A Thesis

entitled

Food Consumer Choices in Lucas County, Ohio

by

Michelle N. Crist

Submitted to the Graduate Faculty as partial fulfillment of the requirements for the

Master of Arts Degree in Sociology

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August 2011
An Abstract of
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This thesis reviews food consumer choices of Lucas County, Ohio residents. Choice plays a crucial role in the determining the types of food people consume and many choices are “the result of rational individuals adjusting to a particular set of constraints” (Friedman 1996: 18). Issues involving access, the cost of food, time, and lifestyle all contribute to what types of food individuals choose to consume. Potential barriers to obtaining a variety of healthy foods due to a lack of local supermarkets may affect dietary patterns which can cause food insecurity and health issues such as obesity. Hunger and obesity are symptoms of the same problem. Although it is important to acknowledge individual issues, the structural issues cannot be overlooked. Secondary data was analyzed from two different data sets focusing on Lucas County, Ohio. Although the data does provide a look into the built food environment, it did not reveal many significant findings. Future research needs to address the frequency of obtaining foods from different places and must be mindful of the nutritional needs of a population. Differentiating between various types of food is crucial in understanding how the built environment affects food choices and how those choices affect health. Understanding the role these structural issues play in food consumption choices can aid organizations in
advocating for changes at both the local and national level in order to provide people with additional affordable and healthful options when purchasing food.
Acknowledgements

This thesis would not have been possible without the love, support, and encouragement from my family. I do not have words to adequately describe my gratitude for the opportunities my parents have provided me that have allowed me to succeed thus far. I would also like to thank my friends, who have supported me throughout this journey.

I could not have completed this thesis without the guidance of the Anthropology and Sociology department. Their enthusiasm for the discipline and dedication toward my success is greatly appreciated. I would not have found my true passion if it were not for this department.
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Chapter 1

Literature Review

1.1 Introduction

Many economists work on the assumption that virtually all human behavior is chosen. This concept seems unreasonable to many non-economists because, as Friedman (1996) asks, “what role does choice play in the lives of people who have barely enough to survive?” In fact, choice plays a very crucial role; poor people may have to choose to buy cheap, or cheaper, unhealthful foods because they cannot afford healthier food; if they were to buy healthier food they might have to choose to give up something else important, such as shelter or heat. Many choices are “the result of rational individuals adjusting to a particular set of constraints” (Friedman 1996: 18). People have to adjust to various limitations including income and the built food environment, such as eating certain foods because they are more affordable or more easily obtainable as opposed to what they prefer.

“If we look at how real people behave with regard to their own lives, we find that they make trade-offs between life and quite minor values” (Friedman 1996: 14). Value, as economists use the term, is observed in choice. Many people still participate in detrimental behaviors despite knowing the risks. For example, people may buy fast food
because it is more convenient despite knowing it is not always healthy. “…Every time you eat anything a nutritionist would not have recommended, you are choosing to give up, in a probabilistic sense, a little life in exchange for something else” (Friedman 1996: 15).

Choices of consumption and the goods people consider buying are often relative to their income. “Economic value is simply value to individuals as judged by them and revealed in their actions” (Friedman 1996: 17). The actions people take are usually rational decisions that result from adjusting to various constraints. “If poor food choices are only a matter of personal responsibility, then we only need to educate people to eat better. But if environmental factors make it difficult to eat healthfully, we need to change society to make healthful choices the default” (Nestle 2007: ix).

Our choices are not entirely our own because, even in a supermarket, the menu is crafted not by our choices, nor by the seasons, nor where we find ourselves, nor by the full range of apples available, nor by the full spectrum of available nutrition and tastes, but by the power of food corporations (Patel 2007).

This thesis will focus on issues of involving access, the cost of food, time, and lifestyle that all contribute to what types of food individuals choose to consume. My research question is: How do access, cost, time, and preference affect peoples' food consumption in urban communities? It is important to explore how institutions such as the food environment, ethnicity, and class impact the purchasing choices people make, as well as how they influence issues such as access and price. In addition, it is essential to look at how access to grocery stores and fast food restaurants impacts what choices people make. Many people may not have the time or the money to shop at multiple stores for food, while others might have to choose between buying poor quality food from a fast
food restaurant or the medicine necessary to keep diet related health problems under control.

Understanding the structural issues surrounding food consumption could result in policy and structural changes at both the local and national level that provide people with additional affordable options when purchasing food. This thesis will explore both hunger and “overnutrition” and how people in Toledo, Ohio are impacted by choices associated with these concepts; it also provides individual and community solutions to issues of hunger. Data from the Census provides a glimpse of how Toledo compares to other areas of the country in terms of population size, demographics, and poverty rates in order to understand the importance of these issues in Toledo.

1.2 History of Hunger in the United States of America

In 1996, the members of The World Food Summit defined food security as existing “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life” (WHO 2011). Most often, the concept of food security includes both physical and economic access to food that meets dietary needs and food preferences. Food security is built on three pillars: food availability, food access, and food use.

Availability includes having enough food available on a consistent basis. There is enough food in the world to feed everyone adequately, but there is a problem with distribution causing food security issues. Access means having the resources to get appropriate food for a nutritious diet. Food use involves knowing basic nutrition
information and care of food. Without any one of these three pillars, true food security cannot exist.

The term nutritious is somewhat subjective. According to Michael Pollan (2008), nutrition is not the same as nutritionism. Nutrition suggests the science of healthful food, while nutritionism is a widely shared assumption that the key to understanding food is through the nutrient. For example, protein or calcium have both been promoted by the food industry as important nutrients; because of this, foods are then fortified with these nutrients to make them more “nutritious.” However, the quality of food relies on the combination and interaction of nutrients rather than the individual nutrients. When the term nutritious is used in this thesis, it is intended to mean good quality, healthful food rather than food that relies on nutritionism.

Recently, there has been a sharp increase in food insecurity; two billion people worldwide are food insecure (Morgan and Sonnino 2010). According to the United States Department of Agriculture Economic Research Service, 50.2 million Americans lived in food insecure households in 2009 (USDA 2011). Food price surges in 2007-8 resulted in the price of wheat doubling and the price of rice almost tripling. Prices have dropped somewhat since then, but they still remain higher than in the past, resulting in hunger and malnutrition for classes that had, until recently, been unaffected.

The USDA distinguishes between two types of food security in America: low food security and very low food security. Low food security is not having enough food for a healthy lifestyle, while very low food security is not having enough to eat, skipping meals, and sometimes going hungry for days (National Public Radio 2009). In 2009, according to the USDA (2011), 17.4 million U.S. households were food insecure at some
point during the year; 10.6 million of those households had low food security while 6.8 million households had very low food security. Ninety-four percent of those with very low food security said they could not afford to eat balanced meals (USDA 2010).

The prevalence of food insecurity at each level of severity has remained at the highest percentage observed since 1995, when nationally representative food security surveys began. Food insecurity was also more common in large cities than in rural areas and in suburbs of large cities (Nord et al. 2009). The recent recession has also contributed to food insecurity in the United States. “The largest increase occurred between 2007 and 2009, when households using food pantries rose by 44 percent from 3.9 to 5.6 million households” (Andrews 2010). People often may suffer from hunger as a result of being food insecure.

Hunger is defined as the inadequate ability to purchase food; in the United States, hunger effects 20 million children and adults. Studies have also identified nutrient intakes below the recommended daily allowance among groups living in poverty (Nestle 2007). Inadequate dietary intake affects bodily functions, resulting in a generalized lack of vitality that “reduces productivity and impairs people’s ability to escape the consequences of poverty” (Nestle 2007: 400). However, it should not be difficult to prevent malnutrition associated with poverty; programs that redistribute income, subsidize food prices, and provide education have worked to improve malnutrition in developing countries (Nestle 2007).

Not only may families in urban areas have less access to better quality food, but they may also be more likely to go hungry more frequently than families in higher-income neighborhoods. The United States Department of Agriculture recently found that
almost 15 percent of American households struggled to get enough to eat in 2008 (National Public Radio 2009). Many households are a part of the working poor with at least one parent having a job but the family is still unable to achieve food security.

