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Beliefs and Opinions of Low-Income Residents Living in a Food Desert in a Gulf Coast State

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Walden University

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Kimberly L. Willis

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Walden University
2019

Abstract

Beliefs and Opinions of Low-Income Residents
Living in a Food Desert in a Gulf Coast State

by

Kimberly L. Willis

MPH, Walden University, 2010

BS, Auburn University, 2007

Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy
Public Health

Walden University

March 2019

Abstract

This study was an investigation of the access problem to fresh and affordable fruits and vegetables and how limited access influenced the beliefs and opinions of residents of a food desert as designated by United States Department of Agriculture. Many researchers have documented that price, availability, and transportation are barriers to fruit and vegetable consumption, particularly among low-income individuals. Researchers in other studies have concluded that these barriers are further exacerbated by an individual's distance from a supermarket or grocery store. However, much less information is available regarding the beliefs and opinions about life in a food desert and how these factors affect food-shopping. Accordingly, this study used the socioecological model framework to explore the beliefs and opinions of the low-income residents who lived in a food desert.. Qualitative data were collected from semistructured interviews with 14 low-income participants to learn their beliefs and opinions about access to fresh produce. The qualitative data were transcribed and analyzed, using ATLAS.ti software, to generate themes. Results showed that the participants felt fresh fruits and vegetables were available, but they were not always able to purchase them because of cost. Respondents had an awareness of how their budgets influenced food choices and shopping behaviors as well as how the mode of transportation and mileage from a grocery store impacted food shopping behaviors. The implications for positive social change include creating additional options for food access, such as farmers' markets, community gardens, mobile food trucks, and lowered prices (or subsidies).

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Dedication

I would like to dedicate this study to the Most High, my Creator. Secondly, I would like to dedicate this dissertation to my family. Thank you for your encouraging words and support throughout this entire process. To my sister, Is'cah L. Willis, thank you for your understanding and support. You have been phenomenal throughout this journey. Thank you for allowing me time to write and vent, and for cooking me fantastic meals. You are the glue that holds our family together.

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Chapter 1: Introduction to the Study

Introduction

In this study, I explored access to fresh and affordable produce, and how such access influenced the beliefs and opinions of residents of a United States Department of Agriculture (USDA) designated food desert. In this study, I also explored whether these factors affected food shopping behaviors in a Gulf Coast state. I researched factors related to living in a food desert by conducting semistructured qualitative interviews and documenting the lived experience(s) of study participants. The findings from this study contributes to the increasing need for better understanding of how the food environment impacts low-income residents of food deserts.

This chapter provides an explanation of the term “food desert” and establishes the need to address food insecurity. I discuss the concerns and opinions of residents who reside in a food desert community to identify efficient policy actions to address limited access to healthy food options (Hilmers, Hilmers, & Dave, 2012), gauge intervention policies, promote lasting healthy eating habits, create lively communities, and promote positive social change. Thus, from a public health perspective, it is imperative to understand the impact of a food desert and its relation to the study population. In order to accomplish this task, this chapter lays the groundwork for the sections that follow.

Background

Access to food is defined by proximity to a supermarket or large grocery store (Jiao, Moudon, Ulmer, Hurvitz, & Drewnowski, 2012). The term “food deserts” was derived in the United Kingdom to define newly constructed, remote public housing units,

which are barren of viable food shopping venues for residents. Policymakers, government officials, and researchers have since applied this term to low-income rural and urban communities within the United States which lack convenient access to healthy food (Barker, Francois, Goodman, & Hussain, 2012). The 2008 Farm Bill, Section 7527, defines a food desert as an area in the United States with inadequate access to inexpensive and healthy food, principally an area composed of primarily lower-income communities (Institute of Medicine and National Research Council, 2009, p. 8). The USDA Economic Research Service (ERS) reported that limited access to major food outlets, such as supermarkets and grocery stores, affects over 29.7 million people (Sohi, Bell, Liu, Battersby, & Liese, 2014). These are residents who live in low-income areas more than one mile from a supermarket. An Internet mapping tool, developed by the USDA, shows that about 10% of the 65,000 census tracts in the United States meet the description of a food desert (USDA, 2017). These low-income tracts contain 13.5 million people living in food deserts with low access to healthy food. This research showed that 82% of this population lived in urban areas (USDA, 2017).

Gulf Coast State Data

The Gulf Coast state I explored contained 46 census tracts; 15.3% of the population lived below the poverty line, which is higher than the national average of 12.7% (United States Census Bureau, 2016). According to the USDA, food desert conditions are based on two features of the population: low access to supermarkets and low-income. In the study area, 41 out of 147 census tracts (159,340 residents) are considered food deserts (USDA, 2017). See Figures 1 and 2.

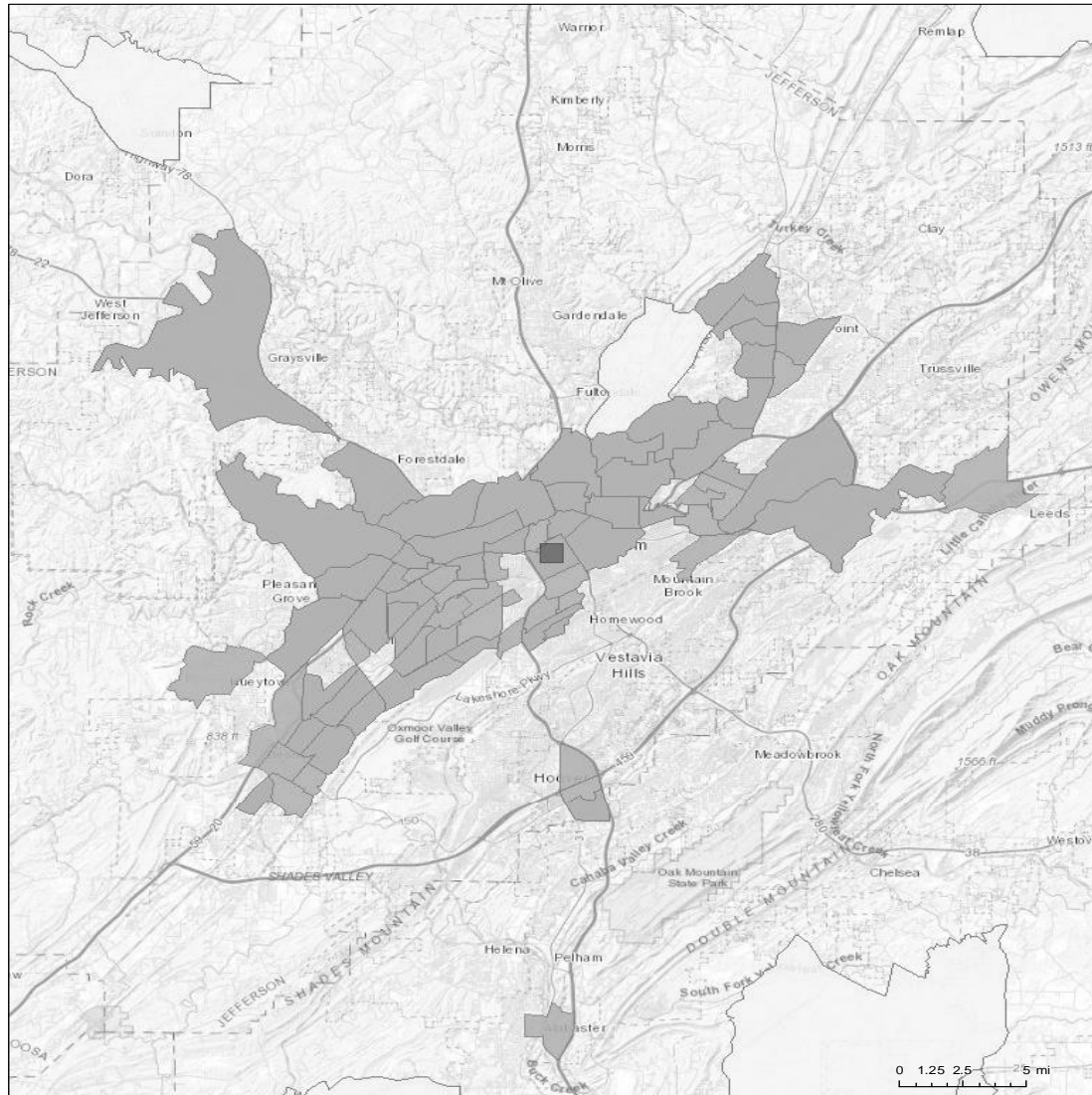


Figure 1. Map of low-income census tracts where a substantial number of residents are more than one mile (urban) or 10 miles (rural) from the closest supermarket.

