	American Indian or Native	11	2.13%	1.1%	0.021	0.144	0.021	0	1
	Asian	4	0.77%	3.2%	0.008	0.088	0.008	0	1
	Latino or Hispanic	84	16.25%	24.6%	0.162	0.369	0.136	0	1
	Other	20	3.87%	2.5%	0.039	0.193	0.037	0	1
	Choose Not to Respond	4	0.77%		0.008	0.088	0.008	0	1
Education	0=Some High School	40	7.74%	6.0%	3.188	1.968	3.874	0	7
	1=High School Graduate/GED	76	14.70%	22.8%					
	2=Some College	113	21.86%	20.6%					
	3=Associate's Degree	48	9.28%	6.8%					
	4=Bachelor's Degree	117	22.63%	24.6%					
	5=Some Graduate School	22	4.26%						
	6=Graduate Degree	83	16.05%	13.3%					
7=Post-graduate Degree	18	3.48%							
HH Income	0=Less than \$2500	40	7.74%		4.580	3.013	9.077	0	9
	1=\$2500-14999	62	11.99%	10%					
	2=\$15000-27499	50	9.67%	9%					
	3=\$27500-39999	70	13.54%						
	4=\$40000-52499	59	11.41%						
	5=\$52500-64999	41	7.93%						
	6=\$65000-77499	30	5.80%						
	7=\$77500-89999	47	9.09%						
	8=\$90000-99999	16	3.09%						
9=\$100000 and Over	102	19.73%	25%						

Language Survey Was Taken In (1/0)	0=English	488	94.39%		0.056	0.230	0.053	0	1
	1=Spanish	29	5.61%						
Gender (1/0)	0=Male	113	21.90%		0.781	0.414	0.171	0	1
	1=Female	404	78.10%						

Table 6: Results from Econometric Modeling

	Model 1: Challenge to Get F&V			Model 2: Frequency of Consumption of Enough F&V		
	Coef.	Std. Err.	z	Coef.	Std. Err.	z
Grocery Store						
Natural Food Store	0.079	0.135	0.590	-0.313	0.113	-2.760***
Ethnic Market	0.080	0.223	0.360	-0.462	0.213	-2.170**
Fast Foot Restaurant	-0.526	0.346	-1.520	-0.185	0.285	-0.650
Convenience Store	0.292	0.513	0.570	0.000	0.459	0.000
Gardens	-0.289	0.170	-1.700*	-0.179	0.134	-1.340
Other Restaurant	-0.152	0.239	-0.640	0.139	0.180	0.770
Food Aide	0.122	0.169	0.720	0.088	0.156	0.570
Seasonal/Local	0.225	0.139	1.610	-0.239	0.117	-2.040**
Meal Delivery	0.725	0.405	1.790*	0.077	0.370	0.210
Own Car						
An Other's Car	1.156	0.261	4.430***	0.000	0.248	0.000
Bike	0.525	0.406	1.290	-0.973	0.417	-2.330**
Walk	1.213	0.325	3.730***	0.045	0.305	0.150
Bus	0.841	0.400	2.100**	0.680	0.423	1.610

It is Delivered ¹						
Distance to Primary Outlet	-0.033	0.056	-0.600	-0.043	0.048	-0.900
Transportation/Distance as Barrier				0.024	0.037	0.640
Budget as Barrier				0.110	0.044	2.500**
Gender	-0.227	0.134	-1.690*	-0.457	0.118	-3.870***
Age	-0.007	0.005	-1.410	-0.007	0.004	-1.710*
Education	-0.073	0.039	-1.870*	-0.018	0.032	-0.560
HH Income	-0.090	0.026	-3.430***	-0.017	0.025	-0.700
Language Survey Was Taken In	0.320	0.274	1.170	-0.175	0.278	-0.630
Native Indian or Alaska Native	0.724	0.370	1.960*	-0.383	0.335	-1.140
Asian	1.913	0.587	3.260***	-1.486	0.702	-2.120**
Hispanic or Latino	0.340	0.187	1.820*	-0.050	0.167	-0.300
White						
Other Ethnicity	-0.008	0.293	-0.030	0.104	0.250	0.410
No Response Ethnicity	0.314	0.645	0.490	0.561	0.533	1.050
	Obs = 525 LR $\chi^2=192.330$ Prob > $\chi^2 < 0.000$ Pseudo R-squared=0.169			Obs = 517 LR $\chi^2=99.480$ Prob > $\chi^2 < 0.000$ Pseudo R-squared=0.065		

*** significant at the $\alpha=0.01$ level, ** significant at the $\alpha=0.05$ level, * significant at the $\alpha=0.10$ level

¹ The inclusion of “It is delivered” in the ordinal probit models resulted in two completely determined observations, unreliable standard errors and p-values of one. For this reason, this option was excluded from the modeling exercise.

3.5 Results

The results of the econometric modeling exercises are presented in Table 6. Nearly half of respondents reported a moderate to a great deal of challenge in purchasing or acquiring enough fruits and vegetables due to transportation restrictions or great distances and nearly 80% of respondents indicated that they do not eat the recommend amount of fruits and vegetables every day. The results from Model 1 indicate that those using alternative forms of transportation (another person's car, bus, walk, but not bike) report increased levels of challenge acquiring fruits and vegetables. Distance, however, was not significantly different from zero in both models, indicating that distance does not affect the perceived level of challenge an individual experiences acquiring fruits and vegetables, nor is it a predictor of an individual's fruit and vegetable consumption. The use of a meal delivery service is a slightly significant predictor of increased perceived challenge in acquiring fruits and vegetables but is insignificant in Model 2's results on consumption of fruits and vegetables.

Having a garden, whether backyard or community, is a significant predictor of decreased challenge in acquiring fruits and vegetables, but surprisingly, is an insignificant predictor of fruit and vegetable consumption. Furthermore, other primary sources of fruits and vegetables were insignificant in Model 1, but proved significant in Model 2, where individuals shopping at natural food stores, ethnic outlets, and seasonal sources such as CSAs, produce stands, and farmers' markets report eating enough fruits and vegetables with higher frequencies. Model 2 also indicates that those that bike consume enough fruits and vegetables with more frequency than any other primary form

of transportation. This suggests that bicycling, as a primary mode of transportation is not the expected barrier to accessing produce, but may also indicate that this lifestyle choice may be an important indicator of other healthy lifestyle choices (diet).

As expected, lower income levels are significant predictors of increased perceived challenge in accessing fruits and vegetables as well as more noted budget barriers on fruit and vegetable consumption. Gender and age also significantly predict fruit and vegetable consumption, where women and older individuals report eating enough fruits and vegetables at higher frequencies. Some self-reporting ethnicities- Latino or Hispanic, Native American, or Asian- are positively correlated with the perceived challenge in acquiring fruits and vegetables but are not correlated with consumption of fruits and vegetables. Finally, education was slightly significant in Model 1 but not in Model 2.

3.6 Discussion

All told, the results indicate the presence of food access issues in Longmont, Colorado. This is evident by 299 of 695 (43%) respondents indicating that they experience some level of challenge in accessing fruits and vegetables. However, sheer distance to a primary grocery outlet doesn't appear to be the problem, and it is unclear whether effective transportation systems are the issue. Instead, affordability and cultural accessibility are barriers worth considering with policy or program efforts. These policy and program interventions focus primarily on stimulating economic development by reducing barriers to entry and/or supporting and creating demand through education and programming.

Several findings from this study are considered robust and worth considering. Of course, the significant role of household income in food access was expected. Given the dispersed nature of urban/suburban interfaces, it was not surprising to see that an overwhelming majority of survey respondents owned their own cars and that distance was not considered a significant barrier to food access. This could also be the cause of the inconclusive role that modes of transportation play in research on food access issues. The rising Hispanic and Latino population in Longmont and across the country also indicates that discussions of race, ethnicity, and public health cannot remain bilateral.

Common solutions to food deserts and food access issues focus heavily on spatial factors, including increasing the density of primary food outlets, decreasing the concentration of fast food restaurants, or increasing modes and options for travel. Instead, proposed projects and solutions should run the whole spectrum of initiatives, from widespread policy and planning code change to reduce barriers to market entry; Pigovian taxes to change behavior and raise revenues for intervention programs; supporting and creating demand and providing complete information through public educational campaigns and community based projects; to private sector solutions like home delivery businesses and supermarket-run transportation systems. Several of these solutions are discussed in more detail in Chapter 4.