Despite over 50 million people living in food insecure households, Americans also face a problem with over-nutrition. “During the past 20 years there has been a dramatic increase in obesity in the United States” (CDC 2011). As of 2009, only Colorado and the District of Columbia have a prevalence of obesity less than 20 percent, at 18.6 and 19.7 percent, respectively. Thirty-three states have a prevalence of obesity equal to or greater than 25 percent; nine of those states have a prevalence of obesity equal to or greater than 30 percent.

Health problems such as obesity also affect ethnicities differently. As Cossrow and Falkner (2004) suggest, although obesity rates continue to increase for all races, there are racial differences in the prevalence of obesity. According to the Centers for Disease Control and Prevention (CDC), blacks' had 51 percent higher prevalence and Hispanics had 21 percent higher prevalence of obesity compared to whites by 2008 (CDC 2011).

While over 50 million Americans go hungry each year, millions more are overfed. Both issues can be explained by the food environment and the prevalence of food deserts. The CDC describes food deserts as “areas that lack access to affordable fruits, vegetables, whole grains, low-fat milk, and other foods that make up the full range of a healthy diet” (CDC 2010). However, the CDC also acknowledges there is no standard definition for food desert which can make it hard to understand the extent to which people in the United States are affected. For some, a food desert might mean there is not enough food to eat,

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Due to the differences in the terminology used to describe ethnicity, I will use the terminology used by the cited author.
while for others there is not adequate access to healthful food; the difference between the
two materializes as malnourishment and over nourishment.

1.3 The Role of “Overnutrition”

Pollan (2008: 7) argues that “‘overnutrition’ in America is emerging as a more
serious threat to public health than undernutrition…most of what we’re consuming today
is no longer, strictly speaking, food at all, and how we’re consuming it – in the car, in
front of the TV, and, increasingly, alone – is not really eating, at least not in the sense that
civilization has long understood the term.”

“For a while it used to be that food was all you could eat, today there are
thousands of other edible foodlike substances in the supermarket” (Pollan 2008: 1). For
instance, gelatin consists of animal byproducts and SPAM consists mainly of pork by-
products and seasonings. “Americans will eat just about anything. That is, of course, as
long as they don’t know what it is” (Potorti 2006: 27 as referenced in Belasco 2008: 65).

According to the United States Department of Agriculture (2003), the aggregate
food supply in 2000 provided 3,800 calories per person per day, with around 1,100
calories lost to spoilage, cooking, plate waste, or other losses. Total caloric consumption
was around 2,700 calories per person per day (USDA 2003). Although the amount of
calories needed varies from person to person based on lifestyle, the United States
government uses a 2,000-calorie diet as an average health guideline. Currently, the
United States food supply provides an average of 3,900 calories a day per capita, which is
almost twice the average amount of calories necessary for a healthy diet (Nestle 2007).
The increase in caloric intake may be associated with more people eating out. When
eating food prepared outside the home, people tend to either eat more, eat higher calorie foods, or both.

There are multiple factors that can contribute to weight gain, but the basic cause is an excess of energy intake over energy expenditure. For most Americans, activity levels have not increased with the increase in calorie consumption, thus contributing to obesity and poor health.

In fact, the city has inadvertently become an *obesogenic* environment due to the predominance of energy-dense foods on the one hand and the lack of opportunities for physical mobility on the other. The powerful correlation with poverty means that obesity is not so much an urban problem per se as a problem of poor people in an obesogenic urban environment because, generally speaking, the highest rates of obesity are found among groups with the highest poverty rates and the lowest education levels (Morgan and Sonnino 2010: 210).

According to Nestle (2007), “in the United States, as well as in most developing countries, food production is sufficient to meet the energy requirements of the population, but many people are too poor to afford an adequate diet” (399). However, it is now possible for people who can’t afford enough to eat to be obese. People who grow up malnourished metabolize and store food poorly and, as a result, are more likely to store the (poor-quality) food they can access as fat (Patel 2007).

Obesity in the United States increased 71 percent between 1991 and 2001 (Patel 2007). Most often, individual causes of obesity are discussed rather than broad, structural factors such as the food industry or geography.

We are encouraged to understand obesity to be, at the end of the day, an individual failing, an inability to deal with the farrago of choices offered to us, a deficit of impulse control. Conventional wisdom sees obesity as a symptom of an impoverished faculty of choice, never a result of an impoverished range of choices. And this is because, in large measure, the solution offered to the *social* problem of obesity has been an *individual* one (Patel 2007:273).
Hunger and obesity are symptoms of the same problem. Although it is important to acknowledge individual issues, the structural issues cannot be overlooked. Issues involving access, the cost of food, lifestyle, and time all contribute to what types of food are consumed by individuals. Potential barriers to obtaining a variety of healthy foods due to a lack of local supermarkets may affect dietary patterns which can contribute to the risk of obesity.

1.4 Current Issues of Hunger

1.4.1 Access and Logistics

As discussed earlier, African-Americans and Hispanics have a higher prevalence of obesity compared to whites. One of the reasons African-Americans may disproportionately be affected by obesity and other health related diseases is because of access to the food environment. Many studies (Bodor 2010; Moore and Roux, 2006; Zenk et al. 2005a, 2005b) show racially mixed and non-white neighborhoods have less access to supermarkets, fresh food markets, and better quality foods, thereby decreasing their chances of obtaining a healthy diet. “Half of all black neighborhoods in the United States are reported to be without full-service grocery stores and supermarkets” (Raja et al., 2008: 470). Often, these neighborhoods are located in urban areas and the lack of supermarkets in these neighborhoods severely limits many aspects of food purchasing for the residents.

Living in a food desert does not necessarily mean there are no shops nearby. There may be shops, but they tend to be run-down shops and sell little or no fresh food
(Reynolds 2005). Often there is not as much variety in the urban areas, the food is of poorer quality and more expensive, and it usually takes longer to get to stores in urban areas compared to suburban areas. Zenk et al. (2005a: 2) found “among stores of the same type, those located in economically disadvantaged and inner-city neighborhoods have less availability, more limited selection, and higher prices for foods for sale than those in more affluent and suburban neighborhoods.”

Many studies have shown that a significantly greater number of supermarkets are located in white neighborhoods as opposed to black neighborhoods, while smaller grocery stores are more common in black neighborhoods (Moore and Roux, 2006; Zenk et al. 2005a, 2005b). Supermarkets are often linked to a broader choice of foods that are healthier and less costly. Therefore, neighborhoods that lack them may experience detrimental effects for the health of the residents. “Closer proximity to a chain supermarket is positively associated with fruit and vegetable intake or overall dietary quality” (Zenk et al., 2005a: 1).

Zenk and her associates (2005b) conducted a study of 869 Detroit-area neighborhoods to evaluate the spatial accessibility of large supermarkets in relation to neighborhood racial composition and poverty. It was found that the distance to the nearest supermarket was similar among the least impoverished neighborhoods regardless of racial composition; but in the most impoverished areas, neighborhoods with African Americans were on average a mile further from the nearest supermarket than white neighborhoods (Zenk et al. 2005b).

In Detroit, residential segregation disproportionately places African Americans in more impoverished neighborhoods, reducing access to supermarkets. Seventy-six percent
of neighborhoods with a high proportion of African Americans were among the most impoverished. However, middle-income neighborhoods that have transitioned from white to African American have supermarkets that remain despite the transition (Zenk et al. 2005b).

Bodor and his associates (2010) found that predominately African-American neighborhoods in New Orleans had a greater concentration of small food stores and general merchandise stores than other neighborhoods but their presence did not compensate for the lack of nearby supermarkets. The total availability of fresh and frozen fruits and vegetables was significantly lower in the African-American neighborhoods. However, the presence of snack foods such as cookies, crackers, pastries, candies, and carbonated beverages was not significantly lower in these neighborhoods.