Note: Reprinted from USDA Food Desert Locator Tool, November 3, 2017. Retrieved from <https://www.ers.usda.gov/data-products/food-access-research-atlas/documentation>. In the public domain.

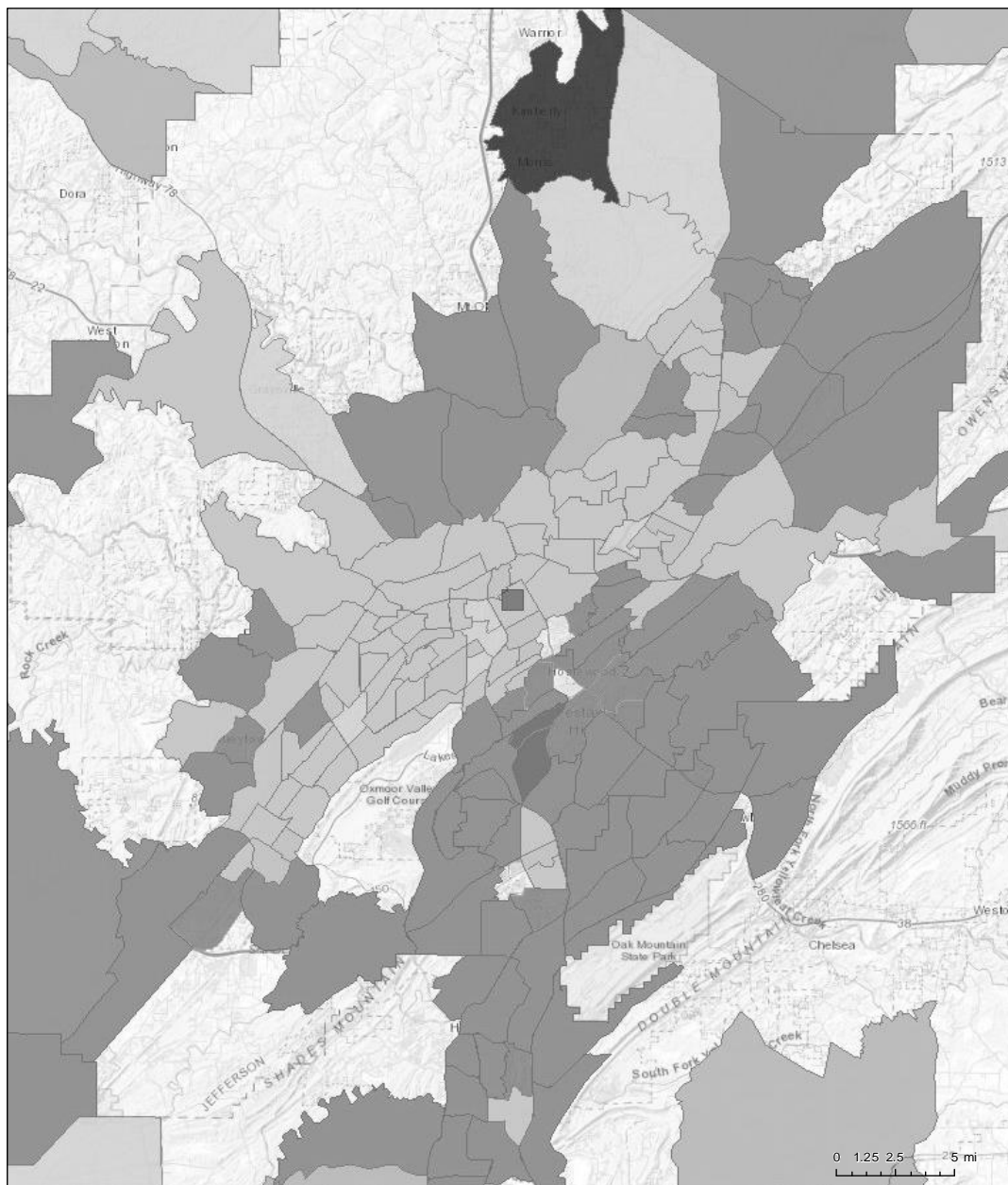


Figure 2. Map of low-access census regions with a poverty rate of 20% or higher, or regions with an average family income less than 80%. *Note:* Reprinted from USDA Food Desert Locator Tool, November 3, 2017. Retrieved from <https://www.ers.usda.gov/data-products/food-access-research-atlas/documentation>. In the public domain.

Challenges of Food Insecurity

Individuals residing in a food desert face many problems. For example, limited access to healthy food is a significant contributor to obesity and chronic diseases (Miller et al., 2016). Danhong et al. (2016) examined the association between obesity and food environmental factors. They found that food desert status was positively linked with obesity. Additional challenges such as hunger, disruption in eating patterns, poor health outcomes, and reduced food intake are encountered in food deserts (Miller et al., 2016). Individuals residing in these areas have a tendency to spend more money on less nutritious foods and less money on fruits and vegetables (Miller et al., 2016).

Healthy-eating advocates work to increase access to healthier foods across the nation (Danhong et al., 2016). According to the Centers for Disease Control and Prevention (CDC, 2014), neighborhoods within 10 miles of grocery stores tend to consume more fruits and vegetables and have better health outcomes. There is a relationship between healthier food options through retail access and a lower prevalence of overweight and obesity in adults (Miller et al., 2016). Conversely, a higher occurrence of overweight and obesity in adults is found in urban areas where food is available through convenience stores and fast-food outlets (CDC, 2014).

There are challenges with availability and accessibility of healthier food options. For example, if healthy food is outside of a consumer's budget, the individual may decide not to purchase a healthier food option (Danhong et al., 2016). If the selection of food is not adequate (limited varieties, limited quantities, or expired products), then healthier

food is deemed inaccessible as well. Therefore, accessibility may be based on various conditions that are present in the food environment (Danhong et al., 2016).

Multiple factors may limit consumers from finding healthy food options.

Danhong et al. (2016) proposed the following barriers to healthy food access:

- Distance from where the individual lives in relation to where he or she shops
- Poverty status
- Vehicle ownership
- Presence of food retailers that offer fewer healthy food options

Assessing the adequacy of healthy foods in low-income communities is a major initiative that has been the driving force for policy change. Although some programs have been implemented in low-income communities, other areas have been inadequately assessed and therefore have not been provided with any solutions to the food desert problem. Furthermore, the impact of living in a food desert community has been seen, but not adequately explained, through research studies and various literature. In order to understand this issue, more research must be performed on various aspects of the food desert phenomenon.

Further Research

Further research must be conducted on the public health impacts of food deserts and the lack of healthy food options for low-income consumers. In this study, I analyzed the concerns and opinions of residents within these communities to aid in potentially identifying effective policy actions for achieving environmental justice (Hilmers,

Hilmers, & Dave, 2012). This research could also help evaluate intervention strategies and promote lifelong healthy eating habits, optimal health, and vibrant communities.