Mark Winne (2008) writes about the need for community economic development to intervene where the private market fails to provide, “with respect to food, community economic development strategies require that nonprofit organizations enter the marketplace, run a food enterprise in a businesslike way, and provide for as much community participation and benefit as possible.” Unfortunately, the endeavor he is

referring to was a neighborhood cooperative supermarket that closed its doors to business within two years of opening due to an inability to compete with larger markets despite being located in a well researched and supported market area. Winne further states that most neighborhood grocery cooperatives fail unless they also appeal to a high end, well-educated consumer base (even if one purpose is to provide access to all).

Additional grocery stores are unlikely to increase food access in Longmont given that the city already supports sixteen supermarkets, sixteen specialty food stores, and eighteen conveniences and liquor stores (Economic & Planning Systems, Inc, 2006). This means that there are already 1.45 food stores per square mile or 2.27 retail outlets per square mile including convenience stores.

When survey respondents were asked what would make it easier to consume more fruits and vegetables, the most popular responses, across all income categories, were “less expensive”, “more farmers’ markets”, and/or “more time to prepare/cook them,” in order of decreasing popularity. The least popular categories were, “more convenience stores that sell them,” “having someone to cook for/eat with,” “bus routes or shuttle services to places that sell them,” and “more stores that carry produce from my culture,” in order of decreasing popularity.

Since the study results indicate that more grocery stores and better transportation options are unlikely solutions to the food access issues, the Longmont Community Food Coalition has decided instead to pursue local food system and “public produce” solutions. These involve creating more opportunities for local vegetable farmers to sell their produce within city limits, in addition to the weekly farmers market. Plans are currently being made to create community and collaborative gardening opportunities available in

high traffic areas such as at the Ed and Ruth Lehman YMCA and other community organizations. Moreover, new access models supported by engaged production areas will be accompanied by appropriate health, nutrition, and cooking programming. The objective of these activities is to increase fruit and vegetable consumption, engagement and access across all socioeconomic classes, but especially among lower income groups and the Hispanic and Latino population. To this end, programs and their materials will be available in English and Spanish.

Some policy barriers to these programs are being considered at this time. The use of residential lands for commercial purposes such as gardening for commercial sale and sales on residential sites are currently against city code. Fortunately, the City of Longmont is considering classifying mini-farmers' markets and produce stands as "accessory uses" for some residential zones pending the results of the 2011 produce stand pilot season which would allow commercial sales on residential properties. In addition, the City is reconsidering antiquated code that does not allow mobile vending trucks inside city limits. The proposed revisions would allow mobile vending of prepared foods, "hot trucks", as well as fresh produce vending. Fortunately, the City does not regulate gardening for non-commercial purposes and already has a licensing process in place for backyard hen laying setups. Additional policy barriers will be evaluated with the support of the City as they emerge.

Despite the relative ease that new programs are being piloted with, economic accessibility is a continuing concern with no clear resolution. Sliding price scales on produce and programs is another option being considered. Studies conducted by the USDA's Economic Research System find that targeted coupon campaigns are more

effective than price discounts in increasing fruit and vegetable consumption while also providing additional marketing and education about the benefits of eating fruits and vegetables (Dong & Leibtag, 2010). A new Michigan based program called “Double Up Food Bucks,” is yielding promising results with funding from Wholesome Wave. Under this program, anyone using SNAP benefits at a farmers market is given additional farmers’ “market bucks” to match their request at the EBT machine. The efficacy of this program has yet to be determined, but its continually increasing use and funding suggests that it is having some effect (Fair Food Network, 2010). These “market bucks” and coupons are other ideas being considered in Longmont as well as a type of discount buying club system. Additional details have yet to be fully explored.

The summer of 2011 will be the pilot season for many of the Community Food Coalition programs. Evaluation support provided by LiveWell Colorado will ensure that these programs are properly evaluated and the results will be shared in some public venues. These programs are meant to serve as a model for other municipalities struggling with some of the same issues.

Since the purpose of the original survey instrument was neither to assess food access specifically nor to be particularly scientific, not all results can be considered valid or applicable to other areas. Although meeting leaders were trained before conducting focus groups and listening sessions, and volunteers were instructed not to help survey respondents, some survey bias is suspected. The lack of a random sampling is also cause for concern. This is a drawback to community-based research that relies on volunteer help and community networks to create survey instruments and gather data. Overall, it is unlikely that the results from this study and the modeling exercises are generalizable. The

results, however, may provide motivation for additional research regarding food access and food environments in suburban areas. Additional research could verify that the underlying causes of food access issues and food insecurity in suburban areas are unique to suburban areas and therefore require unique solutions.

CHAPTER 4: BEST PRACTICES AND MODELS

The following chapter explores best practices and models for addressing food access issues in multiple communities along with critiques. These models were chosen based on information readily available, popularity among practitioners and community food advocates, relevancy to Longmont and suburban areas, and/or innovative contributions to the field. Descriptions of the models are followed by a brief discussion about their applicability to Longmont, Colorado, and what progress has been made on these projects either in Longmont or in Colorado in general.

4.1 Private Sector Solutions

4.1.a Large Supermarkets and Discount Supercenters

The most classic example of discount supercenters and other large food retail outlets are Wal-Mart Supercenters and Target Supercenters. Both of these retailers sell a wide range of household goods and food products, leveraging economies of scale and buying power in order to sell goods at a low price. Although Wal-Mart has mostly located in rural areas with few competitors and little constraints on space, the large retailer is starting to move into cities such as Chicago and New York (Coffey, 2010). The economic costs and benefits of these types of supercenters, especially Wal-Mart is the focus of many extensive papers, but they have resulted in few clear conclusions. However, it is generally recognized that these types of stores increase food access

therefore public health, especially for low-income individuals in food deserts. This is achieved both by the store itself opening, but also by anchoring a retail area and attracting additional, smaller, specialty retailers such as Trader Joe's (Gallagher, 2008).

These large retailers can also offer a variety of services and stores that an independent grocer might not be able to. For Wal-Mart, these include not just supercenters, but also "mini-markets" with drive-through pick-up lines for online orders, Internet shopping and delivery, and "market side" stores which offer freshly prepared meals and bakery items. Furthermore, with the support of First Lady Michelle Obama, Wal-Mart composed a comprehensive plan to make healthy food items more affordable and recognizable, while also carrying more healthy foods. More information on this initiative is available on Wal-Mart's Health & Wellness webpage, <http://walmartstores.com/pressroom/news/10514.aspx>.

Critics of giant food retailers such as Wal-Mart, Target, and Krogers, insist that the dedication of these retailers to food access issues is nothing more than a self-interested land grab in recessed urban areas. Since these retailers have more resources on hand and better access to capital, they can pursue tax-incentives, entitlements, and grant opportunities, such as the Health Food Financing Initiative, faster than community groups, therefore threatening to displace possible local solutions (Wang, Holt-Gimenez, & Shattuck, 2011). This is contrary to the food justice and sovereignty movement.

Regardless, supercenters increase food access and public health in areas devoid of other food retailers. This is typically only in rural or urban areas, rarely in suburban areas. Longmont, Colorado already has two Wal-Marts, one of which is a supercenter. The opening of an additional supercenter is unlikely to increase food access in Longmont,

regardless of where it is located. This will likely be true for any area suffering from chronic food insecurity but not due to a lack of retail options.

4.1.b Farmers Markets, Community Supported Agriculture and Supported Shares

In some ways the local food movement, as captured by the prevalence of farmers markets and community supported agriculture (CSA) businesses, is a reaction to partially counter the corporate consolidation of the food system and large retailers. These are the place-based solutions that food advocates call for since they not only provide more and different food retail options, but also because they are assumed to keep local dollars in the local economy. This increases community food security and economic resilience (Wang et al., 2011).

In addition to providing additional, direct market opportunities to local farmers and value-added producers, farmers markets and CSAs are addressing economic barriers to healthy food access in ways that large corporations and retailer either cannot or are unwilling to. Many producers and small operators will offer individuals using SNAP benefits a discount on items or will double the consumers purchase. Many farmers' markets organizations offer the same benefits; see Chapter 3's discussion on "Double-Up" market bucks as well as the SNAP and WIC discussion, to follow. Some CSAs offer supported shares. These shares are typically subsidized by donations from other shareholders, which are sometimes matched by the producers themselves. Happy Heart Farm's Feeding the Families program takes this form of charity to a whole new level, asking families in need of support for \$50 or twelve volunteer hours in exchange for a full season's worth of fresh, organic produce (Happy Heart Farm, 2011).