Children living in urban, low-income areas are more likely to have reduced access to healthy food environments where fresh fruits, vegetables, and whole grains are readily available and of good quality (Ard et al., 2007; Keita et al., 2009; Robinson-O’Brien et al., 2009; Zenk et al., 2005a). Because supermarkets are less available in low-income urban areas parents sometimes resort to buying fast food more frequently than making meals at home. It can be an easy way for parents to feed their children in a quick and relatively convenient manner (Devine, et al. 2009; Zenk 2005a).

1.4.2 Price

Various studies have found that local area prices of fast foods, fruits, and vegetables influence eating behaviors (Ard et al., 2007; Beydoun et al., 2008; Lo et al., 2009; Powell et al., 2006, 2007; Zenk et al., 2009b). A study by the CDC (2007) found
that low-income adults were less likely to consume fruits and vegetables five times per day than high-income adults; this finding was the same for low-educated versus high-educated adults (Powell and Chaloupka 2009).

Similarly, Beydoun and her associates (2008), examining the effects of prices of fast foods, fruits, and vegetables, found that there was a higher consumption level at fast food restaurants for the poorest income level when compared to other income categories; the poorest were also exposed to the highest prices. Increasing the cost per serving of fruit and vegetable items significantly decreases the chances of availability in the home by almost 25 percent (Ard et al., 2007).

Increasing fruit and vegetable consumption may be difficult because food choices, although not mutually exclusive, are closely linked to food cost. The cost of fats, oils, sugars, and sweets increased less between 1982 and 1997 than did the cost of fruits and vegetables. Cost negatively impacts produce choices in both African-Americans and whites, but African-Americans have found to be less affected by the increased cost than whites (Ard et al. 2007). However, this only seemed to be the case for certain foods such as squash and oranges that are already priced higher but possibly culturally relevant for that population.

1.4.3 Lifestyle and Time

Families living in low-income areas are often headed by parents who do not have much extra time to spend on grocery shopping and preparing meals for their families. Parents can find themselves working long hours with inflexible schedules that may not
permit them to spend a lot of time shopping for and preparing elaborate meals (Jilcott 2007).

Fast food is a quicker, and occasionally cheaper, more convenient way to feed a family, but it is not high quality, healthful food. There is greater access to fast food restaurants in low income areas, making it easier for parents to buy food there than from a grocery store (Zenk 2005a). Food prepared outside the home has been shown to have lower nutritional quality than food prepared at home, and less healthful diets have been associated with low job status, poor working conditions, high work demands, and low control at work (Devine 2009).

Although there is an abundance of fast food restaurants, millions of people still suffer from hunger. The USDA (2011) found 17.2 million of the 50.2 million people in America suffering from hunger in 2009 were children. Also, a study by Keita and her associates (2009) showed there were no overall differences in caloric intake between children in upper- and lower-socioeconomic statuses but the composition of calories did vary. Children in disadvantaged neighborhoods had a greater percentage of energy from fat and a higher sodium intake than children in better off neighborhoods (Keita et al. 2009). A higher sodium intake can be an indicator of increased consumption of processed foods. Children in disadvantaged neighborhoods also had an average intake of trans fat that well exceeds the suggested intake (Keita et al. 2009).

1.5 Solutions

The limited availability of fresh fruits and vegetables in urban food environments, combined with the large availability of energy dense foods and snacks in grocery and
convenience stores, has a negative impact on the health of the residents. Although there is a growing amount of literature on food disparities in low-income neighborhoods, little of it focuses on solutions to the inadequacies of both hunger and health issues that residents face. A community needs to have access to nutritionally adequate, affordable, and culturally appropriate foods to have good nutritional quality (Raja et al., 2008). The following are several ways Americans have addressed the current food problem:

1.5.1 **Personal Coping**

Personal food choice coping strategies are widely used by lower income employed parents as another way to buy food for their families. Some of these strategies include eating food prepared outside of the home at fast food restaurants, missing meals, making meals that are easy to prepare or pre-made and planning ahead by making enough for leftovers or packing lunches or snacks (Devine et al. 2009). Despite these strategies, children may still have less access to healthful food environments.

1.5.1.1 **Supplemental Nutrition Assistance Program (SNAP)**

As of October 1, 2008, the federal Food Stamp Program changed to Supplemental Nutrition Assistance Program in order to reflect a focus on nutrition; SNAP is the federal name for the program, but state programs may have different names (USDA 2009). Due to the recent change in the terminology used to describe this program, I will use the term SNAP when not directly citing an author.

“The Food Stamp Program is designed to provide low-income families with increased food purchasing power to obtain a nutritionally adequate diet” (Hanson and Andrews,

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2 Due to the recent change in the terminology used to describe this program, I will use the term SNAP when not directly citing an author.
1.5.2 Community Coping

Families may use supplemental ways to obtain food such as food banks, the Supplemental Nutrition Assistance Program (SNAP), and community and personal gardens. These programs can provide an extra source of food, but may not be available to everyone or may be dependent on interrelated factors such as income and supply availability.

1.5.2.1 Food Banks

Food banks frequently collect leftover or damaged boxes and cans from supermarkets, food processors, and other distributors and then pass the food on to soup kitchens and food pantries. They can normally find some fresh produce in small amounts, but most of the foods are processed (McGray, 2009). However, a movement has started
in California where food banks are increasingly able to collect fresh produce from farms across the state.

Normally food banks collect leftover or damaged boxes and cans from supermarkets, food processors, and other distributors and then passed the food to soup kitchens and food pantries. They can usually find some fresh produce, but seldom a lot; most of the foods are processed. Recently, food banks have been looking to agriculture for support; California is leading the change. Since 2005 the California Association of Food Banks has struck deals with farms across the state where they collect truckloads of fruits and vegetables that supermarkets can’t sell.

Part of the push for fresh produce is due to the obesity rise among the poor, but also because the food industry has become more efficient. There is a huge surplus of fresh produce that goes to waste every year, so some people are starting to make deals with farms to get the second hand produce that is not good enough to be sold in supermarkets. However, some second hand foods are harder to get for less money such as sweet potatoes and carrots. Sweet potatoes can last an entire year when stored properly and carrots can be shaved down into baby carrots.

Because of the push to provide healthier food for people in need, food banks have increasingly been able to procure fresh produce in large amounts. In 2005, 10 million pounds of fresh produce was given to food banks in California; by the end of 2009, they are hoping for 80 million pounds. For many families fresh produce is a big deal. Because most of the food supplied to food banks is highly processed, it is less healthy. However, there is an increasing drive to supply fresh produce for those who benefit from food banks.
1.5.2.2 Gardens

As mentioned earlier, food stamps are available for qualifying people but may not always provide nutritionally adequate food that is affordable. Food banks also provide supplemental food for people in need, but most often it is heavily processed food that is not as healthy as fresh food. However, there is a push for farmers in California to provide surplus produce to food banks so people do not solely receive processed foods.

In the case of Toledo, Ohio, Our City in a Garden (2009) is a forum that links local food-based organizations together to, “produce, prepare, process, preserve, and distribute healthy and wholesome food products within [Toledo’s] community…in a manner that stresses environmental sustainability.” It encourages programs like Gleaning and Grow a Row to provide the surplus crops for people who could not otherwise afford them. Gleaning subsists on a pool of volunteers who pick the surplus crop from participating farms for individual consumers, while Grow a Row targets smaller farmers and backyard gardeners asking for the extra produce to be donated to local food banks.

There is also the community gardening outreach program, Toledo GROWs, which offers “organizational resources and technical assistance to support the development of sustainable garden projects that serve people of diverse ages and abilities” (Our City in a Garden). Throughout the growing season, over 65 communities were served in 2008 by Toledo GROWs. Community gardens are often situated in neglected areas where neighbors take initiative and responsibility for organizing, maintaining and managing the area. Not only do they provide an additional food resource for the community, they also increase neighborhood engagement and revitalize the area. Community gardens and
programs such as Gleaning and Grow a Row seem to be beneficial to low-income communities. However, research still needs to be conducted to see how beneficial they are to the health and well-being of the community.
Chapter 2

Background Statistics and Community Profile

Demographic data were compiled from the 2005-2009 United States Census to provide a glimpse of how Toledo compares to other areas of the country in terms of population size, demographics, and poverty rates. Data for one County (Lucas County) and two cities (Toledo, Ohio and Detroit, Michigan) were gathered in addition to data for the state of Ohio and the nation. Lucas County consists of four cities, including Toledo, and several other villages and townships. The data that is shown mirrors the variables and data used in the analysis. It is used provide insight as to why it is important to look the food environment and factors that can impact food consumption in Toledo and Lucas County.