Problem Statement

The problem addressed in this study was that of residents living in USDA-designated food deserts lacking access to fresh fruits and vegetables. In this study, I observed how inaccessibility to healthy foods influenced the beliefs and opinions of residents in these communities within a Gulf Coast state. Insufficient access to fresh and affordable fruits and vegetables is a significant problem in the field of public health. Conducting research on access to fresh produce could identify effective policy measures and intervention strategies in low-income communities.

Purpose of the Study

The purpose of this study was to assess how the residents of food deserts felt about their opportunities to obtain healthy food. Currently, little research has been conducted on the beliefs and opinions about life in a food desert. To address this gap, a qualitative research approach was used to discover how residents experienced the effects of a food desert. A qualitative interview framework was used to understand what the residents' thoughts were about food desert life, including shopping behaviors and how certain factors affected food choices. In order to record how community members experienced the effects of a food desert, a semistructured interviews with open-ended questions were conducted.

Research Questions

The following six research questions guided this study:

1. What are the beliefs related to food accessibility for low-income individuals living in a food desert in a Gulf Coast state?
2. How do the beliefs of low-income individuals living in a food desert in a Gulf Coast state affect food shopping behaviors related to food choices?
3. What are the opinions related to food accessibility of low-income individuals living in a food desert in a Gulf Coast state?
4. How do the opinions of low-income individuals living in a food desert in a Gulf Coast state affect food shopping behaviors related to food choices?
5. What are the shopping behaviors related to food accessibility of low-income individuals living in a food desert in a Gulf Coast state?
6. How do the shopping behaviors of low-income individuals living in a food desert in a Gulf Coast state affect food choices?

Theoretical Framework of the Study

The theoretical base for this study was the socioecological model (SEM).

Bronfenbrenner (1994) proposed the SEM and theorized that various environments interplay with one another (e.g., physical, cultural, organizational, or policy environments) to affect the health of a population. This model provides the framework for interventions that address multifactorial health problems at various levels of an environment. This framework highlights the health implications that a food desert can impose upon individuals, interpersonal relationships, communities, and society as a

whole (CDC, 2015). The SEM acknowledges that individual, relationship, community, and societal influences play a role in health choice and lifestyle, as each layer is nested within the others. The SEM views a person's environment as an important factor in his or her welfare. More detailed information on the SEM is provided in Chapter 2.

The SEM fits this study because it views a person's environment as an important factor in his or her welfare, which fits within the environmental aspect of the model (CDC, 2015). Eating behaviors and their impact on the health of a community cannot be fully understood without paying attention to the environmental, societal, and political settings (Rodriquez & Maraj Grahame, 2016). In this study, I focused on multiple factors that could explain the differences in the experiences of individuals living in a food desert community. The SEM provided an effective framework for reaching a better understanding of the factors and barriers that impacted individuals in a food desert. Lastly, the model provided a framework for suggesting interventions targeted at the individual, organizational, community, and policy levels (see Chapter 5).

Nature of the Study

The nature of this study was qualitative. Qualitative research focuses on (a) understanding encounters from the point of view of those who live them (Rudestam & Newton, 2015). and (b) on personal events, and finds associations between participants and the research questions. A qualitative interview framework was used to understand what an individual's thoughts were about food desert life. This framework also allowed me to ascertain how shopping behaviors affected food choices.

In order to record how community members experienced the effects of a food desert, I conducted semistructured interviews (30–60 minutes in length) with open-ended questions. The conversations were audio-recorded to make it easier to focus on the content of the interview and verbal prompts. Verbatim transcripts of the interviews were then made (Jamshed, 2014).

Definitions

Belief: A belief is an idea based on lived experiences and principles and may not be based on rationality or truth (McLean, 2003). Beliefs are a frame of reference through which a person understands the world. Beliefs can be changed, but this usually requires long periods of time or convincing evidence to persuade a person. A belief can come from different sources, such as a person's own encounters, cultural and societal norms, or what other people say (McLean, 2003).

Bracketing: Bracketing is separating scientific concepts from the study of psychology and the mind (Ungvarsky, 2017). Bracketing allows the researcher to overcome the mind and become reflexive when asking questions (Bevan, 2014). Bracketing occurs when the researcher separates his or her biases from the findings in the study. Bracketing is achieved by using memos to describe data in the study or by keeping a reflexive journal.

Constructivism: Constructivism is an interpretivist philosophy of learning that stresses that people construct their view of the world through their lived experiences (Howson, 2013). Constructivism posits that learning is an active process. In this paradigm, people create their own subjective representation of objective reality (Howson,

2013). Constructivism assumes that a participant's knowledge is created from his or her previous knowledge, regardless of learning style.

Food insecurity: Food insecurity is defined as a lack of access to adequate food when money and other resources are limited. The USDA monitors food insecurity in the United States by performing surveys sponsored by the USDA's ERS (USDA, 2016). Food insecurity, along with other social determinants of health (housing, education level, employment status), affect health and quality of life. Not all people living below the poverty line experience food insecurity, and people living above the poverty line can experience food insecurity (USDA, 2016).

Interpretivism: Interpretivism is a philosophical viewpoint that claims that social experiences need to be examined as a whole and that there are multiple realities (Howson, 2013). Interpretivism allows the researcher to appreciate the differences between participants. Interpretivism also focus on meaning and employs multiple methods to explain a phenomenon. The interpretivist approach includes data collective via interviews and observations (Howson, 2013).

Low-access communities: Low access communities are classified as areas where a substantial number of residents are more than one mile (urban) or 10 miles (rural) from the closest supermarket enquired from the USDA Food Desert Locator Tool (USDA, 2017). A census tract is considered low-access when a large number of residents in the tract are far from a supermarket, supercenter, or large grocery store (USDA, 2017).

Low-income communities: Low-income communities are classified as areas with a poverty rate of 20% or higher, or regions with an average family income less than 80% of

median family income for the state/metropolitan area enquired from the USDA Food Desert Locator Tool (USDA, 2017). Approximately, 54.4 million people (17.7%) of the population in the United States live in low-income communities (USDA, 2017).

Opinion: An opinion is an expression of a person's feeling that cannot be proven (Corvino, 2014). An opinion is an attempt to draw a conclusion from factual evidence. Additionally, opinions can be based on facts or emotions. In comparison, a belief states a relationship between an object and some characteristic (Oskamp & Schultz, 2005). In other words, a belief is a firmly held conviction.

Shopping behavior: Shopping behavior is concerned with the selection and purchase of products or services to satisfy a need for an individual or group (Tetteh, 2013). Buying behavior is influenced by multiple factors, such as availability of resources, socioeconomic status, characteristics of the product, and trust of the consumer (Tetteh, 2013). Shopping behavior is also influenced by the beliefs and opinions of family members and friends.

Triangulation: Triangulation is a way of enhancing research credibility by collecting data on the phenomena from multiple sources, or by using more than one researcher to collect data (Howson, 2013). Triangulation allows the researcher to develop a comprehensive understanding of the phenomenon in the study. Additionally, triangulation can also test validity from the merging of data from various sources (Howson, 2013).

Assumptions

In this study, I made certain assumptions. First, I assumed that the participants would answer the interview questions honestly. Secondly, I assumed that the inclusion criteria of the study sample was appropriate and therefore assured that all of the participants have all experienced the same phenomenon of the study. These assumptions were necessary within the context of this study, as they directly relate to how some individuals who live within food deserts may have similar and contradictory beliefs and opinions about life within their community.