Farmers' markets and community minded food businesses are not without their challenges. The seasonal nature of local agriculture can make food access a seasonal issue itself. Seasonality, along with limited business hours and limited options (which may be unfamiliar to some ethnic groups) make these market channels unreliable solutions to persistent food access issues. In addition, those wishing to pay with SNAP and WIC benefits must also have access to a farmers' market which is capable of accepting these forms of tender. In order to accept SNAP and WIC benefits, the market must possess an Electronic Benefits Transfer (EBT) machine, which can cost around \$1,500 a machine, have access to electricity, and have access to a reliable, secure server connection. Furthermore, the perception that farmers' markets sell only expensive, organic produce and are therefore limited to elite consumers prevents farmers' markets from fully serving underserved, low-income populations (Grace, Grace, Becker, & Lyden, 2005).

As mentioned in Chapter 2, Longmont's farmers' market is part of the Boulder County Farmers' Market group. Both markets, Longmont and Boulder, have EBT machines and many of the attending producers offer discounts for those paying with SNAP and WIC benefits. On average, however, the Longmont market runs a net loss and is subsidized by the Boulder market, which serves a wealthier clientele and typically charges the highest prices in the region (based on price data collected during the 2010 season, no formal write up available, price reports available through Boulder County Extension, <http://www.coopext.colostate.edu/boulder/ag/abm.shtml#prices>).

One of the projects currently being pursued by the Longmont Community Food Coalition is a produce stand at the local Ed and Ruth Lehman YMCA. In its pilot year,

one local farm, Ollin Farms, will support the produce stand. This stand will be open on Tuesday nights, complementing the Saturday morning farmers' market and will be located at a high traffic intersection in an otherwise residential neighborhood. This neighborhood is predominately Hispanic with a median household income of \$35,786 (Bloch, Carter, & McLean, 2011). There is some concern that this produce stand will not be financially viable, however the coalition and farmer are hopeful that the regular traffic associated with the YMCA will provide enough business to sustain the stand.

The local hospital, brewery, and some homeowners associations are also interested in hosting a weekly produce stand or mobile produce vending truck. The planners of the City of Longmont are currently reviewing and evaluating codes in hopes of making these activities clearly permissible and permit-able. Produce stands and mini-farmers markets currently fall into the "gray zone", where they are neither clearly legal nor illegal. Mobile vending trucks, however, are clearly illegal at this time. New codes will be introduced to the Longmont planning commission and City Council in the fall of 2011.

4.2 Public Sector Solutions

4.2.a SNAP and WIC

In classic food desert situations, it is common for the available food retailers to either not be SNAP/WIC eligible or to not sell healthy foods. In Detroit, for example, 30% of the population receives food assistance and 92% of SNAP/WIC retailers in Detroit do not sell fruits or vegetables (Fair Food Network, 2011). In these types of situations, increasing the number of farmers' markets and produce stands with EBT

machines could significantly increase access with proper marketing. This is a clear objective of the Farmers' Market Promotion Program and the Senior Farmers' Market Nutrition Program, grants supported by the USDA, which support the implementation of EBT services at markets and provides coupons for fruits and vegetables to seniors. The Fair Food Network in Michigan takes these programs one step further to offer "Double Up Food Bucks," to those using SNAP funds at a participating market. Under this program, a consumer may request, for example, \$10 in market money at the EBT booth, but will actually receive \$20. Early findings from the Fair Food Network report a triple increase in sales of Michigan grown produce to low-income individuals at farmers' markets (Hesterman, 2011, p. 61).

Although SNAP and WIC programs are federally appropriated and funded, it is up to individual states to allocate the funds. A common complaint heard from qualifying individuals in Colorado is that the application processes for these programs are overly difficult and burdensome. This could account for Colorado's dismally low SNAP participation rate, the fourth lowest in the country (USDA, 2010c), although WIC participation rates are rather high. A 2010 and 2011 policy priority for the Healthy Eating and Active Living (HEAL) policy council, hosted by Hunger Free Colorado and LiveWell Colorado, is to support efforts to revise and simplify the application process for SNAP and WIC benefits. The Colorado Food Systems Advisory Council has also listed supporting SNAP/WIC efforts in Colorado, including EBT infrastructure at farmers' markets as a 2011 priority.

4.2.b Healthy Food Financing Initiatives

With a mission of ensuring that everyone has access to fresh and nutritious food, The Food Trust started in Philadelphia in 1992. Since then, it has started several successful projects in Pennsylvania, New York, Louisiana, and Illinois, and is laying the groundwork for projects in New Jersey, Colorado, Massachusetts, Maryland, Mississippi, Georgia, Tennessee, Texas, Arizona, and Minnesota. One of their programs, however, stands to have an enormous lasting impact on the food security of communities across the country- the Pennsylvania Fresh Food Financing Initiative. This has led to similar initiatives in various states and likely instigated the national Healthy Food Financing Initiative (HFFI) (Food Trust, n.d.).

President Obama initially allocated \$400 million for the Healthy Food Financing Initiative in his 2011 budget. Although this was met with some resistance and legislation introduced in 2010 did not make it through the 111th Congress, the effort is moving forward. On May 11, 2011, the U.S. Department of Healthy and Human Services released a notice of funds available for \$10 million for “projects located in food deserts and designed to improve access to healthy, affordable foods,” (National Sustainable Agriculture Coalition, 2011). These funds are limited to private, non-profit community development corporations, but are not limited to typical food retailing options or specific regions. Therefore, these funds can help start and support projects like farmers markets, mobile vending projects, and other creative community based solutions, while also creating jobs and stimulating local economic development.

Unfortunately, the HFFI it may be limited to areas that are classically defined as ‘food deserts’ according to the Economic Research Service (ERS), which also limits the

effect funded projects can have on the community. The ERS has recently released a food desert locator to help identify census tracts that meet classic definitions. According to his tool, one of Longmont's census tracts is a food desert, and this tract borders the proposed produce stand on its north side, and also a Safeway grocery store on its west side (USDA ERS, n.d.). This is a prime example of how important it is to think beyond classic definitions of food access, since the census tract in question is unlikely to benefit from additional stores. In short, misdefinitions will overly limit the eligibility of innovative food access projects in some areas.

At this time, several groups have convened to facilitate a state healthy food financing initiative in Colorado. A final report of their assessment and a work plan is due in the fall of 2011. The HEAL policy coalition has listed supporting the HFFI efforts as a policy priority in 2011 and 2012. The combined support of national and state level HFFI may encourage creative and innovative public and private sector solutions to unique food access issues in Colorado.

4.2.c Fat Taxes and Thin Subsidies

Although anti-hunger advocacy groups widely denounce programs, policies, and taxes that would limit a consumers right to choose, many researchers, politicians, and economists discuss the use of taxes and subsidies to influence consumer behavior in the food marketplace. An example of this is a soda or soft drink tax. This Pigovian is designed to discourage unhealthy behavior- excessive soda consumption- while also raising revenues for intervention programs and to offset the costs to public health. Washington State, Washington D.C., Colorado, Maryland, and Virginia either have

specific soda taxes or do not exempt soda from regular sales tax. These “fat taxes,” as they are commonly called, are popular in discussions about how to reduce and prevent obesity and diet related health care costs. They do not, however, address food access and healthy eating. In fact they could be considered regressive since the grocery budget is a larger portion of a low-income household’s total budget, therefore price increases have a larger effect on low-income households.

The opposite idea, a “thin subsidy” addresses healthy eating and food access. A thin subsidy reduces the costs of fruits, vegetables, and other healthy foods. In one experiment conducted in a high school cafeteria, the prices of fruits and vegetables were cut by 50%. Sales of these items increase by two to fourfold and these increased sales made up for the total loss of revenue (French et al., 1997a). Similar studies have produced similar results (French, Jeffery, Story, Hannan, & Snyder, 1997b; French et al. 2001; Jeffery, French, Raether, & Baxter, 1994). This study suggests that reducing prices on fruits and vegetables may be an effective strategy to increasing economic access to healthy foods and it’s a strategy that business owners can implement without strong policy interventions.

The use of a tax or subsidy on food items can be a highly contentious political issue. A poll by Reuters found that 51% of those surveyed opposed a tax on junk foods such as soda, while 33% supported a tax, and 16% had no opinion. A similar poll by Kaiser Permanente found that 46% of those surveyed supported a tax if revenues supported health care overhaul and universal coverage (Hensley, 2010). At this time, there has been no discussion of policy measures along these lines in Longmont, however,

there has been some conversation amongst the producers about featuring lower prices at farmers' markets and produce stands located in lower income neighborhoods.