The data for the city of Toledo provide a look at the urban makeup of Lucas County, while the Lucas County data provide a broader demographic overview of the area. The Lucas County data were useful since some of the survey data used did not differentiate between the city of Toledo and Lucas County. The city of Detroit, Michigan was included because it is an old industrial city similar to Toledo that faces some of the same economic problems. The state of Ohio and national data provide demographics against which to compare the Toledo and Lucas County data.
The median household income for the United States is $51,425. The income levels for Toledo and Detroit, Lucas County, and Ohio range from $29,447 to $47,144; Toledo’s average household income is $35,753, which is about $15,700 less than the national average. Lucas County’s income level is about $7,000 higher than the city of Toledo. The percentage of households with an income below $24,999 per year is 36% in Toledo compared to just below 24% in the country. The national poverty rate is around 14% but is 8% higher in Toledo at 22% (see table 2.1).

Table 2.1: Demographic data from U.S. Census comparing the cities of Toledo and Detroit, Lucas County, the state of Ohio, and the United States.

<table>
<thead>
<tr>
<th>Table 2.1</th>
<th>Toledo, OH</th>
<th>Lucas County</th>
<th>Detroit, MI</th>
<th>Ohio</th>
<th>United States</th>
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<td>Median Household Income</td>
<td>Household Income &lt; $24,999/year</td>
<td>People in Poverty</td>
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<td>36%</td>
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<td>25.90%</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>301.5 million</td>
<td>$51,425</td>
<td>23.80%</td>
<td>14%</td>
<td></td>
</tr>
</tbody>
</table>
2.1 City of Toledo versus State of Ohio

According to United States Census data, 11.5 million people live in Ohio; 317,000 of those people live in Toledo. The average age of the population of Toledo is slightly lower than the state at 34.4 years compared to 37.9 years old. About 84 percent of the Ohio population considers themselves to be white, 12 percent was black or African American, while two percent was Asian. Toledo is 69 percent white, 25 percent black or African American, while one percent is Asian. The remaining percentages at both the city and state level identify as Native Hawaiian and Other Pacific Islander, some other race, or two or more races (see table 2.2).

Table 2.2: Demographic data from U.S. Census comparing the city of Toledo to the state of Ohio.

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Toledo, OH</th>
<th>Ohio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>317,000</td>
<td>11,500,000</td>
</tr>
<tr>
<td>Median Age</td>
<td>34.4</td>
<td>37.9</td>
</tr>
<tr>
<td>Number Households</td>
<td>125,000</td>
<td>4,500,000</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>69%</td>
<td>84%</td>
</tr>
<tr>
<td>Black/African American</td>
<td>25%</td>
<td>12%</td>
</tr>
<tr>
<td>Asian</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>&quot;Other&quot;</td>
<td>5%</td>
<td>2%</td>
</tr>
</tbody>
</table>
The household median income in Toledo is $35,753 compared to $47,144 for the state of Ohio. Almost 36 percent of the households in Toledo had an income less than $24,999 per year; additionally, almost 47 percent of the population spent 35 percent or more of their household income on rent. In Ohio, almost 25.9 percent of the households had an income less than $24,999 per year. Eighty-three percent of the Toledo population over the age of 25 has graduated from high school with only 17 percent having a bachelor’s degree or higher. In Ohio, 87 percent of the population over the age of 25 has graduated from high school and 24 percent has a bachelor’s degree or higher (see table 2.3).

Table 2.3: Demographic data from U.S. Census comparing the city of Toledo to the state of Ohio.

<table>
<thead>
<tr>
<th>Table 2.3</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td>Toledo, OH</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>$35,753</td>
</tr>
<tr>
<td>Household Income &lt; $24,999/year</td>
<td>36%</td>
</tr>
<tr>
<td>Education (over 25)</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>83%</td>
</tr>
<tr>
<td>Bachelor's or higher</td>
<td>17%</td>
</tr>
</tbody>
</table>
The poverty rate in Toledo is also higher than for the state of Ohio; 22 percent of the people in Toledo are in poverty compared to 14 percent in the state. About 10 percent of the state population received SNAP benefits within the past year but 18 percent of the population in Toledo received benefits. Eighty-six percent of the population in Toledo had at least one vehicle available per household, but this left 12.6 percent of households that do not have any vehicle available. Ninety-two percent of the state population has at least one vehicle available per household, but eight percent of households still do not have a vehicle available to use (see table 2.4).

Table 2.4: Demographic data from U.S. Census comparing the city of Toledo to the state of Ohio.

<table>
<thead>
<tr>
<th>Table 5.4</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td>Toledo, OH</td>
</tr>
<tr>
<td>People in Poverty</td>
<td>22%</td>
</tr>
<tr>
<td>Families in Poverty</td>
<td>18%</td>
</tr>
<tr>
<td>SNAP benefits⁢</td>
<td>22,500</td>
</tr>
<tr>
<td>Vehicles available</td>
<td></td>
</tr>
<tr>
<td>1 or more</td>
<td>86%</td>
</tr>
<tr>
<td>None</td>
<td>12.60%</td>
</tr>
</tbody>
</table>

⁢ There is some discrepancy in the accuracy of this number; it is current according to the U.S. Census Fact Finder retrieved July 5, 2011.
2.2 City of Toledo versus the United States

There are about 301.5 million people living in the United States, according to United States Census Data for all 50 states. The median age nationally is 36.5 years compared to 34.4 years for the city of Toledo. 74 percent of the country identifies as white, 12 percent as black or African American, and four percent as Asian. Toledo is 69 percent white, 25 percent black or African American, while one percent is Asian. The remaining percentages at both the city and national level identify as Native Hawaiian and Other Pacific Islander, some other race, or two or more races (see table 2.5).

Table 2.5: Demographic data from U.S. Census comparing the city of Toledo to the United States.

<table>
<thead>
<tr>
<th>Table 2.5</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td>Toledo, OH</td>
</tr>
<tr>
<td>Population</td>
<td>317,000</td>
</tr>
<tr>
<td>Median Age</td>
<td>34.4</td>
</tr>
<tr>
<td>Number Households</td>
<td>125,000</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td><strong>White</strong></td>
<td>69%</td>
</tr>
<tr>
<td><strong>Black/African American</strong></td>
<td>25%</td>
</tr>
<tr>
<td><strong>Asian</strong></td>
<td>1%</td>
</tr>
<tr>
<td><strong>&quot;Other&quot;</strong></td>
<td>5%</td>
</tr>
</tbody>
</table>
Nationwide, the median income of households is $51,425; almost 23.8 percent of the households have an income less than $24,999 per year. The average household income for Toledo is $15,672 less than the national average ($35,753) and 36 percent of the population in Toledo has an income less than $24,999 per year. The high school graduation rates between the city and country are similar at 83 percent versus 85 percent respectively. However, the percentage of people with a bachelor’s degree or higher is only 17 percent in Toledo compared to 28 percent for the country (see table 2.6).

Table 2.6: Demographic data from U.S. Census comparing the city of Toledo to the United States.

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Toledo, OH</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Household Income</td>
<td>$35,753</td>
<td>$51,425</td>
</tr>
<tr>
<td>Household Income &lt; $24,999/year</td>
<td>36%</td>
<td>23.80%</td>
</tr>
<tr>
<td>Education (over 25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>High School</strong></td>
<td>83%</td>
<td>85%</td>
</tr>
<tr>
<td><strong>Bachelor's or higher</strong></td>
<td>17%</td>
<td>28%</td>
</tr>
</tbody>
</table>
Although about 9.5 million people nationwide received SNAP benefits within the past year which amounts to 8.5 percent of the population, the percentage of people in poverty is around 14 percent. In Toledo, 22 percent of the population is in poverty with about 22,500 people receiving SNAP benefits within the past year. Nationwide, 9.0 percent of households do not have a vehicle available compared to 12.6 percent in Toledo. (see table 2.7)

Table 2.7: Demographic data from U.S. Census comparing the city of Toledo to the United States.