Scope and Delimitations

In the study area, 41 out of 46 census tracts were defined as food deserts by the USDA (USDA, 2017). In this study, I focused on residents over the age of 18 years who lived in areas below the poverty line. The most common racial or ethnic group living below the poverty line were African American, followed by European American and American Indian (United States Census Bureau, 2016).

The delimitations of the study included the geographic location, demographics of the population, and temporal restraints. The geographic location in this study was a Gulf Coast state. The lack of correlation with other states could make this research ungeneralizable to other areas of the country. The demographics of the population was skewed. For example, more women than men were included in the study, because more women are unemployed and living below the poverty line (United States Census Bureau, 2016). Additionally, the study population included more African Americans than European Americans or American Indians, because most African Americans live below

the poverty line. A lack of European American and American Indian participants could result in an inaccurate representation of the total affected population, thus not allowing me to accurately assess the different impacts experienced by racial groups living in a food desert community.

Limitations

There were a few limitations to the present study that are worth noting. First, there could have been an unknown condition or factor at the participant's home or study area (public library) that could have biased the responses of the participants. Secondly, the number of participants included in the study were enough to reach a level at which saturation of the data was achieved. To address the limitations, several techniques were implemented.

First, interviews conducted in the participant's home took place in areas with limited distractions. For example, home interviews were conducted in areas of the home with access to few electronic devices and few interruptions from family members. Secondly, I used criterion sampling and nonprobability sampling to recruit participants residing in low-income communities. Additionally, the demographics of each community in the Gulf Coast state were obtained via the Census Bureau, giving me a clearer picture of the geographic location of prospective study participants from different racial/ethnic groups. As a result, I was able to use this information to post flyers in areas representative of a diverse population.

Significance of the Study

The public health field has focused on defining and understanding the concept of food deserts, but little attention has been paid to how these circumstances impact the individuals who experience them. This study can fill a gap in understanding with its focus on inadequate access to affordable fresh fruits and vegetables, and how that inadequate access influences residents of a food desert.

The results of this study, which assesses the beliefs and opinions of community members, can help policymakers create legislation that supports healthy food programs. It can also help residents understand barriers to food access and assess the impact that it has on their diet and health. The beliefs and opinions of community members living in a food desert can also correlate with food shopping behavior.

This research study provided an understanding of how beliefs and opinions about access to healthy food affected personal health in relation to food choices. The SEM can help policymakers and community members understand how layers of influence intersect to shape a person's food choices. For example, implementing changes at various levels of the SEM is effective in improving eating behaviors. Food choices are part of an individual's eating pattern. Professionals can work with community members in a variety of settings to adapt the residents' choices to accommodate personal food budgets and accessibility.

Summary

This study was an investigation of the problem of access to fresh and affordable fruits and vegetables, and how this influenced the beliefs and opinions of residents of a

food desert as designated by the United States Department of Agriculture. Many researchers have documented that price, availability, and transportation are barriers to fruit and vegetable consumption, particularly among low-income individuals.

Researchers in other studies have concluded that these barriers are further exacerbated by an individual's distance from a supermarket or grocery store. However, much less information is available regarding the beliefs and opinions about life in a food desert and how these factors affect food-shopping. Accordingly, this study used the socioecological model framework to explore the beliefs and opinions of the food desert phenomenon.

The relevance to the theoretical framework and relevant literature related to the research topic will be described in Chapter 2. Chapter 3 will outline the research method used to answer the research questions. Chapter 4 will discuss the findings, highlighting the complex and dynamic role that beliefs, opinions and behaviors play for individuals who live in food deserts, as these factors relate to healthy food access. Chapter 5 will discuss the interpretation of findings as related to the literature review, limitations of the study, and recommendations for further research. Additionally, policy implications will be discussed as well as the positive social change aspect of the research study.

Chapter 2: Literature Review

Introduction

The problem addressed in this study was inadequate access to fresh and affordable fruits and vegetables and how that influenced beliefs and opinions of residents of a USDA-designated food desert. I also addressed whether these factors affected personal health in relation to food choices. The literature provided an explanation of the term “food desert” and established the need to address food insecurity in these areas. It supported the establishment of various intervention strategies used to counteract the effects of food insecurity nationally and to promote healthier dietary standards. There is a paucity of literature on the influence of a food desert on the beliefs and opinions of those who reside within the surrounding communities. In this chapter I describe the literature search strategy, the theoretical foundation, and the review of the current literature on food deserts.

Research Strategy and Organization

Five databases (Academic Search Complete, CINAHL Plus with Full Text, PubMed, PsycINFO, and SocINDEX with Full Text) were searched in September and October 2017 using the following search terms: *food deserts*, *food insecurity*, *socioecological*, and *social ecological* with the Boolean operator *OR*. Furthermore, a keyword search was performed to obtain the official definitions of the key terms.

Study Selection

The initial database search returned English-language abstracts. The types of literature included were peer-reviewed journals with full text from 2013 to the present.

Relevant studies were identified by eliminating duplicates, irrelevant articles, and outdated material. From those relevant studies, some were eliminated based on the following criteria:

- The literature did not contain relevant information on food deserts.
- The article covered instances outside of the United States.
- The literature addressed other topics not directly related to food deserts.
- The article was a review.
- The article was an editorial.
- The literature was a dissertation.
- The literature was based on a newspaper article or newsletter.
- The literature was not focused on social ecology and/or food deserts.

Organization of Studies

During the literature review process, it was imperative to organize the articles obtained from the research databases. Each of the studies was listed in a literature review matrix according to the following characteristics:

- Author name
- Date
- Theoretical framework
- Research questions
- Methodology
- Analysis/results
- Conclusions, implications for future research, and implications for practice

Theoretical Framework

Urie Bronfenbrenner (1994) proposed the sociological model and posits that various environments interplay with one another (physical, cultural, organization, or policy environments), creating an effect on population health. The SEM theorizes how proximal processes, personal characteristics, context, and historical time influence each other (Rosa & Tudge, 2013). This model provides the framework for interventions that address multifactorial health problems at various levels of an individual's environment. This framework highlights the health implications that a food desert can impose upon the individual, interpersonal relationships, community, and society as a whole (CDC, 2015).

The SEM acknowledges that individual, relationship, community, and social influences play a role in healthy choices and lifestyles, as each layer is nested within the others (Figure 3). Socioecological theory views a person's environment as an important factor in his or her welfare. The SEM is an arrangement of four structures; microsystem, mesosystem, exosystem, and macrosystem (Rosa & Tudge, 2013).

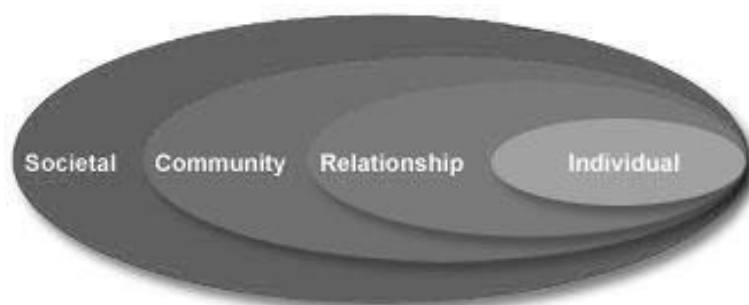


Figure 3. Image of socioecological model. *Note:* Reprinted from *The socioecological model: A framework for prevention*, November 3, 2017. Retrieved from <https://www.cdc.gov/violenceprevention/overview/social-ecologicalmodel.html>. In the public domain.

Microsystem

The concept of the microsystem is part of the ecological systems theory, which states that an individual's development is understood by examining environmental influences. The microsystem is the most proximal setting that includes physical characteristics of a person's environment, such as the home, the workplace, or the childcare facility. In the microsystem, individuals interact with one another by participating in activities that take place over time (Rosa & Tudge, 2013).