4.2.d Public Produce

As interest in and dedication to community food security and public health grows, there is an increasing need for local governments and municipalities to become involved.

Darrin Nordahl, author of *Public Produce*, makes a compelling argument when he writes:

If public officials want a healthier, more prosperous citizenry, and believe that access to fresh, locally sourced, wholesome, and affordable food is good for both the individual citizen and the community at large, then public officials can no longer remain idle. In the face of rising food insecurity and declining public health stemming from a poor diet, public officials need to pursue various methods of providing better food choices in their community (2009, p. 53).

One of the easiest and most straightforward ways for a local government to do this is to simply allow it. Some cities can have really strict codes against food production in front yards or perceived public places as well as policies against the use of food producing plants in city owned parks and open spaces. At the same time, some cities embrace urban agriculture and the production of food on public lands as necessary components to a healthy, sustainable community. Whether local governments play an active role in public food production by using fruit bearing trees in tree planting projects, or simply lease vacant lots and open spaces to community organizations, the cooperation and support of the local government is integral to the food security of a community.

The City of Chicago recognizes the role it plays in community food security and has taken several steps towards actively restructuring the food system in order to support public health. Among these projects was the transfer of land for two youth led, urban farms into a city land trust (City of Chicago, 2007). In Davenport, Iowa, city

maintenance staff spend some of their time maintaining community gardens and public food production areas. At times, the produce is available for sale or gratis through the Parking Office (Nordahl, 2009, pp. 45-49). The City of Des Moines, in a more proactive step, has worked with landscape architects in order to create community gardens on institutional grounds, as well as parks and public right-of-ways into fruit and nut orchards, complete with grape arbors, and raised beds for annuals. The motivations for these projects are not limited to beautification and rejuvenation, but go beyond that and proactively address community food security by creating a supply of publicly accessible produce (Nordahl, 2009, p. 65).

The City of Longmont is aware of the role local governments play in community security. With the support of LiveWell Longmont, several revisions to the city comprehensive plan have been proposed, including the addition of an entire community health and wellness chapter. This proposed chapter contains several proposed goals, policies, and strategies related to health food access. The relevant goals are as follows:

Goal CH-4: Promote safe and convenient access to healthy food.

Goal CH-5: Work with community partners to support a sustainable food system.

The proposed supporting policies and strategies for these goals are available in Appendix 2. These revisions are scheduled for evaluation for the late summer or early fall of 2011.

4.3 Third/Non-profit Sector Solutions

4.3.a Community Cafes/Pay-What-You-Can Eateries

The original “pay-what-you-can” restaurant model is contributed to One World Everybody Eats café in Salt Lake City, Utah, which opened its doors in 2003. Since then,

several similar cafés have opened, including SAME (So All May Eat) Café in Denver, Colorado, and now several Panera Cares Cafes in Portland, Oregon; Detroit, Michigan; and St. Louis, Missouri. Under this model, the cafes are non-profits with suggested donations instead of actual prices, donation boxes instead of cash registers, and some volunteer staff. The cafes largely depend on the over-payment by some in order to subsidize the under- or non-payment by others. Although Panera Cares provides suggested donations, SAME Café only asks that people pay what the meal is worth to them.

Critics of this model insist that there are no free lunches in a capitalistic, market economy; however, Ron Shaich insists that Panera Cares Cafes are not about free lunches, but instead “shared responsibility”. This cross-subsidization and price-discrimination is working in some areas. Panera Cares reports that these non-profit cafes bring in approximately 85% of the retail value of product sold with the St. Louis store being completely self-sufficient (Bowers, 2010), but that the Portland café only brings in 60% and may close soon (Kisse, 2011). Managers at both locations insist on the importance of location. The St. Louis café is located in a neighborhood where some residents can support it and some residents need it, whereas the Portland café is close to a high school with an open campus lunch policy (Bowers, 2010; Kisse, 2011). Before closing their doors though, Panera Cares of Portland has embarked on an education campaign in order to inform consumers that the café is not free and that those of limited means are invited to volunteer an hour in exchange for their meal.

Supporters of this model are drawn to the humanity and respect associated with it. Clean, healthy, safe prepared food is served in a non-discriminating manner, regardless of

socioeconomic status. The haves and the have-nots are served the same food and the same manner, only the check differs. In this regard, the owners of SAME Café are quoted as saying, “No matter their means, we treat people with dignity. They return the favor...We cook simple, high-quality food. We reject the notion that only an elite deserves to eat well,” (Horn, n.d.)

Much like the organic and local food movements, a pay-what-you-can operation depends largely on consumers who are concerned about their health and the health of their community since these are the customers that ultimately pay to keep the lights on. As long as an appropriate market exists, few barriers prevent other communities from following suit. These types of eateries have to follow food safety laws and planning and building codes, like any other restaurant, however operators can be more creative with their business model. Some cafes only offer sliding scale meals on certain days of the week or offer only one or two complementary menu items alongside a full retail menu. These last two models allow for-profit businesses to reach out to their entire community in an innovative way without necessarily risking life investments. The marketing and promotion alone is probably worth any loss in profits due to adopting this type of model. Furthermore, eateries that are dedicated to producing healthy and nutritious meals will likely exposing consumers with new vegetables, fruits, and whole grains in a low risk fashion, thereby increasing the likelihood that consumers will chose those foods again in the future.

More information about pay-what-you-can eateries can be found at <http://www.oneworldeverybodyeats.com/>.

4.3.b Community and Giving Gardens

As discussed in Chapter 2, community gardens and collective agriculture is probably as old as agriculture itself. Most community gardens are allotment gardens, meaning that an individual or a household rents a small plot of land away from their home in order to grow a small amount of produce, individually and for a nominal fee. This fee usually covers water expenses and sometimes a part-time manager only. Very rarely will a community garden cover additional expenses such as compost, mulch, or even tools. These start-up costs are one of the reasons why the role of community gardens in promoting food security is questioned. New trends in community gardening, increasingly becoming known as collective and giving gardening, have the potential to make stronger contributions to community food security since collective and giving gardens provide fresh produce for the gardeners and for those seeking emergency food assistance.

Under the framework of collective gardening, gardeners work together to cultivate a larger piece of land. These groups share tools, materials, seeds, labor, and harvests, year after year. This model overcomes many financial and logistical barriers associated with gardening. In addition, the skills required produce fruitful and bountiful crops are not acquired over night, a collective model nearly always ensures that someone with the needed skills to garden is available to teach others. This informal mentorship structure provides new gardeners with the time and the space to learn new skills and confidence in gardening before trying it on their own at home or in another location. Furthermore, collective models tend to produce more and different varieties of fruits and vegetables than the traditional model, allowing the gardeners to give food away to

friends, neighborhoods, food banks, and soup kitchens. Collective gardening can be more attractive and less burdensome than allotment gardening and can have a greater impact on community health.

Giving gardens take collective gardening to a whole new level. These gardens are typically hosted by a private landowner, organization, or gardener who wishes to make significant contributions to their community in the form of garden mentoring and produce. The host gardener manages the garden, provides as the supplies, and covers all the cost while inviting neighbors and local organizations to participate and learn. Typically, these gardens are larger than a single gardener would take on, therefore producing more food than a single gardener would eat. This excess produce is donated to a food assistance organization of choice.

When these types of giving gardens are supported by a non-profit or coalition, the overall impact on the community is greater. Take ‘The Growing Project’, a Fort Collins based non-profit, for example. The Growing Project supports five giving gardens by providing the host with access to basic supplies and expertise, and facilitates the donation of the produce to food assistance organizations in the area. The host manages the gardens, arranges for volunteer help, and covers water expenses. In the future, The Growing Project hopes to provide each host gardener with a library of tools for residents of the immediate neighborhoods to use as they attempt to grow their own gardens. Other organizations across the country support giving gardens in different ways. Sometimes land and water is donated to gardeners, sometimes just seeds and supplies. Regardless, the intention of giving gardens is always to intentionally grow excess food in order to donate it to those that need it most.

The Ed and Ruth Lehman YMCA in Longmont is exploring the idea of turning their 1.2-acre lot into a community garden. This exploration process has involved several meetings with local farmers and food assistance organizations, as well as community listening sessions with the surrounding neighborhood. Although the initial plan for the community garden area was an allotment garden, the results of the community listening sessions (shown in Table 6) indicate that the community is not interested in an allotment garden, but collective or giving gardens instead.