<table>
<thead>
<tr>
<th>Table 2.7</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td>Toledo, OH</td>
</tr>
<tr>
<td>People in Poverty</td>
<td>22%</td>
</tr>
<tr>
<td>Families in Poverty</td>
<td>18%</td>
</tr>
<tr>
<td>SNAP benefits⁴</td>
<td>22,500</td>
</tr>
<tr>
<td>Vehicles available</td>
<td></td>
</tr>
<tr>
<td>1 or more</td>
<td>86%</td>
</tr>
<tr>
<td>None</td>
<td>12.60%</td>
</tr>
</tbody>
</table>

⁴ There is some discrepancy in the accuracy of this number; it is current according to the U.S. Census Fact Finder retrieved July 5, 2011.
2.3 Built Food Environment in Lucas County

The USDA Economic Research Service (2011) provides a Food Environment Atlas that includes 168 indicators of the food environment. Factors such as store and restaurant proximity, food prices, nutrition assistance programs, and community characteristics are included. The Atlas provides data at the county level as well as the state or regional level. The data provided are for Lucas County from 2006 to 2010 (ERS: Atlas 2011).

Between 2007 and 2008, the number of grocery stores available dropped from 74 to 71; grocery stores include establishments such as supermarkets and smaller grocery stores that provide a general line of food such as canned and frozen foods, fresh fruits and vegetables, and fresh and prepared meats, poultry, and fish. It does not include convenience stores that do or do not sell gas, supercenters or warehouse clubs.

The availability of fast food restaurants remained at 334 while the average yearly expenditure per capita rose from $514 in 2002 to $622.31 in 2008. Full-service restaurant expenditures also increased from $486 to $577.37 between 2002 and 2008. Fast food and full-service restaurants are more available than grocery stores at seven and eight restaurants respectfully to one and a half grocery stores.

In 2006, almost 5.75 percent of the low-income population did not have a car and lived more than a mile from a store. About 45 percent of the low-income population received SNAP benefits in 2006 and this number increased to almost 48.5 percent in 2007. The number of stores that accept SNAP benefits increased between 2006 and 2007.

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5 Both expenditures are in 2002 dollars.
6 The number of restaurants in the county per 1,000 residents.
by 45 percent from 371 to 416 stores. These include supermarkets, grocery stores, convenience stores, and supercenters or warehouse clubs.

About 180 pounds of fruit and vegetables\(^7\) were purchased per resident in 2006 compared to 315 pounds of prepared foods\(^8\). About 123 pounds of sweet snacks\(^9\) were purchased. The adult obesity rate in 2007 was at 30 percent and the diabetes rate was just over 10.5 percent in Lucas County.

\(^7\) Fruit and vegetables include fresh, frozen, and canned, but not juices.
\(^8\) Prepared foods include ice cream and frozen desserts; frozen entrees and sides; canned soups, sauces and other prepared foods; packaged snacks; ready-to-eat hot and cold deli items.
\(^9\) Packaged sweet snacks include, for example, cookies and candy bars.
Chapter 3

Methods

3.1 Research Questions

My research question is: How do access, cost, time, and preference affect peoples' food consumption in urban communities? This question entails the four major factors of accessibility, cost, time, and preference and how they influence what food to buy and eat. To test these factors, four sets of hypotheses have been developed, one for each factor, as follows:

1. Accessibility

It is hypothesized that the less accessible healthful food is, the worse eating habits will be. People who have a farther distance to travel for nutritious food will purchase more food from fast food restaurants than people who do not have to travel as far.

Because a secondary analysis of pre-existing data is being conducted, I must work with instruments that were not designed specifically to answer my research question. Therefore, I will use the variables available that best operationalize the variables I want to study. In this case, the frequency of consumption of fast food meals is the best proxy available for measuring the healthfulness of food in the local food survey.
The assumption is that on average, people who eat more fast food meals are eating less healthful food than people who eat fewer fast food meals.

The Community Food Assessment Survey (CFAS) include a question asking if participants eat fresh food or healthy food. However, this question asks participants to check all answers that apply and includes options for bulk or reduced price food, fast food or easy to make meals, diet food, and restaurant food. It does not ask how frequently those types of foods are eaten, although there are two questions that ask how many meals are eaten out each week and at home each week. This could become an issue methodologically if people eat both healthy food and fast food; because frequency of which each is consumed cannot be determined. People who eat significantly more fast food than healthful food will have the same response as people who eat significantly more healthful food than fast food. These data also include a question on how far participants usually go to buy food, and another asking if the distance to the store makes it hard to get food.

Many studies have shown that African-Americans have less access to grocery stores which is the best determinant of healthful food (Moore and Roux, 2006; Raja et al., 2008; Zenk et al., 2005a). African-Americans have to travel farther to purchase healthful food compared to white people; therefore, African-Americans purchase more food from fast food restaurants than white people.

2. Cost

It is also hypothesized that the more costly healthful food is, the less it will be consumed. Again, the best proxy used for healthfulness of food will be fast food. Studies have shown that fast food offers more calories per dollar than more nutritious food, so
fast food is expected to be the food of choice for lower income families (Rolls 2003). It is also hypothesized that people who spend more money at a grocery store will have better health than people who spend more money at a convenience store. Finally, people who have a higher income will self-report having better health than people with a lower income.

3. Time

Another hypothesis is that the less time people have to prepare food, the less people will eat at home. Primary food purchasers for the household who work full-time will purchase more food from fast food restaurants than primary food purchasers for the household who are full-time homemakers. Also, primary food purchasers for the household who are full-time homemakers will prepare more meals at home than primary food purchasers for the household who work full-time. People who are full-time homemakers will self-report better health than people who work full-time. Finally, primary food purchasers for the household who work full-time will spend less money at the grocery store than primary food purchasers for the household who are full-time homemakers.

4. Preference

In terms of food preference, it is hypothesized that people who prefer healthful food will buy and eat more nutritious food. People who shop for organic food will self-report better health than people who do not prefer organic food. People who prefer the low prices will self-report poorer health than people who do not mind spending extra on food. People who prefer buying food with the lowest price will buy more fast food than people who do not shop for food with the lowest price. Although preference does not
always result in a corresponding choice, it is used as a proxy for choice as a result of the questions asked.

3.2 Data

Data from two existing surveys were analyzed. Both surveys were conducted in Northwest Ohio and include data from the greater Toledo area. These data sets were chosen because they focus on food consumer choices in Toledo and provide insight into variables that impact those choices. Secondary analysis of pre-existing data is being conducted. Therefore, I will use the proxies to measure the concepts I want to study. Although I am analyzing these four factors separately, they may interact with each other. However, because of the sample size of the data sets, I was unable to run any statistics that would show multiple relationships. Additionally, the Local Food Survey did not directly ask about the cost of foods, so only the Community Food Assessment Survey was used when analyzing cost.

3.2.1 Community Food Assessment Survey

The first study was a project through Toledo Area Ministries and was an open-ended community food planning project conducted from October 1, 2006 to September 30, 2007. Funding was provided by the United States Department of Agriculture to Toledo Area Ministries and was subcontracted to The University of Toledo Urban Affairs Center.
Semi-structured focus group interviews were conducted with five groups of food consumers, one of which served as a pilot group, and one group of Feed Your Neighbor site coordinators. Two of the focus groups were from HIV/AIDS support groups at a medical center while the other four were at churches, community centers, and food distribution sites. Surveys were also administered to 221 community members at Feed Your Neighbor sites, Health Science Campus HIV/AIDS patient groups, and Lucas County Jobs & Family Services, using a multi-stage, semi-systematic convenience sample.