Bronfenbrenner also coined a term referred to as bi-directional influences (Rosa & Tudge, 2013). For example, a child's family may affect his or her beliefs and behavior; however, the child also affects the beliefs and behaviors of the parent. Bi-directional influences are strongest at the microsystem level and have the greatest impact on an individual. Therefore, the parent's beliefs and opinions about food choices can influence the child. For example, once the child grows into an adult, he or she may choose to make food purchases based on the beliefs and opinions of their parents. The child may also have an influence on the food purchases of his or her parents.

Mesosystem

The mesosystem is the relationship between two or more microsystems and affects an individual directly (Rosa & Tudge, 2013). The mesosystem is created when an individual enters into a new setting and is diminished when an individual leaves a new setting (Rosa & Tudge, 2013). Like the microsystem, the developmental characteristics are similar. Unlike the microsystem, activities and interpersonal relationships take place over several settings rather than just one.

Exosystem

The exosystem is the third setting in the ecological model. In this setting, the developing individual does not enthusiastically participate within it, but still experiences the influences of the setting or project his or her influence within it. The exosystem is the setting that most politicians focus on when creating new policies for members of society. Additionally, the exosystem layer includes family members, extended family members, media, work environments, neighbors, friends, and social welfare services (Rosa & Tudge, 2013).

Macrosystem

The macrosystem includes institutional systems, such as the economic, social, educational, legal, and political systems (Rosa & Tudge, 2013). The function of the macrosystem is determined by function of the other ecological settings, such as the family or school institution. It contains the attitudes, ideologies, values, laws, and customs of a culture. It can also describe the subculture of a community.

Chronosystem Models

An interesting expansion on the socioecological framework is the notion of the chronosystem model. In a chronosystem model, time is viewed as an important stimulus on human development. Researchers using such a model focus on the changes that have occurred over the lifespan of an individual. These experiences may occur in the external environment or within an individual's own body (such as puberty, and illness). Additionally, these changes can be normative or non-normative (Rosa & Tudge, 2013).

Bronfenbrenner believed that these events can alter the relationship between a person and their environment, thus influencing developmental change.

Theoretical Connections to Study

The SEM fits this study since it views a person's environment as an important factor in his or her welfare, which fits within the environmental aspect of the model (CDC, 2015). Eating behaviors and their impact on a community cannot be fully understood without paying attention to the environmental, societal, and political settings (Rodriquez & Maraj Grahame, 2016). The SEM provides an effective framework for reaching a better understanding of the factors and barriers that impact individuals in a food desert and therefore can provide guidance for developing appropriate intervention strategies. There are multiple health implications that a food desert can inflict upon the individual, interpersonal relationships, the community, and the society. For example, at the individual level, the risk factors for the lack of access to healthy foods are numerous and can include determinants such as income level, education level, and geographic location.

The chronosystem model proposed by Bronfenbrenner helps explain the changes that an individual faces when a food desert impacts a geographical area. This unexpected event alters the existing relation between person and environment, thus creating a dynamic that may bring about progressive change in human developmental outcomes. It is important to note that most of these effects are not additive since the four elements within the SEM simultaneously influence one another (Rosa & Tudge, 2013).

The Socioecological Model: Beliefs, Opinions, and Shopping Behaviors

The individual level of the SEM identifies biological and personal history factors that increase the chance of an individual being impacted by a food desert. Factors contributing to this increased chance include age, education, income, and race/ethnicity. Strategies at the individual level promote opinions, beliefs, and behaviors that reduce the impact of food deserts on an individual. Strategies may include creating community gardens, providing education on gardening, or teaching people how to budget and make better food choices (Rodriquez & Maraj Grahame, 2016).

As previously stated, the SEM assumes that many levels of effect exist and that these levels interplay with one another. Golden and Earp (2012) state that the social, physical, and cultural aspects of the environment have an impact on health. These researchers state that the environment is multifaceted, and the environmental sphere may influence the health of people inversely, contingent on their personal beliefs and practices (Golden & Earp, 2012). In the proposed study, this reasoning can correlate with people experiencing the environment differently, thus forming differing beliefs and opinions about the community that he or she resides in. Additionally, an individual's experience with environmental context could cause him or her to develop different practices, in this case, shopping behaviors.

Shopping behaviors and the consumption of fresh fruit and vegetables are part of a complex interplay of personal, cultural, and environmental factors that can be described by the SEM: intrapersonal level (shopping habits, nutritional knowledge), interpersonal level/social environment (beliefs and social traditions impacting eating practices), and

organizational/public policy levels (food access and availability). The SEM provides a valuable framework for better understanding numerous factors and barriers that influence beliefs, opinions, and shopping behaviors of people living in a food desert (Robinson, 2008).

An opinion is an attempt to draw a conclusion from factual evidence (Butler & Fowler, 1981). Opinions are subjective, and in relation to food choices, represent preferences for a certain type of food based on price or access. Unlike an opinion, a belief is based on cultural faith, personal faith, morality, or values (Butler & Fowler, 1981). Beliefs are also subjective, but are convictions based on faith, morality, or values.

Literature Review Related to Key Variables and Concepts

Proximity to Supermarket or Grocery Store

The United States food supply chain has changed drastically since the 1970s. The food supply contributes to the poor diet quality of Americans, including the under-consumption of fruits, vegetables, and whole grains (Neff et al., 2009). A federal study has shown that U.S. agricultural production standards must change in order to allow the population to eat according to USDA dietary recommendations.

The closing of grocery stores around the country can create food deserts. For example, Miller et al. (2016) projected that approximately 291 grocery stores across the United States closed in 2015. Many grocery chains close as a result of a bad economy or bankruptcy. Grocery stores are leaving the city centers, and retail food outlets are emerging in suburbs (Pine & Bennett, 2014). This creates a food system in which transportation is necessary for accessing healthy food, because this healthy food is not

available within walking distance from people's homes (Pine & Bennett, 2014). As a result, convenience stores, restaurants, and other non-traditional outlets are becoming more important parts of how people access food, especially since they are located within walking distance of residential neighborhoods located in many food deserts.

The study conducted by Miller et al. (2016) focused on a small rural community in Appalachia, United States and how residents there adapted to an imminent food desert. Residents in rural Appalachia experience a high rate of cardiovascular disease and mortality. Poor nutrition is a risk factor for these conditions. When faced with an impending food desert, residents in rural Appalachia started a food cooperative (co-op). Even though the community responded to the food desert crisis by creating a food outlet, data from the study showed that 77% of the residents did their grocery shopping at a supermarket more than 11 miles from their home residence. The researchers found that the location of a food outlet in an impending food desert did not guarantee residents would shop there. Additionally, the placement of a new food outlet in the community did not lead to an improvement in the dietary behaviors of the residents (Miller et al., 2016). Based on the researchers' findings, being at risk of becoming a food desert changed consumer behavior.

With the recession and increased income inequality in the United States, cost is a significant barrier to obtaining healthy food. Traveling to and from the grocery store can be expensive, especially for people with tight budgets (Pine & Bennet, 2014). Researchers have found that many residents in urban and rural areas drive great distances to purchase foods at the lowest prices. In the study by Miller et al. (2016), this point was

clearly shown. Residents were willing to travel outside of their community (11 miles) for the best food prices versus buy the food at the co-op that was available near their home. The researchers showed that a family of four could save \$44.82 per week or \$179.28 per month by traveling further away to buy food at a supermarket versus the food cooperative within their community (Miller et al., 2016). In this study, the researchers found that even though it costs money to travel, ultimately more money was saved in the long run.