Table 7: Results of Community Listening Session Regarding Community Gardening at the Longmont YMCA. Fifty-nine people were interviewed.

“How would you like to be involved...” in the YMCA’s neighborhood based food system?	Positive responses	Percent positive response
I would like to support/volunteer in the garden in others ways (water, weeding ...).	42	71%
I would like to learn more gardening skills.	37	63%
I would like to work with others to grow food.	30	51%
I would like to volunteer in the garden in exchange for food.	29	49%
I would like to grow food for other low- income families.	11	19%
I would like to rent a plot to grow food for their own family.	8	14%

The survey results, the community listening notes, and the results of the modeling exercises indicate that those that garden, whether its personal or community, experience less challenge acquiring fruits and vegetables. Moreover, the Longmont community is interested in a community garden, but the overall impact that community gardens have on community food security is debatable. Research shows that community gardens improve social well-being, community cohesiveness, and physical activity; however, little

research has shown an overall increase in community health (Glover, Parry, & Shiness, 2005; Teig et al., 2009).

Unfortunately, it is commonly believed that gardening tends to be a gentrified activity. Linn (2009) claims that, "Community gardens can be seen as forerunners of urban gentrification — Trojan Horses setting in motion processes that will displace people of lesser means." While another study reports that 78% of respondents to a community garden survey and interview were self-reported white/Caucasian, indicating that use of public lands for community production purposes may not be an adequate food access solution for lower-income and non-white socioeconomic classes (Teig et al., 2009). The feasibility and efficacy of widespread public food production is still up for great debate and should be the focus of further, targeted research. A question of particular interest is what lasting affect targeted outreach through community gardening has on individuals, households, and neighborhoods.

4.4 Public and Private Community Collaborations

4.4.a Local, Regional, and State Food Policy Councils

In most municipalities, there are transportation, economic development, education, housing, and various other advisory groups and boards, however there is rarely an integrated food systems advisory board. Given the complex nature of the food system, food policy councils are an increasingly popular way for regions and states to address food and agriculture related policy in a systematic way, overcoming some of the perceived barriers of having different stakeholders work in their "silos" on issues that should really be handled across disciplines (for example, land planning and food safety).

The first food policy council was formed around 1975. In 2010, there were eighty-three policy councils across thirty-four states (Hesterman, 2011, p. 176).

These food policy councils are typically composed of stakeholders from every sector of the food system- agriculture, hunger relief, food retail, distribution, education, human services, etc. Without these multi-stakeholder efforts, the failings of a food system are addressed in isolation or are not addressed at all. In regards to food security, the CDC insists that when representatives from the various areas of the food system work together with state officials, the results of their efforts can be increased community health and access to healthy foods (2009; 2010). A comprehensive evaluation of food policy councils suggests that they have the, “potential to address public health through improving food access, addressing hunger and food security, and improving the quality of available food,” (Harper, Shattuck, & Holt-Gimenez, 2009). However, these same ideas could be raised with respect to other public issues such as resource management and economic development. Dalhberg, however, found that food policy councils that focus mainly on hunger issues fail and disband over time, whereas councils that focus on wide-sweeping sustainable food system reform tend to be more successful (1994).

Food policy councils cover a variety of issues and are composed of a variety of stakeholders- no two food policy councils are the same. In general, however, they have four primary functions:

- 1) To serve as forums for discussing food issues
- 2) To foster coordination between sectors in the food system
- 3) To evaluate and influence policy

- 4) To launch or support programs and services that address local needs (Harper et al., 2009)

The exact role of the food policy council depends on the basis of its formation and its charge. For example, the Colorado Food Systems Advisory Council was created by a state mandate in 2010, has specific state department appointments, and specific obligations. Grassroots initiatives formed by community advocates, however, have more freedom to base their agendas on grassroots issues. It should be noted that, when grassroots initiatives do not have the support of the government policies they are reacting to, they tend to be less successful (Harper et al., 2009).

Longmont does not have a specific food policy council. Instead, the Community Food Systems Coalition is advising the policy efforts taking place in Longmont, as review in previous sections. Based on the current state of the policy discussions underway in Longmont, the Community Food Systems Coalition will play a significant role in creating long lasting policy change in Longmont. The long term effect that these policy changes will have on Longmont's food security remains to be seen. Indeed, there is little to no evidence proving or disproving the long term effect that food policy councils have on their communities. Additional information about food policy councils and "get started" manuals can be found at www.foodsecurity.org/FPC.

4.4.b Food and Nutrition Education

Although many local food advocates operate under a "build it and they will eat vegetables" mentality, the truth is that supporting farmers and farmers' markets is not enough. Within a single generation, the culture of the United States has moved away

from one of scratch cooking to one of heat and eat. For those whose greatest culinary adventures start and end with the microwave, fresh vegetables represent a particularly great challenge. Without intervention at the point of decision and preparation, at the supermarket and in the home, the masses are doomed to microwavable dinners and fast food carry out as more and more cooking skills are lost across generations. Simple nutrition education is not enough, some families need hands on training in designing weekly menus, selecting healthy, fresh foods, and preparing meals from scratch, and all this in a manner that is compatible with busy schedules and picky eaters.

The Happy Kitchen/La Cocina Alegre is a cooking and education program that seeks to equip families and individuals with the knowledge and skills needed to create a menu and stick to it. Their programs are designed to do the following:

- 1) Teach skills and self-sufficiency in preparing healthy, economical meals that consist of whole grains, fresh produce and low-saturated fat ingredients.
- 2) Effect positive changes in shopping, cooking, eating habits and nutrition.
- 3) Reduce diet-related diseases (diabetes, heart-disease, certain types of cancer, etc.)
- 4) Promote the health and development of young children.

The classes are 1.5 hours long, are full of interactive cooking and food demonstrations, last for six weeks, and are peer led. At the end of every class, participants leave with a bag of groceries, recipes, and menu for the week. The Happy Kitchen/La Cocina Alegre is working with the University of Texas to evaluate the long-term effect these classes have on their participants, although the short-term affect is clear- overwhelmingly participants indicate that they are making healthier choices, eating more fruits and

vegetables, drinking more water, and are cooking at home. As the program extends beyond Austin, Texas, into other areas of the country, the target population is still low-income families and there is no program fee (Winne, 2010, pp. 114-117).

During the Longmont community listening session, people called loud and clear for cooking and nutrition education assistance that was accessible and practical. Too often, cooking classes are “Vegan Pastry 101” for \$300 a class, and not “how to cook and cut a carrot” or free. During the community gardening listening session, forty-four of fifty-nine people indicated that they were interested in the garden, but that they would also need to learn more cooking skills. After listening to all of these community comments, the Longmont Community Food Coalition decided to run cooking and food demonstrations alongside the weekly produce stands at the Ed and Ruth Lehman YMCA. These cooking demonstrations are free, will be held in English and Spanish, come with recipes in both languages, and will feature seasonal, fresh produce available at the price stand. These pilot demonstrations will provide the framework and develop the partnerships needed for the YMCA to host its own series of kitchen and cooking boot camps.

For more information on The Happy Kitchen/La Cocina Alegre, visit <http://www.sustainablefoodcenter.org/happy-kitchen> or read “God Didn’t Make Nachos” in Mark Winne’s *Food Rebels, Guerrilla Gardeners, and Smart-Cookin’ Mamas* (2010).

CHAPTER 5: DISCUSSION AND CONCLUSION

This final chapter includes some final recommendations for community food assessments and community food advocacy, as well as general policy recommendations to support community food security. For specific policy recommendations and projects are described in Chapter 4. The final conclusions review the importance of not limiting food access discussion to spatial characteristics.

5.1 Recommendations for Community Food Assessments, Advocacy, and Research

The strengths of Community Food Assessments, that they are designed and carried out by the community, are also its weaknesses. An examination of traditional definitions for food access and tools for evaluating food access clearly identifies shortcomings- an over-reliance on spatial indicators and set definitions leaves some neighborhoods underserved and limits the framework for discussing solutions. Depending too much on other's research and their chosen tools could limit a community's ability to identify and address its own, unique food system and access issues. The opposite situation, however, is just as bad. When a community performs a food assessment with little technical assistance or guidance and without consulting the literature, some of the same problems may persist along with creating new ones. These potential problems may include survey error, a lack of robust data, the use of indicators that are poor proxies for the underlying issue, or that use of uncommon indicators and variables, resulting in information that cannot be compared to other studies or help against national databases,

like census data. It is important that any community wishing to undertake a food assessment seek proper assistance with survey design and implementation, data analysis, and reporting. Much of this assistance is available through the USDA, the Community Food Security Coalition, consulting firms, non-profit organizations, and universities. Technical assistance will help ensure that the results of the assessment are robust and useful, both to the community in question and to the greater food security body of knowledge.