### 3.2.2 Local Food Survey

The second study, the Local Food Survey (LFS) was conducted by the University of Toledo Urban Affairs Center Survey Research Lab by Jeanette Eckert and students trained in interview techniques and proper data collection protocol. Like the SFAS, it was approved by the University of Toledo Social, Behavioral, and Educational Institutional Review Board. Data collection began in late January 2011 and was finished in early June 2011. In order to be eligible for the survey, the participant had to be 18 years of age or older and be the primary grocery shopper for the household.

The data utilized for this thesis used only the responses from Lucas County, and was completed in early May 2011. It was determined a sample size of 340 would be necessary for a margin of error of plus or minus five margin at a 95 percent confidence interval. The proportion of the area population for each county’s population was

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10 Jeanette Eckert is the Survey Research Center Manager & Research Assistant at the University of Toledo Urban Affairs Center.
calculated to get a target number for each county. Lucas County makes up 56 percent of the six county total, so the goal was 190 responses from that county; an extra 10 responses were added to increase the response rate for this thesis for a total of 200 responses. The overall goal increased from 340 to 350 responses which had no effect on the statistical significance.

The survey was conducted by telephone and the phone numbers were obtained from a data company that provides random digit dialing number sets. A total of 6,758 land line numbers and 145 cell phone numbers were uploaded into the survey software WinCati; this software allows for numbers to be pulled up completely at random for the interviewers to call. Of the attempts made, about 10.5 percent of the households answer the phone and stay on the line long enough to be invited to take the survey. 89.5 percent of the numbers were disconnected, business numbers, households claiming not to have an eligible member, immediate hang ups, or answering machines. Of the 10.5 percent of households that were being reached, the response rate has been 47 percent for the combined six counties.

3.3 Measures

Select variables from both data sets were re-coded in order to better address the research questions. Although the two data sets were separate, they address similar issues. Both included questions about the distance traveled for various types of foods as well as income level. The Local Food Survey addresses issues relating to access and barriers one might encounter while the Community Food Assessment Survey addresses issues of the
frequency meals are eaten, employment, and health. Whenever possible, multiple tests are utilized to establish the robustness of the findings.

Within the Community Food Assessment Survey, race, income, and the willingness to take a nutrition class in the community were re-coded. Race was recorded by asking participants their race or ethnicity; these categories were not mutually exclusive, so participants were able to check all that applied. For the purpose of analysis, race was re-coded where African-American = 1, White = 2, and “Other” = 3.

Participants were also asked how strongly they agreed or disagreed with various statements, one of which was “I would take nutrition classes in the community;” They were able to pick from strongly disagree, disagree, no opinion, agree, and strongly agree. For the purpose of analysis, this question was re-coded where strongly disagree = 1, disagree = 1, no opinion = 2, agree = 3, and strongly agree = 3.

Variables for zip codes, income, and health within the Local Food Survey were re-coded. Each respondent was asked their zip code; all zip codes were part of Lucas County, but they were re-coded where the city of Toledo zip codes = 1 and non-Toledo zip codes = 2. This was done in order to better compare the Toledo area responses to the entire county’s responses.

Income was based on total 2009 gross household income (before taxes). Income was re-coded where less than $24,999 = 1, $25,000-$49,999 = 2, $50,000-$99,999 = 3, and $100,000 and more = 4. Respondents were asked to self-report how they would rate their health; the individual health variable was then re-coded where Excellent health = 1, Good health = 2, and Fair and Poor health = 3.
Chapter 4

Findings

Of the people participating in the Community Food Assessment Survey, 64 (37.6%) identified as black or African-American, 75 (44.1%) identified as white or European-American, and 17 (10.1%) identified as an ethnicity that was re-coded as “Other.” The income levels had a lot of variation, but all but six (3.6%) individuals had an income below $25,000; this left 145 (85.3%) participants with an income below $25,000, which was the national poverty line at the time the data were collected. The majority of the participants in the CFAS (77%) had an annual household income that was below $15,000. Because there was not much variation between income levels above $15,000, the income variable was not useful for analysis. The average family size for households with an income less than $24,999 was 4.2 people.

Households with an income between $25,000 and $49,999 had 2.5 people11. Households with an income between $50,000 and $99,999 had an average of 4.5 people and households with an income over $100,000 had an average family size of 3.4 people. The average household size could have an impact on other variables such as the amount of money spent on groceries or fast food each week.

11 Data from the Local Food Survey.
The respondent’s ethnicity was not asked in the Local Food Survey. The household incomes were collapsed into categories to gain a better understanding of the impact income had on other variables. Seventeen percent of the respondents had an income below $25,000 in 2009; another 20 percent had between $25,000 and $50,000, 17 percent had between $50,000 and $100,000, and 13 percent had more than $100,000. Thirty-two percent of the respondents refused to answer this question, which likely impacted these analyses. Three people were not able to or refused to answer how they would rate their health. Almost half of the respondents self-reported their health as good, thirty percent rated it as excellent, and almost 20 percent rated it as fair or poor.

4.1 Accessibility

On average, respondents of the Local Food Survey traveled almost three and a half miles for food. However, ninety-nine percent of the respondents did not travel more than 10 miles. Only two people traveled farther; one person said he or she traveled 15 miles and the other traveled 20 miles. Half of the respondents travel two miles or less. It was expected that people who have a further distance to travel for nutritious food would purchase more food from a fast food restaurant.

Bivariate correlations were used to analyze the relationship between miles driven for food and the frequency of both meals eaten at home in a typical week as well as meals eaten from a fast food restaurant in a typical week\textsuperscript{12}. It was expected that people who have to travel farther for nutritious food would buy more fast food. However, there was no correlation between either variable. A possible explanation for this could be because

\textsuperscript{12} Data from the Local Food Survey.
the phrase “miles driven for food” is so vague. Asking people to differentiate between the distances they have to travel for fast food versus a grocery store to prepare a meal at home may yield different results.

Respondents to the Community Food Assessment traveled just over two miles to get food. Just over 75 percent of the participants reported eating fresh and healthful foods, while just over half (54.7%) reported not eating fast food or easy to make meals. However, this question asked participants to check all answers that applied and included options for bulk or reduced-price food, fast food, or easy to make meals, diet food, and restaurant food. These categories were not mutually exclusive and were not time bound. Therefore, people who eat more fast food per week than fresh food could check the same categories as someone who ate mostly fresh and healthful food, but occasionally ate fast food.

Crosstabulation analysis was used to test the relationship between ethnicity and the types of foods eaten. A chi-squared test showed no significant difference between fast food consumption and ethnicity (p = 0.193). Almost 63 percent of African-Americans said they did not eat fast food, while less than 38 percent said they did; White people who ate fast food just outnumbered those who did not at 52 percent and 48 percent, respectively (see Table 4.1).

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13 Data from the Community Food Assessment.
Table 4.1: Crosstabulation between ethnicity and eating fast food.

<table>
<thead>
<tr>
<th></th>
<th>Ethnicity</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>African-American</td>
<td>White</td>
<td>Other</td>
<td>Total</td>
</tr>
<tr>
<td>Eat Fast Food</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Count</td>
<td>40</td>
<td>36</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>% within Ethnicity</td>
<td>62.5%</td>
<td>48.0%</td>
<td>60.7%</td>
</tr>
<tr>
<td>Yes</td>
<td>Count</td>
<td>24</td>
<td>39</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>% within Ethnicity</td>
<td>37.5%</td>
<td>52.0%</td>
<td>39.3%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>64</td>
<td>75</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>% within Ethnicity</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

A chi-squared test also did not show a significant difference between healthful food and ethnicity ($p = 0.510$). Over 80 percent of African-Americans ate fresh and healthful food while just less than 20 percent said they did not; about 75 percent of Whites ate fresh and healthful food while just over 25 percent said they did not. Again, this is opposite of what was expected and could be because the questions did not ask about the frequency of consumption. Studies show racially mixed and non-white neighborhoods have less access to supermarkets and better quality food which limits

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14 Data from the Community Food Assessment.
many aspects of food purchasing for them. Because supermarkets are less available, people may resort to buying fast food more frequently than making meals at home (see table 4.2).