The researchers also noted that although the residents saved money overall on their food purchases, this behavior came at a cost. For example, traveling long distances negatively impacted health, which led to a higher prevalence of obesity, cardiovascular disease, and death. Some people with low access to food chose to travel greater distances to a supermarket. However, their low-cost food purchases were often less healthy than higher cost food items in their local communities (Miller et al., 2016). When cost is the only factor considered in this scenario, people bought fewer fruits and vegetables at the distant food markets than they bought at a local food store.

It is theorized that distance to a supermarket may be an underlying cause of obesity and other health inequalities (Ghosh-Dastidar et al., 2014). For example, the researchers of a study of 10,763 residents in Mississippi, North Carolina, Maryland, and Minnesota found that the presence of supermarkets in a residential census tract was associated with a 24% lower prevalence of obesity and a 9% prevalence of overweight individuals. Researchers have also shown that a higher concentration of supermarkets within 0.5 miles of a person's residence was associated with a lower body mass index (BMI) (Ghosh-Dastidar et al., 2014).

Rodriquez and Maraj Grahame (2016) demonstrated that people make food choices governed by transportation to a food source, which is a part of the mesosystem. Based on survey results obtained during the study, participants noted that they would like to eat fresh fruits and vegetables; often they did not have the ability to do so. The lack of transportation was a barrier to reaching a food outlet to obtain healthy food. A lack of transportation left an individual at the disposal of what was available at local food sources such as convenience stores. Convenience stores stocked little to no fresh foods, and they usually provided foods that were less nutritious. Additionally, the condition of the roads (unpaved roads and remote locations) prevented participation in federally-assisted programs such as meal delivery. These barriers negatively impacted health. Participants in the study revealed that they suffered from a health condition such as diabetes ($n = 2$), hypertension ($n = 2$), atherosclerosis ($n = 2$), high cholesterol ($n = 4$), or stroke ($n = 3$) (Rodriquez & Maraj Grahame, 2016). The lack of transportation was further complicated for those who are disabled and cannot carry their groceries or travel to a food outlet.

Chrisinger (2016) found that study participants made adjustments to their shopping behavior and purchases based on their transit type. For example, many participants bought less items if they were going to ride a city bus. Additionally, other consumers decided to purchase a rolling luggage to carry items from the store to work, allowing the participant to eliminate going to the grocery store after work. Other consumers decided to make several shopping trips in one week to the grocery store, limiting the amount of items they had to carry each time. In the worst scenarios, study

participants were at the disposal of members of their families or neighbors to find a ride to the grocery store. In other cases, individuals had to pay a taxi driver to drive them to and from a food outlet, which proved to be expensive (Chrisinger, 2016). Whatever the case, participants had to alter their shopping patterns in order to accommodate the mode of transportation that was readily available to them. Chrisinger's (2016) study was not limited to those who only used public transportation. Those with vehicles were interviewed, and further research indicated that gas prices often limited how far a shopper would venture on a trip to the grocery store. Private vehicles were an enhancement to those who owned them, however, challenges still arose such as maintenance costs, declining eyesight, traffic tickets, driver's license possession, and rising gas prices.

Sohi et al. (2014) found that residents in eight South Carolina counties with low food access areas traveled further to their main food store. As a result, these residents accumulated more total shopping miles per week than their counterparts living in areas with higher food access. Sohi et al. (2014) also found that a lack of access to a supermarket was not automatically a factor in food shopping behaviors. The researchers noted that the accessibility of certain food items and price was an important factor to some individuals living in food desert communities. They go on to note that an improvement in public transportation and closer food outlets save time and money for individuals living in areas with limited access to healthier foods. Increased travel distance to supermarkets incurred an exacerbated cost, often linked to time spent traveling to a food outlet as well as the cost required to get there.

An interesting twist on the distance to a supermarket or grocery store conundrum was the accuracy of Geographic Information System (GIS) maps used to locate food deserts and their distance from these establishments. Liese et al. (2014) evaluated two measures of food access created by two different agencies using a 2009 food environment validation study in South Carolina. These researchers found a difference in the percentage of food desert census tracts reported by the CDC (29.0%) versus the USDA ERS (22.5%). Liese et al. (2014) proposed that better spatial analysis is warranted for pinpointing food access. It is also important to note that the measures used by the USDA ERS targeted low-income areas with limited access to healthy food outlets. Therefore, the USDA's measures are less likely to identify more census tracts than the CDC. The information obtained via the CDC focused primarily on supermarket or grocery stores with the boundaries of a census tract. From the consumer's perspective, these estimates need to be as accurate as possible in order to find healthier food options within the community. Additionally, when the CDC and USDA ERS systems are synchronized, they provide a better picture of increasing and diminishing food desert communities.

New travel options have also led to a new dilemma in the food desert issue. Transportation mediums such as Uber and Lyft provide an alternative to using a taxi and are also cheaper on the consumer. However, these services tend to discriminate against supermarket consumers. For example, many drivers with these companies will avoid picking up grocery shoppers because they anticipate a cheaper fare (based on lower mileage to the destination), thus imposing risks for the driver losing money for a longer car ride (Mui et al., 2015). Additionally, drivers will go out of their way to cancel

requests for rides to grocery store locations, or they tend to give grocery-shopping passengers a lower rating so that other drivers will not service these areas. Transportation difficulties are seen the most in elderly populations. Gauging et al. (2013) used semi-structured, qualitative interviews from 16 senior citizens to study healthier food options. Residents in this study faced buying their food from local corner stores because of their lack of private transportation and immobility caused by chronic illness or disease.

Ramirez et al. (2017) monitored a mobile farmers market to improve food access to healthier foods in central California. The social marketing theory incorporated marketing principles that outlined the Produce on the Go (POTG) initiative. This initiative used two vehicles to deliver healthy produce to areas in central California, aiming to improve food access and improve dietary behaviors. As a result, the researchers aimed to see a reduction in obesity among the rural population through a social marketing approach (Ramirez et al., 2017). Distance to food was a factor in this study population, however, other outlets for food existed in this community, such as fruit and vegetable stands. Zepeda et al. (2014) also investigated mobile food markets and their effectiveness in food desert communities. In this study, mobile markets contributed to an increase in healthy eating among participants who shopped there. Non-shoppers, however, ate less fruits and vegetables than those who shopped at the mobile food market.

Low-Income Status and Cost of Food

Low-income neighborhoods and ethnic minorities in the United States have worse health and higher rates of obesity. Childhood obesity also continues to be a public health concern in the United States. According to the most recent National Health and Nutrition

Examination Survey, the United States saw the prevalence of obesity among 2 to 19 year-olds increase by 16.9% between 1976-1980 and 2009-2010 (Niswanger et al., 2016).

Low-income individuals, as well as ethnic minorities, are also less likely to have access to grocery stores and supermarkets in comparison to higher-income and white neighborhoods (Ghosh-Dastidar et al., 2014).

Previous research has addressed that healthy food is often expensive and difficult to obtain in comparison to less healthy food. As a result, residents within a food desert community begin to alter their shopping patterns based on their food environments. Studies showed that low-income shoppers adapted their shopping behaviors to a variety of barriers, including time, transportation, physical ability, income, or produce quality (Chrisinger, 2016).

Low-income individuals may be willing to travel further distances to lower priced stores. LeDoux and Vojnovic (2013) showed how residents, regardless of economical and transportation restraints, shopped for groceries outside of their neighborhood food environment. Based on this fact, once someone was inside a low-cost store, they are often influenced by displays and marketing of less nutritious foods, or junk foods. In turn, this advertising motivated individuals to buy more of an item, leading to a higher likelihood of obesity. Previous research showed that low-income shoppers were sensitive to fluctuations in price and to the approaches in which different foods are displayed and advertised (Ghosh–Dastidar et al., 2014). In general, supermarkets tend to promote automatic or impulsive buying, owing to the large inventory of products and stimulation in the supermarket environment.