Furthermore, there is a great need for some aspects of community food assessments across regions to be consistent. An example of this is perhaps five to ten questions remain identical across assessments where the rest of a survey can be tailored to each individual community. This bi-modal survey design is necessary in order for researchers to ask questions across regions while enabling community food advocates to design programs tailored to the unique needs of their areas. In general, more detailed and consistent research is needed in order to move many aspects of community food security forward. Long-term evaluations of intervention programs are also sorely lacking and are needed. These imperative additions to the literature are only possible with cross-sector and region collaborations combined with technical assistance and guidance.

As WPM Consulting and LiveWell Colorado moves forward with community food assessments in various regions of Colorado, concerted effort is being made to retain some questions and indicators across assessments in order to compare and contrast regions. Within a year or two, WPM Consulting will have enough data to start asking more concise questions and make comparisons across regions and community typologies. These assessments and reports, along with the tools used, will be available to the public

in hopes of providing communities across the country additional resources as they endeavor to conduct their own community food assessments.

5.2 General Policy Implications

Even with concerted and collaborative efforts from community organizations and advocacy groups in the form of community food assessment and outreach programming, widespread community food security will never be actualized without wide-sweeping policy reform. Leaders in community food security and sovereignty would love to see the commodities title of the farm balanced or dismissed. Despite countless arguments supporting the need to diversify the food system and eliminate incentives to over produce commodities such as corn, wheat, and cotton, this type of reform is politically infeasible. Instead, more creative policy proposals are needed to encourage diversified, secure, and economically viable food systems.

Cities and towns dedicated to local food systems and security can initiate several policy changes to increase local food security, promote community resiliency, and support a local food system. Among these are the following:

- Evaluate and re-write zoning and planning codes that exclude backyard agricultural efforts within city limits
- Create a permitting process for small produce stands and mobile produce vending units in more areas
- Create permanent year-round space for direct to consumer farmers markets, support EBT machines in the marketplace

- Dedicate public lands to community gardens and other forms of fruit and vegetable production for public donation and private sale
- Prioritize worksite wellness and local food procurement in government offices

In addition, cities and towns can work with other municipalities in their regions to create food policy councils, food hubs, regional agriculture co-ops, and distribution systems in order to encourage and support strong and resilient local food systems, stimulate economic growth, and increase total community food security. Similar initiatives are possible at the state level. Collectively, state and regional food policy councils and organizations can advocate for more balanced policy reformed on the national level, prioritizing the production of fruits and vegetables for human consumption over the subsidizations of feed crops and other commodities. These efforts combined with creating a culture of public health and wellness, not one of cheap calories in the “let-them-eat-high-fructose-corn-syrup” model, are the first steps to ensuring good food is a secure, basic, human right. When the efforts of representatives from all sectors of the food system are focused on community and public health, then food security and justice will become a reality.

5.3 Conclusions

Food deserts have received increasing attention from those in the food security, public health and food system community, but the focus on spatial characteristics (distance) may need to shift to a broader set of place-based issues. This research shows that despite a dense concentration of supermarkets and other food outlets in the suburban area of Longmont, Colorado, a segment of residents still experience significant

challenges in securing fruits and vegetables. Instead of finding that distance is a significant barrier, analysis of Longmont's residents suggests that additional, non-traditional outlets (such as farmers markets and produce stands) and culturally appropriate outlets may be the most effective way to address perceived challenges in purchasing/receiving fruits and vegetables, but distance, education and income were less important.

These findings challenge common notions about food deserts and food access issues, as well as their recommended solutions. Large-scale grocery retailers, a commonly proposed solution to improving healthy food access, are decidedly not an appropriate solution for Longmont residents. Moreover, the finding that those who bicycle for transportation also consume more produce, suggests that some lifestyle choices may be made jointly as people decide on how those choices influence their health. The results of the community food assessment helped Longmont decide upon innovating new models for engaging targeted communities through community gardens, cooking education programs, building on a key community food coalition, and working closely with city government to evaluating zoning and planning regulations. In addition to addressing access issues, the engagement required for such projects may influence households to select a new bundle of lifestyle choices. This idea of addressing food access issues less as a function of households acting purely as consumers in markets, and more as eaters exploring a variety of ways to produce, create and plan for improved diets and lifestyles will have challenges, but this case study suggests such initiatives may be warranted and may be more appropriate than more traditional solutions to food access issues.

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APPENDICES

Appendix 1. Survey Instrument

NOTE: The “codes” written included here are the original codes for the raw data, not the codes used for the ordered probit modeling exercises.

Dear Longmont Resident,

THANK YOU for completing this survey telling us more about how you decide where and what foods to eat, and what changes you would like to see happen in your community to increase access to healthy foods. Your responses will provide LiveWell Longmont with information on how best we can accomplish our Mission: to ensure that healthy lifestyle choices are always available and convenient for all who work, live, play, and learn in our community.

We want to help Longmont become the healthiest community in the healthiest state. One of our most important goals is to help increase the percentage of Longmont residents who eat five or more servings of fruits and vegetables every day.

Please help us understand how we can achieve this lofty goal!

This survey should take 5-10 minutes of your time.

Please complete the survey no later than Wednesday March 31st, in order to be entered in a chance to win a \$25 coupon to an area grocery store! (There will be multiple winners.)

Why is LiveWell Longmont interested in food?

Unhealthy eating and physical inactivity are associated with an increased risk of a number of chronic health conditions including heart disease, stroke, diabetes, some cancers, and being overweight. Even though Colorado's percentage of overweight and obese citizens is much lower than national average percentage, the trend is going in the wrong direction. *Currently, only 42% of Longmont residents consume the recommended 5 servings of fruits and vegetables a day.* Improving nutrition is critical for improving the overall health of our residents.

How will survey results be used?

To understand how we can better support residents to access and consume more fruits and vegetables and other healthy foods, we recently convened a Community Food Assessment Subgroup. This Subgroup is examining issues of Longmont's local food system and our community's issues of access to healthy food. In addition to this survey, the Subgroup conducted a series of focus groups this past fall and plans on holding community listening sessions later in the year. What we learn will help inform LiveWell Longmont's strategies to improve healthy eating and will provide all our coalition partners with more information to guide their work.

Is this survey confidential?

Yes! You will not be asked to supply your name or any other identifying information in this survey. We do ask for demographic information so that we can better understand if there are differences in Longmont residents' ability to consistently access fruits and vegetables.

Interested in learning more about LiveWell Longmont?

In 2007, with funding from LiveWell Colorado, the Ed and Ruth Lehman YMCA convened a steering committee represented by the City of Longmont, St. Vrain Valley School District, Boulder County Public Health, Longmont United Hospital, Kaiser Permanente, the OUR Center, Sun Construction, and many others, to collaboratively coordinate this initiative. Please visit us at <http://www.livewellcolorado.org/community-initiatives> to learn more about us!

Required answers: 0 Allowed answers: 0

Q1 Do you currently live in the City of Longmont?

Yes[Code = 1]

No[Code = 2] (Go To End)

Required answers: 1 Allowed answers: 1

We would like to know more about the sources of food you purchase and eat. Please select your top three food sources for each question listed below.

Q2 Throughout the year, where do you **typically** get most of your fruits and vegetables?