Table 4.2: Crosstabulation between ethnicity and eating healthful food

<table>
<thead>
<tr>
<th>Eat Healthful Food</th>
<th>Ethnicity</th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>African-American</td>
<td>White</td>
<td>Other</td>
</tr>
<tr>
<td>No</td>
<td>Count</td>
<td>12</td>
<td>19</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>% within Ethnicity</td>
<td>18.8%</td>
<td>25.3%</td>
<td>28.6%</td>
</tr>
<tr>
<td>Yes</td>
<td>Count</td>
<td>52</td>
<td>56</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>% within Ethnicity</td>
<td>81.3%</td>
<td>74.7%</td>
<td>71.4%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>64</td>
<td>75</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>% within Ethnicity</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

There was a significant correlation between bulk food and race/ethnicity (p = 0.014) at the 95% confidence level\textsuperscript{15}. However, lambda was 0.216, so it was a moderate relationship. About 38 percent of African-Americans ate bulk food while just over 62 percent did not. Almost 70 percent of white people ate bulk food while just over 30 percent did not. Access may be part of the reason African-Americans do not eat as much bulk food since it is more common in the suburbs. Another issue may be with the wording of the choices. Bulk food was grouped in with free or reduced price food, which may be interpreted differently by different people; separating bulk food from free and

\textsuperscript{15} Data from the Community Food Assessment.
reduced price food might have changed the interpretation of the question and provided a more accurate outcome.

Frequencies were also run to determine different barriers people may face when shopping for food. Almost 85 percent of respondents answered the distance to the store is not a reason it is hard to get food; for the majority of respondents, transportation is not an issue either. Overall, the data reflects accessibility is not one of the barriers to healthful food for people living in Toledo.

4.2 Cost

Crosstabulation was used to analyze the relationship between the recoded health variable and the collapsed income variable. As hypothesized, the more costly healthful food is, the less it will be consumed, thus impacting the self-reported health. A chi-squared test revealed a significant relationship (p = 0.005) between income and self-reported health. The majority of respondents self-reported good health, but respondents reported better health as income level increased. However, this is not only because of nutrition. There may be other factors that impact self-reported health. Additionally, because health is self-reported, it may not be an accurate reflection of the health of an individual as assessed by a doctor.

ANOVA was used to analyze the relationship between the collapsed income variable and the frequency of meals eaten at a fast food restaurant each week. There was no statistical significance (p = 0.170; F = 1.701), but the general trend appeared to be

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16 Data from the Local Food Survey.
17 Data from the Local Food Survey.
18 Data from the Local Food Survey.
that as income increased, more fast food meals were eaten. This trend is opposite of what was expected, although it was not significant. Fast food was thought to be the preference for low-income families since it is thought to be less expensive than healthful food. One explanation for this could be the convenience of fast food rather than the cost; for some, it might be easier to stop and pick up fast food rather than cook a meal when they get home.

Similarly, people who had a higher income are thought to spend more money at the grocery store because more nutritious food is often more expensive. ANOVA was used to analyze the relationship between the amount of money spent to feed their household at a grocery store and income and showed significance (p = 0.009; F = 4.034)\(^{19}\). However, there was no significance (p = 0.574; F = 0.666) when testing the relationship between income and the amount of money spent per week at a fast food restaurant\(^ {20}\). This reflects the trends for frequency of consumption; fast food consumption increased as income increased, so people may have more money to spend on both groceries and fast food.

Additionally, there was no significant relationship between the amount of money spent at a grocery store each week and self-reported health, as evidenced by a simple means comparison showing people who self-report excellent health spend an average of 60 cents more at the grocery store each week than people with fair and poor health\(^ {21}\). People who self-reported good health spent seven dollars less than the other groups.

Differentiating between the types of foods people buy and how many people they buy for

\(^{19}\) Data from the Local Food Survey.
\(^{20}\) Data from the Local Food Survey.
\(^{21}\) Data from the Local Food Survey.
could better explain the link between the amount of money spent at a grocery store and self-reported health. However, this still would not explain why people who self-report excellent health spend as much as people with poor self-reported health; it also would not explain why people who self-report good health spend, on average, seven dollars less a week on groceries. Family size could influence the amount of money spent as well as what food was being bought.

People who self-reported fair or poor health did spend more per week at a fast food restaurant\textsuperscript{22}. They spent just over 12 dollars compared to the 11 dollars for people who self-report good health and eight dollars for people who self-report excellent health. However, this finding was not statistically significant.

Eighty-two respondents of the Community Food Assessment Survey stated money, or a lack of it, makes it hard to get food. Crosstabulation analysis was used to analyze if money as a reason it is hard to get food impacted the choices to eat fast food and healthful food. Almost 76 percent of people who stated money as a reason it is hard to get food still ate fresh, healthful food. However, because there is no way to check the frequency of consumption, people who eat fresh and healthy food once a week will be in the same category as people who eat healthful every day.

About 35 percent of the participants said they had to choose between housing and food\textsuperscript{23}. A chi-squared test revealed significance at the 90% level (\(p = 0.080\)) when compared to race. Although 56.5 percent of African-Americans and 66.7 percent of

\textsuperscript{22} Data from the Local Food Survey.
\textsuperscript{23} Data from the Community Food Assessment.
whites do not have to choose between housing and food, 43.5 percent and 33.3 percent do, respectively. This is important to keep in mind when looking at food security.

Although income significantly impacted the self-reported health of people living in Toledo as revealed through a chi-squared analysis (P = 0.005), the only significant correlation was with regards to the amount of money spent to feed their household at a grocery store (P = 0.006)\(^{24}\). Even though people may report money as a reason why it is hard to get food, most say they are still able to find fresh, healthful food to eat. This could be attributed to various programs around the city such as the Gleaning program that gathers leftover crops and donates them to people who may otherwise be unable to afford them. It could also be because the terms “fresh” and “healthful” are subjective terms so they are dependent upon interpretation.

4.3 Time

Crosstabulation analysis was used to test the relationship between employment status and the frequency of fast food consumption\(^{25}\). There were only 11 people who stated they were full-time homemakers compared to the 62 people who work full-time. Although a chi-squared analysis revealed the relationship between employment status and fast food consumption was not significant (P = 0.727), the primary food purchasers for the household who are full-time homemakers ate fast food less frequently than the primary food purchasers for the household who work full-time. Fifty-four percent of the homemakers did not eat any fast food and 45 percent of full-time workers did not eat any

\(^{24}\) Data from the Local Food Survey.
\(^{25}\) Data from the Local Food Survey.
fast food. If the number of full-time homemakers was higher and close to the amount of full-time workers, the relationship might become significant.

Crosstabulation analysis was also used to test the relationship between employment status and the frequency of meals prepared at home each week\(^{26}\). The number of meals prepared at home each week was re-coded into a variable that was easier to understand. People who answered that they prepared seven meals or less at home each week were coded as 1, people who prepared eight to fourteen meals each week were coded as 2, and people who prepared more than fifteen meals each week were coded as 3. These categories were chosen to represent and average of one, two, or three meals prepared at home each day. Seventy-two percent of homemakers prepared at least 15 meals at home each week. Although only 42 percent of full-time workers prepared 15 meals or more at home each week, this was still the most frequent response; about 26 percent cooked less than seven meals at home and 32 percent cooked between eight and 14 meals each week at home (see table 4.3).

\(^{26}\) Data from the Local Food Survey.
Table 4.3: Crosstabulation between employment status and meals prepared at home each week.

<table>
<thead>
<tr>
<th>Meals Prepared at home each week</th>
<th>Count</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 meals or less</td>
<td>16</td>
<td>25.8%</td>
<td>1</td>
<td>9.1%</td>
</tr>
<tr>
<td>8-14 meals</td>
<td>20</td>
<td>32.3%</td>
<td>2</td>
<td>18.2%</td>
</tr>
<tr>
<td>15 or meals or more</td>
<td>26</td>
<td>41.9%</td>
<td>8</td>
<td>72.7%</td>
</tr>
<tr>
<td>Total</td>
<td>62</td>
<td></td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

Chi-Squared analysis revealed that there was no significant relationship ($P = 0.162$) which can probably be attributed to the small amount of people who are full-time homemakers compared to the larger number of full-time workers. Regardless of employment status, the majority of meals were prepared at home. However, full-time homemakers definitely prepared more meals at home, which might be the result of having the time to prepare meals more frequently. The term “home-cooked” is also vague and subjective so it could be interpreted in different ways among respondents.