People residing in a food desert typically shop where they perceived the environment as safe and where they shared the same racial and income characteristics as other consumers (Chrisinger, 2016). However, the shopping behaviors of individuals were made more challenging by income constraints. Chrisinger (2016) found that one's budget dictated the types of choices made inside the grocery store. Health literature acknowledged that there are inequalities in health between individuals, between socioeconomic and ethnic groups, and between geographic groupings of individuals.

Rodriquez and Maraj Grahame (2016) showed that a main barrier to obtaining healthy food was cost. In this study, participants voiced that they would like to obtain more fruits, however, they were limited from performing this action because of cost. Low-income in urban settings posed a different source of frustration compared to rural areas. Weatherspoon et al. (2013) utilized a Rotterdam approach to estimate price and spending elasticities for fresh fruit and vegetables in an urban food desert. The researchers showed that the daily average fruit and vegetable sales were around \$60. This gave the assumption that fruits and vegetables were being consumed at an average of 1-2 servings per person, per day (Weatherspoon et al., 2013). In this scenario, the average daily intake of fruits and vegetables correlated with the national average. The researchers showed that if fresh fruits and vegetables were accessible to consumers, then they would readily buy them (Weatherspoon et al., 2013). These researchers went on to state that consumers in this low-income tract were responsive to price changes. If the price of fruits and vegetables were decreased, then the consumer would purchase more of them. Thus, the study documents the role that purchasing decisions play on the price of food in a food

desert. Thus far, research has shown that the affordability of fruits and vegetables is important.

Bukenya (2017) researched the determinants of food insecurity in Huntsville, Alabama in low-income households. This study is unique because it studies a small, emerging urban area in the South. The researcher in this study used primary data collected through a household food security and socioeconomic telephone survey between August 27 and September 17, 2016 (Bukenya, 2017). This survey was administered in 14 low-income neighborhoods in the Huntsville Metropolitan Statistical Area (HMSA) in census tracts designated as food deserts. Results showed a statistical significance between food-secure and food-insecure households. For example, food security is often influenced by the age of the head of household. Additionally, the educational attainment of the head of household was statistically significant (5%) and suggested that educated head of household members were more likely to be food secure than those households headed by members who were illiterate (Bukenya, 2017). The key indicators in this study linking household food security to head of household members was household income and the presence of children.

On the opposite end of the spectrum, Caspi et al. (2012) researched a group of residents in low-income housing in the greater-Boston area who did not live in food deserts. The researchers aimed to examine the relationship between perceived and objective measures of supermarket access and fruit and vegetable consumption in a low-income community in an urban setting (Caspi et al., 2012). The researchers found that residents in this area of the country had access to supermarkets, but despite this fact,

chose not to consume many fruits and vegetables. An important limitation to this study was the cross-sectional framework used. In this case, reverse causation cannot completely be ruled out (Caspi et al., 2012).

The Supplemental Nutrition Program for Women, Infant, and Children Retailers

Limited access to healthy food is a major contributor to childhood obesity (Figure 4). Previous research studies have shown that consuming unhealthy, high-calorie, and low-nutrient density foods puts a child at a greater risk of being overweight. A greater intake of fruits and vegetables is linked with a reduced risk of obesity and other health concerns (Niswanger et al., 2016). Women, infant, and children (WIC) retailers are also used as proxies for healthy food retailers. Since 2009, WIC retailers have been required to maintain fresh fruits, vegetables, whole grain foods, soy products, and low-fat dairy products (McDermot et al., 2017). WIC is the third major food and nutrition assistance program in the United States. It served an estimated 8 million participants per month in 2015, including over half of all infants born in the United States (USDA, 2017). The incidence of obesity among young children from low-income families participating in WIC in U.S. states and territories was 14.5% in 2014 (CDC, 2015). The figures below display the average monthly participation in WIC from 1980-2015 (Figure 5), children who participate in WIC (Figure 6), and the income-level of those who participate in WIC (Figure 7).



Category: Obesity / Weight Status

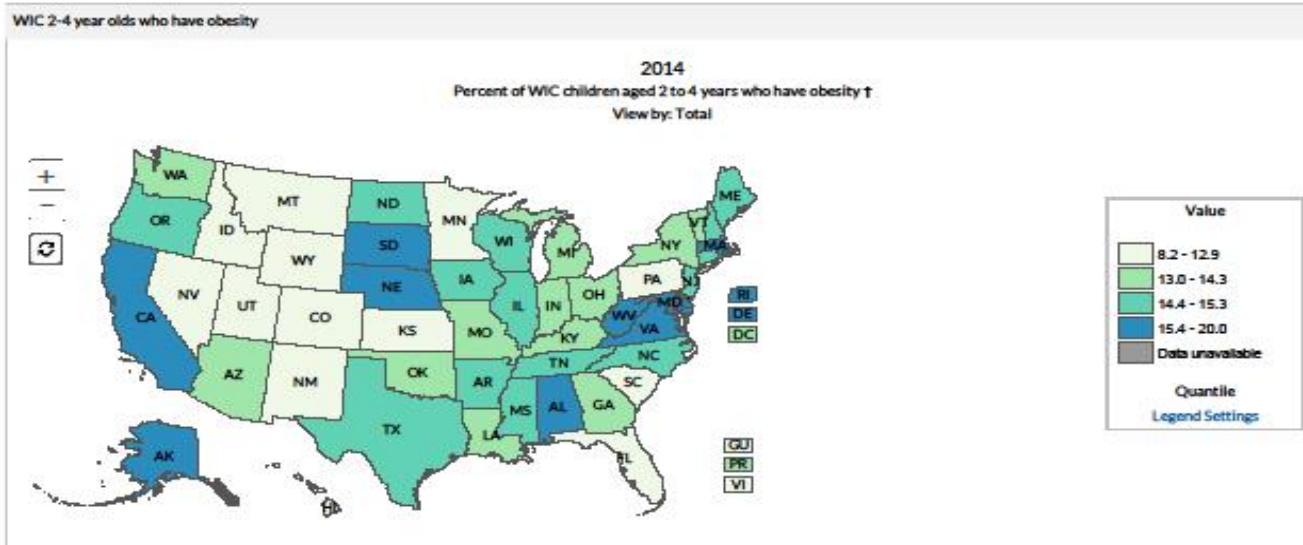
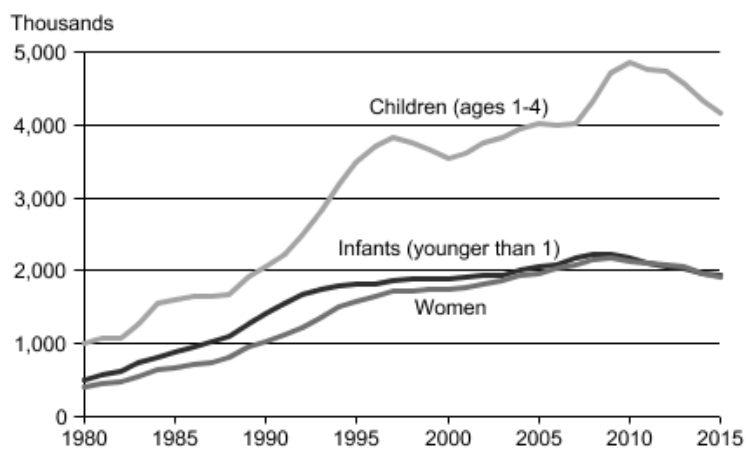


Figure 4. Map of WIC 2 – Four-year-olds who have obesity. *Note:* Reprinted from *National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition, Physical Activity, and Obesity. Data, Trend and Maps*, March 18, 2018. Retrieved from https://nccd.cdc.gov/dnpao_dtm/rdPage.aspx?rdReport=DNPAO_DTM.ExploreByTopicandIsIClass=OWSandIsITopic=andgo=GO. In the public domain.