(Check up to 3)

Grocery stores[Code = 1]

Natural food store[Code = 2]

Ethnic markets[Code = 3]

Fruterias[Code = 4]

Fast food restaurants[Code = 5]

Other restaurants[Code = 6]

Convenience stores/gas stations[Code = 7]

Mobile vendors[Code = 8]

Food bank/pantry[Code = 9]

Meal delivery program (e.g., Meals on Wheels)[Code = 10]

Given/donated to me[Code = 11]

Farmers' markets[Code = 12]

Produce stands [Code = 13]

Home garden[Code = 14]

Community garden[Code = 15]

Community supported agriculture share (CSA)[Code = 16]

Other (please specify)[Code = 17] [TextBox]

Not applicable[Code = 18]

Choose not to respond[Code = 19]

Required answers: 1 Allowed answers: 3

Q3 In addition, during **some seasons**, such as the summer or fall, where do you get fruits and vegetables? (Check up to 3)

Grocery stores[Code = 1]

Natural food store[Code = 2]

Ethnic markets[Code = 3]

Fruterias[Code = 4]

Fast food restaurants[Code = 5]

Other restaurants[Code = 6]

Convenience stores/gas stations[Code = 7]

Mobile vendors[Code = 8]

Food bank/pantry[Code = 9]

Meal delivery program (e.g., Meals on Wheels)[Code = 10]

Given/donated to me[Code = 11]

Farmers' markets[Code = 12]

Produce stands [Code = 13]

Home garden[Code = 14]

Community garden[Code = 15]

Community supported agriculture share (CSA)[Code = 16]

Other (please specify)[Code = 17] [TextBox]

Not applicable[Code = 18]

Choose not to respond[Code = 19]

Required answers: 1 Allowed answers: 3

Q4 From which locations would you like to get **more** of your fruits and vegetables?

(Check up to 3)

Grocery stores[Code = 1]

Natural food store[Code = 2]

Ethnic markets[Code = 3]

Fruterias[Code = 4]

Fast food restaurants[Code = 5]

Other restaurants[Code = 6]

Convenience stores/gas stations[Code = 7]

Mobile vendors[Code = 8]

Food bank/pantry[Code = 9]

Meal delivery program (e.g., Meals on Wheels)[Code = 10]

Given/donated to me[Code = 11]

Farmers' markets[Code = 12]

Produce stands [Code = 13]

Home garden[Code = 14]

Community garden[Code = 15]

Community supported agriculture share (CSA)[Code = 16]

Other (please specify)[Code = 17] [TextBox]

Not applicable[Code = 18]

Choose not to respond[Code = 19]

Required answers: 1 Allowed answers: 3

Q5 Where do you get most of your other food (**not** fruits and vegetables)? (Check up to 3)

Grocery stores[Code = 1]

Natural food store[Code = 2]

Ethnic markets[Code = 3]

Fruterias[Code = 4]

Fast food restaurants[Code = 5]

Other restaurants[Code = 6]

Convenience stores/gas stations[Code = 7]

Mobile vendors[Code = 8]

Food bank/pantry[Code = 9]

Meal delivery program (e.g., Meals on Wheels)[Code = 10]

Given/donated to me[Code = 11]

Farmers' markets[Code = 12]

Produce stands [Code = 13]

Home garden[Code = 14]

Community garden[Code = 15]

Community supported agriculture share (CSA)[Code = 16]

Other (please specify)[Code = 17] [TextBox]

Not applicable[Code = 18]

Choose not to respond[Code = 19]

Required answers: 1 Allowed answers: 3

Q6 How do you usually travel to where you get most of your fruits and vegetables?

My own car[Code = 1]

Someone else's car[Code = 2]

Bike[Code = 3]

Walk[Code = 4]

Bus[Code = 5]

It is delivered to me[Code = 6]

Other (please specify)[Code = 7] [TextBox]

Not applicable - I grow most of my own fruits and vegetables.[Code = 8]

Choose not to respond[Code = 9]

Required answers: 1 Allowed answers: 1

Q7 Approximately how far do you live from where you get most of your fruits and vegetables?

One to 5 blocks (less than a half mile)[Code = 1]

Between half mile and a mile[Code = 2]

Between 1 mile and 3 miles[Code = 3]

Between 3 miles and 5 miles[Code = 4]

Over 5 miles [Code = 5]

Choose not to respond[Code = 6]

Required answers: 1 Allowed answers: 1

Display if NOT Q6='Not applicable - I grow most of my own fruits and vegetables.'

Q8 To what extent does a lack of transportation or far distances make it challenging for you to get to where you purchase or receive most of your fruits and vegetables?

A great deal[Code = 5]

Considerably[Code = 4]

Moderately[Code = 3]

Slightly[Code = 2]

Not at all[Code = 1]

Choose not to respond[Code = 0]

Required answers: 1 Allowed answers: 1

Q9 In deciding what fruits and vegetables to eat, what factors are the most important to you? (Check up to 3)

Freshness/quality[Code = 1]

Prices[Code = 2]

Health/nutrition [Code = 3]

Convenience/ease of preparation[Code = 4]

Taste[Code = 5]

Familiarity [Code = 6]

Organic[Code = 7]

Locally-grown[Code = 8]

Popular in my culture[Code = 9]

Social justice (e.g., good workers' pay and working conditions, fair returns to farmers)[Code = 10]

Other (please specify)[Code = 11] [TextBox]

Choose not to respond[Code = 12]

Required answers: 1 Allowed answers: 3

Q10 How often do you eat five servings of fruits and vegetables or more a day? (A serving, for example could be one medium apple, ¼ cup dried fruit, or one cup of leafy vegetables)

Every day[Code = 1]

4 - 6 days a week[Code = 2]

1 - 3 days a week[Code = 3]

1 - 3 days a month[Code = 4]

Less than 1 day a month[Code = 5]

Never[Code = 6]

Choose not to respond[Code = 7]

Required answers: 1 Allowed answers: 1

Q11 In general, would you say it is challenging for you to get enough fruits and vegetables to provide you with 5 servings a day, every day?

Yes[Code = 1]

No[Code = 2]

Required answers: 1 Allowed answers: 1

Q12 What would make it easier for you to consume more **fruits and vegetables**? (Check up to 3)

Less expensive[Code = 1]

More available at my worksite or school[Code = 2]

More grocery stores near where I live/work[Code = 3]

More restaurants that offer them near where I live/work[Code = 4]

More convenience stores that sell them[Code = 5]

More street or mobile vendors[Code = 6]

Bus routes or shuttle service to places that sell them[Code = 7]

A community garden in my neighborhood[Code = 8]

More farmers' markets (e.g., more locations or market days, year-round markets)[Code = 9]

More produce or farm stands[Code = 10]

More provided at my food bank/food pantry/meal delivery program[Code = 11]

More stores that carry the produce that we eat in my culture [Code = 12]

More time to prepare/cook them[Code = 13]

Knowing how to prepare them[Code = 14]

Having someone to cook for/eat with[Code = 15]

If I/my family liked eating them[Code = 16]

Knowing how to grow my own food/having the space to grow food[Code = 17]

Other (please specify)[Code = 18] [TextBox]

Choose not to respond[Code = 19]

Required answers: 1 Allowed answers: 3

Display if NOT Q10='Every day'

Q13 In the past 12 months, how often were you able to afford enough food to feed you and/or your family all that you wanted?

All of the time[Code = 5]

More than half of the time[Code = 4]

Half of the time[Code = 3]

Less than half of the time[Code = 2]

None of the time[Code = 1]

Choose not to respond[Code = 0]

Required answers: 1 Allowed answers: 1

Q14 How often do you have to compromise on healthy or balanced food items because of budget concerns?

All of the time[Code = 5]

More than half of the time[Code = 4]

Half of the time[Code = 3]

Less than half of the time[Code = 2]

None of the time[Code = 1]

Choose not respond[Code = 0]

Required answers: 1 Allowed answers: 1

Q15 Would you like to include more **locally-produced** foods in your diet?

Yes[Code = 1]

No[Code = 2]

Don't know[Code = 3]

Choose not to respond[Code = 4]

Required answers: 1 Allowed answers: 1

Q16 What might make it easier for you to include more locally-produced foods in your diet? (Check up to 3)

More affordable[Code = 1]

Served at my worksite or school[Code = 2]

More farmers' markets or farm stands (e.g., more locations or market days, year-round markets)[Code = 3]

More provided at my food bank/food pantry/meal delivery program[Code = 4]

Sold at grocery stores I shop at[Code = 5]

More clearly labeled[Code = 6]

Grown in a wider variety/grown year-round[Code = 7]

Knowing more about how to grow it myself[Code = 8]

Knowing how to find it[Code = 9]

Having space to grow it myself[Code = 10]

Choose not to respond[Code = 11]

Required answers: 1 Allowed answers: 3

Display if Q15='Yes'

Q17 Please provide the following information:

Name of the street that you live on:[Code = 1] [TextBox]

The name of the nearest cross street to you:[Code = 2] [TextBox]

Zip Code:[Code = 3] [TextBox]

Required answers: 0 Allowed answers: 3

Q18 How many people currently live in your household (yourself included)?