In order to analyze the relationship between employment status and the amount of money spent at a grocery store each week, a new variable had to be created for the
amount of money spent at the grocery store. The original question from the Community Food Assessment Survey was not categorical, so the amounts were combined to better comprehend the responses. People who spent less than $100 at the grocery store each week were coded as 1, while people who spent between $100 and $199 each week were coded as 2 and people who spent more than $200 each week were coded as 3.

A chi-squared test revealed a significant relationship \( (p = 0.093) \) at the 90\% confidence level between the amount of money spent at a grocery store each week and employment; full-time homemakers are more likely to spend more money at the grocery store than people who work full-time\(^{27}\). This could be related to full-time homemakers consuming less fast food than full-time workers and preparing more meals at home.

The relationship between employment status and self-reported health was tested through crosstabulation analysis\(^{28}\). A chi-squared analysis revealed there was no significant relationship \( (P = 0.905) \), but most people reported good health for both categories. Additionally, fair or poor health was self-reported the lowest for both employment statuses; only five full-time workers and one homemaker reported poor health.

### 4.4 Preference

The majority of people (66.5\%) seldom think of how food is produced when they shop for food. Only a quarter of respondents usually shop for organic food if available\(^{29}\). Crosstabulation analysis was used to test the relationship between purchasing organic food and other factors.
food and health. Although a chi-squared analysis revealed there was not a significant relationship (P = 0.125), almost 80 percent of the people who self-reported fair or poor health seldom thought of how food was produced when shopping for food, compared to 65 and 70 percent for excellent and good health respectively.

There was no significant relationship between health and the importance of a place having the lowest prices\textsuperscript{30}. Overall, almost 80 percent of all respondents thought it was important or very important for a place to have the lowest prices. Over half of the people who self-reported fair or poor health (52.5\%) said a place having the lowest prices was very important compared to 33 percent of people with excellent health and 37 percent with good health.

Finally, crosstabulation analysis was used to test the relationship between the importance of a place having the lowest prices and fast food consumption\textsuperscript{31}. A chi-squared test revealed no significance (p = 0.583) between the two variables. Almost half of the respondents that reported it was very important for a place to have the lowest price reported not eating any fast food meals in a week. An additional 30 percent only reported eating one fast food meal a week and just over 10 percent ate two fast food meals a week.

\textsuperscript{30} Data from the Local Food Survey.
\textsuperscript{31} Data from the Local Food Survey.
Chapter 5

Conclusion and Discussion

This study cannot be generalized because the samples used were not representative. Because of this, additional research should be done on the food environment in Toledo, Ohio. The Community Food Assessment focuses specifically on Toledo, Ohio, but the Local Food Survey focused on Lucas County, Ohio. Therefore, the respondents could live in one of the suburbs outside of Toledo that might have greater access to grocery stores. The average income level in Lucas County is almost $7,000 more than the city of Toledo and the percentage of people in poverty is at 22 percent in Toledo versus 17 percent in Lucas County. Some of the findings that were not significant for Lucas County may be significant for the city of Toledo. However, because we could not differentiate between Toledo and the other suburbs in Lucas County, it is hard to know the impact the suburban data had on the city data.

Most consumers travel between two and three miles to get food for their household. However, neither study asked about the quantity or quality of grocery stores in the local neighborhood. People may have to travel two to three miles to obtain food because they do not have any adequate place nearby. Although most of the Community Food Assessment respondents did not report distance as a barrier, 24 respondents still found it to be an issue; these people may live in a food desert.
There are almost six more fast food restaurants per 1,000 people in the city of Toledo than grocery stores. The availability of fast food restaurants may play a different role in the types of food eaten than initially thought. People may not be eating fast food because it is harder to get to a grocery store; rather, they may be eating fast food because it is more readily available. Differentiating between distances travelled for fast food versus a grocery store may show people travelling shorter distances to a fast food restaurant.

Previous studies have found food choices are closely linked to food cost. Including questions that ask the average amount of money spent on different food categories such as meats, produce, dairy, and snacks would allow for a better understanding of why people make the food choices they do. If people cannot afford good cuts of meat and instead opt for lunch meat, it could affect their health. People may have to make a rational decision to eat poor quality foods rather than not eat at all or remain hungry throughout the week because they bought more healthful food and could not stretch their money as far.

Additionally, questions that differentiate between the types of food purchases people make could contribute a better understanding of how access to a grocery store impacts health. Distinguishing between produce, types of meat, pre-packaged foods, and snack foods and knowing the frequency these foods are purchased could provide better insight into the impacts these food purchases have on health. Knowing if people are buying mostly lunch meat and frozen dinners rather than produce and healthier cuts of meat is important when looking for a relationship between grocery store purchases and health. People who have access to a grocery store may not always have access to good quality foods, nor the money to spend on less processed foods.
A closer look at the ethnic layout of Toledo could contribute to understanding how food preferences and ultimately choices impact health. Knowing the concentration of grocery stores versus fast food restaurants in different neighborhoods would provide a better understanding of the food environment. Studies have shown ethnicity has impacted the location of grocery stores in certain areas; there are also health disparities with diseases such as diabetes and obesity that affect ethnicities differently.

Many people stated money was a reason it is hard to get healthful food in Toledo, but they were still able to get it. However, the amount of healthful food they eat cannot be determined nor where they purchase it from. Knowing if the food comes from the grocery store is just as important as knowing if the food is being obtained through a local program such as Gleaning or farmers market produce that was purchased through SNAP benefits. Additionally, using organic food as a proxy for healthful food can be misleading when looking at monetary impacts. Organic food is usually higher in cost, so it may deter people from purchasing organic, but not from purchasing produce. Although significance could not be determined, cost does seem to be a factor for accessing healthful food.

Jilcott (2007) suggests parents working long hours with inflexible schedules may not be able to spend a lot of time shopping for and preparing elaborate meals. The data did not show a significant relationship between employment status and fast food consumption. However, the primary food purchasers for the household who are full-time homemakers ate fast food less frequently than the primary food purchasers for the household who work full-time. Additionally, full-time homemakers prepared more meals at home each week compared to full-time workers. The relationship was not significant which can be attributed to the small amount of respondents who are full-time.
homemakers, but it still alludes to time being an important factor when picking the types of foods people consume.

There are many different factors that contribute to the reasoning people have when buying food. Access, cost, time, and preference all play a role in determining what types of food people will buy. It is hard to determine how these factors influence the food choices people in Lucas County make. Although many people self-reported good or excellent health, this may not give an accurate picture necessary for assessing the impact of fast food versus grocery store availability. People may still face issues of hunger or food insecurity if they cannot obtain the nutritious food they want.

As Patel (2007) pointed out, our food consumption choices are not entirely our own; what food is available is determined by the power of food corporations. Understanding the rationale behind why people make certain food choices can provide insight into how the built food environment affects health. The distance people travel for food may not be as significant as factors such as time and cost are for obtaining nutritional food. Factors such as work schedules, after-school activities, high rent, a low-paying job, and not having time may play a larger role in affecting the choices people make about the food they eat.

Choice and preference are also elusive concepts. What economists call “choices” may not feel like a choice to a poor person or a person with less access to healthful food. People may have to make tradeoffs in order to survive. What one person may view as a choice might be seen by another person as something out of necessity because there were no other options.
Although the data provides a look at the food insecurity environment in Lucas County, the various sources of data were still lacking in terms of both methodological and conceptual limitations. Future research needs to address the frequency of obtaining foods from different places and must be mindful of the nutritional needs of a population. Differentiating between various types of food is crucial in understanding how the built environment affects food choices and how those choices affect health. Many people may have to rationalize between food and other important factors such as housing. Understanding the role these structural issues play in food consumption choices can aid organizations in advocating for changes at both the local and national level in order to provide people with additional affordable and healthful options when purchasing food.
References


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