1[Code = 1]

2[Code = 2]

3[Code = 3]

4[Code = 4]

5 or more[Code = 5]

Choose not to respond[Code = 6]

Required answers: 1 Allowed answers: 1

Q19 How many members of your household are under the age of 19?

0[Code = 1]

1[Code = 2]

2[Code = 3]

3 or more[Code = 4]

Choose not to respond[Code = 5]

Required answers: 1 Allowed answers: 1

Q20 What is your gender?

Male[Code = 1]

Female[Code = 2]

Transgender[Code = 3]

Choose not to respond[Code = 4]

Required answers: 1 Allowed answers: 1

Q21 What is your age?

(Please enter a whole number only)[Code = 1] [TextBox]

Required answers: 0 Allowed answers: 1

Q22 What is your ethnicity?

American Indian or Alaska Native [Code = 1]

Asian [Code = 2]

Black or African American [Code = 3]

Latino or Hispanic [Code = 4]

Native Hawaiian and Other Pacific Islander [Code = 5]

White [Code = 6]

Multiracial[Code = 7]

Other (please specify)[Code = 8] [TextBox]

Choose not to respond[Code = 9]

Required answers: 1 Allowed answers: 1

Q23 What is the highest level of education you have obtained?

Some high school [*Code = 1*]

High school graduate/GRE [*Code = 2*]

Some college [*Code = 3*]

Associate's degree [*Code = 4*]

Bachelor's degree [*Code = 5*]

Some graduate school [*Code = 6*]

Graduate degree [*Code = 7*]

Post-graduate degree [*Code = 8*]

Choose not to respond [*Code = 9*]

Required answers: 1 Allowed answers: 1

Q24 What is your annual household income?

Less than \$2,500 [*Code = 1*]

\$2,500 - \$14,999 [*Code = 2*]

\$15,000 - \$27,499 [*Code = 3*]

\$27,500 - \$39,999 [*Code = 4*]

\$40,000 - \$52,499 [*Code = 5*]

\$52,500 - \$64,999 [*Code = 6*]

\$65,000 - \$77,499 [*Code = 7*]

\$77,500 - \$89,999 [*Code = 8*]

\$90,000 - \$99,999 [*Code = 9*]

\$100,000 and over[Code = 10]

Choose not to respond[Code = 11]

Required answers: 1 Allowed answers: 1

Q25 Is there anything else you would like to share with us regarding food?

Yes (please explain)[Code = 1] [TextBox]

No[Code = 2]

Required answers: 1 Allowed answers: 1

Thank you for taking the time to complete our survey! With your input, we are learning how to help ensure that all Longmont residents can have consistent access to fresh, affordable, and healthy foods.

We will analyze our survey results in the spring and will post our findings on the city website and through our coalition partners later in the spring. We will be issuing a report of recommended strategies to improve access to healthy foods this summer that will take into account the surveys, focus groups, interviews, and other forms of community engagement. LiveWell Longmont would like to thank Colorado State University faculty and Extension staff for their assistance in developing and disseminating this survey.

In the meantime, if you have any questions or comments, please contact LiveWell Longmont Manager Melissa Trecocke Houghton at mhoughton@longmontymca.org.

Appendix 2: City of Longmont Proposed Additions to the Comprehensive Plan

Goal CH-4: Promote safe and convenient access to healthy food.

Policy CH-4.1: Promote increased consumption of healthy food.

Strategy CH-4.1(a): Partner with community organizations, like LiveWell Longmont and county health departments, to increase awareness about the value of consuming healthy food and to increase knowledge on growing and preparing healthy food.

Strategy CH-4.1(b): Partner with organizations to educate local restaurants on the economic and health benefits of purchasing locally grown food.

Strategy CH-4.1(c): Work with LiveWell Longmont and other community partners to develop and maintain a local, healthy food guide to highlight opportunities for obtaining healthy food.

Policy CH-4.2: Support opportunities for people to have access to fresh, healthy food within their neighborhoods.

Strategy CH-4.2(a): Establish baseline conditions by collecting data regarding existing food retail, including opportunities to purchase healthy food within neighborhood planning areas.

Strategy CH-4.2(b): Identify neighborhoods that have limited opportunities to procure healthy foods.

Strategy CH-4.2(c): Evaluate development regulations related to the siting of grocery stores, greenhouses, farmers markets, gardens and other opportunities for

neighborhood access to healthy foods to determine if there are barriers and/or diminished opportunities.

Strategy CH-4.2(d): Review and revise the Land Development Code to strengthen support for community gardens, licensed farmers' markets, and produce stands, so these uses can operate by right in increased locations throughout the City.

Strategy CH-4.2(e): Create opportunities for people to access to healthy food within their neighborhoods.

Policy CH-4.3: Encourage grocery stores and convenience stores to sell healthy food in underserved areas.

Strategy CH-4.3(a): Explore steps the City and our partners might take to encourage food retailers to sell more healthy food.

Strategy CH-4.3(b): Inventory food retailers that provide healthy foods in all neighborhoods and provide them information on underserved areas.

Strategy CH-4.3(c): Identify locations for new or expanded food retailers to sell healthy food within underserved neighborhoods.

Strategy CH-4.3(d): Provide demographic information to businesses that provide healthy food about the market potential in specific areas of the City.

Policy CH-4.4: Ensure that people can get to food retailers selling healthy food through a variety of transit options (e.g., pedestrian, bicycle, and public transit).

Strategy CH-4.4(a): Work with transit agencies such as, but not limited to the Regional Transportation District and Special Transit to ensure service from neighborhoods to food retailers selling healthy food.

Strategy CH-4.4(b): Identify ways mobile vending of fresh fruits and vegetables can be accommodated within the City.

Strategy CH-4.4(c): Work with partners to explore a program that pairs volunteers with people in need to take them grocery shopping so they can access healthy foods.

Goal CH-5: Work with community partners to support a sustainable food system.

Policy CH-5.1: Collaborate with the community to identify the appropriate role for the City to support the local food system.

Strategy CH-5.1(a): Periodically assess the City's role in supporting the local food system.

Policy CH-5.2: Coordinate land use planning efforts to ensure that land is allocated for various scales of food production (e.g. community gardens, greenhouses, and small farms.)

Strategy CH-5.2(a): Explore ways to integrate urban agriculture into the City.

Strategy CH-5.2(b): Review city programs and policies to promote use of land for various scales of food production.

Strategy CH-5.2(c): Explore additional ways to use City owned property for food production.

Strategy CH-5.2(d): Create an inventory of publicly owned parcels of land that could be utilized for community gardens, farmers' markets, farm stands, and urban agriculture.

Strategy CH-5.2(e): Provide information to the development community about integrating food production into projects.

Strategy CH-5.2(f): Develop systemic approaches for soliciting and integrating food system related community concerns and priorities into the land use planning and decision-making process.

Policy CH-5.3: Work with community partners to link local food producers to local distributors and buyers.

Strategy CH-5.3(a): Assess/inventory local food processing, wholesaling, and distribution facilities.

Strategy CH-5.3(b): Identify ways the City can assist in connecting local agriculture to markets such as retailers, restaurants, schools, hospitals, and other institutions.

Policy CH-5.4: Develop economic opportunities in the local food system and encourage local agriculture.

Strategy CH-5.4(a): Consider economic development programs for local agriculture, such as tax incentives, grants, loans, public land access, and other credit and technical assistance for beginning farmers and on-farm infrastructure development.

Strategy CH-5.4(b): Consider economic development programs related to the community's food system, such as community-supported agriculture programs, farmers' markets, farm-to-institution programs, grocery stores, restaurants, etc.

Policy CH-5.5: Support farmers' markets and mobile food vendors to increase access to healthy and affordable food.

Strategy CH-5.5(a): Partner with the Longmont Farmers' Market to evaluate the feasibility of expanding services.

Strategy CH-5.5(b): Identify appropriate sites for farmers' markets (e.g., municipal parks, street closures), drop-off sites for community-supported agriculture "shares" (direct marketing between farmers and consumers), and sites for mobile vending stops.

Strategy CH-5.5(c): Partner with organizations such as, but not limited to the Longmont Farmers Market and LiveWell Longmont to provide information on where to get healthy foods.

Policy CH-5.6: Encourage gardening as a way to increase access to healthy food, as well as provide opportunities for physical activity.

Strategy CH-5.6(a): Support community gardens throughout the City.

Strategy CH-5.6(b): Ensure development regulations allow the use of front and side yards for growing fruits and/or vegetables.

Strategy CH-5.6(c): Work with partners to provide educational opportunities and support for gardening.