Average monthly participation in WIC, fiscal year 1980-2015



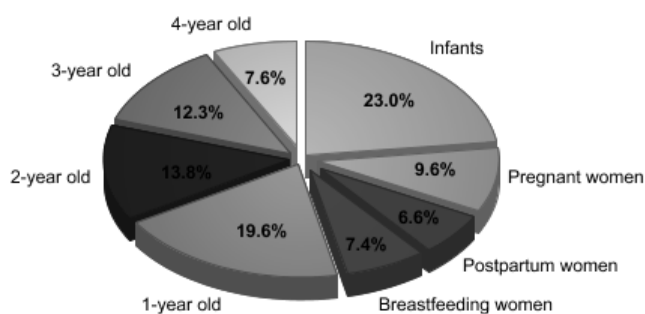
Note: Data for 2015 are preliminary.

Source: Prepared by ERS, USDA, using data as of March 2016 from USDA, Food and Nutrition Service.

Figure 5. Graph of average monthly participation in WIC.

Note: Reprinted from *ERS, Food and Nutrition Services, USDA*, November 3, 2017. Retrieved from <http://www.fns.usda.gov/sites/default/files/op/WIC2014.pdf>. In the public domain.

Children 1-4 years old account for over half of WIC participants, April 2014

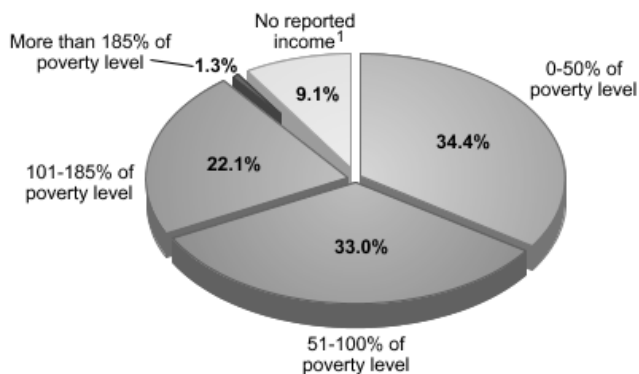


Source: Prepared by ERS, USDA, using April 2014 data from "WIC Participant and Program Characteristics: 2014 Final Report," USDA, Food and Nutrition Service (see Table II.3). Available at: <http://www.fns.usda.gov/sites/default/files/op/WIC2014.pdf>

Figure 6. Chart of children 1 – 4 years old account for over half of WIC participants.

Note: Reprinted from *ERS, Food and Nutrition Services, USDA*, November 3, 2017. Retrieved from <http://www.fns.usda.gov/sites/default/files/op/WIC2014.pdf>. In the public domain.

One-third of those participating in WIC in April 2014 had income at or below 50 percent of poverty level



¹ Participants with no reported income include those with missing information on income, income time period, or size of the economic unit, as well as those who reported zero income. It is not clear whether zero income indicates missing information or adjunctive eligibility (for example, SNAP participants, who automatically meet income eligibility criteria).

Source: Prepared by ERS, USDA, using April 2014 data from "WIC Participant and Program Characteristics: 2014 Final Report," USDA, Food and Nutrition Service (see Table III.6). Available at: <http://www.fns.usda.gov/sites/default/files/op/WICPC2014.pdf>

Figure 7. Graph of one-third of those participating in WIC in April 2014.

Note: Reprinted from *ERS, Food and Nutrition Service, USDA*, November 3, 2017. Retrieved from <http://www.fns.usda.gov/sites/default/files/op/WIC2014.pdf>. In the public domain.

In the study conducted by McDermot et al. (2017), physical access to WIC retailers based on rural and urban settings, mode of transportation, and level of availability was assessed. The researchers found that a large portion of low-income residents lived closer to a WIC retailer than a supermarket. The WIC program is able to provide people with healthy food options when they are not in proximity to a farmers' market or larger supermarket. It should be noted that not all retailers participate in the WIC program. Accessing food through a WIC retailer is a viable option in a food desert environment when there are limited options for obtaining adequate nutrition. This also

showed that WIC programs are effective in their efforts to reach the low-income population.

Some populations are not covered by WIC. For example, there are undocumented immigrants, and those who do not know of their eligibility, who do not benefit from the program. In addition, stigma, and negative beliefs and opinions toward utilizing government sanctioned benefits, as well as administrative obligations versus the amount of benefits received, all impacted registration for services (Neff et al., 2009). Even those accessing the benefits of the program sometimes are not able to afford food purchased outside of the parameters of the program. In turn, this limited the ability of the program to improve nutritional well-being, especially for young children.

Minority Competition Theory

Thibodeaux (2015) proposed that the minority competition theory can explain how macro-level processes affected the motivation to discriminate, thus leading to racial inequalities. This theory argued that as the minority population increased in an area, the residents are seen as a threat to the livelihood of a community, leading to discrimination that kept valuable resources away from the minority group. In the case of food deserts, as the minority population increased in urban tracts, more supermarkets were relocated to the suburbs, which lead to closures in the inner cities where the majority of food deserts occurred. There are many ways to “mask” this effect, however, by intentionally hiding discriminatory practices or spreading them out over a larger segment of the minority population (Thibodeaux, 2015).

Environmental Justice and Food Deserts

The concept of environmental justice entered the equation when further assessing neighborhood disparities. Environmental justice is concerned with the impartial distribution of environmental problems, such as health threats and limited access to healthy food options (Hilmers, Hilmers, & Dave, 2012). This viewpoint describes the higher incidence of obesity among low-income and minority populaces related to inadequate access to healthy foods. This dilemma is also linked to a higher concentration of fast-food chains and convenience stores in food desert communities. The research led by Hilmers, Hilmers, and Dave (2012) showed the correlation between obesity rates and the availability of high-calorie foods offered by fast-food chains and convenience stores. The concept of environmental justice makes society and government responsible for this act, challenging society to provide identical access to healthy food choices for all populations. Racial and ethnic disparities mostly affect non-Hispanic whites, Mexican-Americans, and non-Hispanic blacks.

Socioecological Model and Food Deserts

In the past, food security models were viewed as systems ensuring the basis for human survival. The ecological-social environment model supported the premise that food security is both a framework and intervention to address social, economic, and environmental issues (Kaiser, 2011). Food security in a community is linked to sustainable access to healthy foods grown in an environmentally friendly manner. As a social development intervention, this can be viewed as an answer to economic advancement and unbiased resource dissemination (Kaiser, 2011).

The SEM offers a comprehensive approach to assessing food deserts. The SEM helps researchers link health behavior with health outcomes. These levels of influence include intrapersonal factors, interpersonal factors, community factors, organizational factors, and public policy factors (Robinson, 2008). The social networks within the ecological-social environment are classified as commensalistic or symbiotic (Kaiser, 2011).

Food security empowers individuals to improve the food production within their community in various ways. Kaiser (2011) stated that community food security models shift the system away from production efforts and efficiency and focuses them on food systems that are malleable and strong to ecological and socioeconomic circumstances. Furthermore, the food security model reflects the connections between individuals and their environments.

Goldberg and Mawn (2014) used a retrospective cross-sectional study design to evaluate data from the National Health and Nutrition Examination Survey from 2007 to 2008. The sample population in this study included 2,405 adults that were 60 years of age and older. The social ecological theory was used as the framework to examine food insecurity among older adults.

At the intrapersonal level, marital status, race and ethnicity, and educational achievement had an impact on household food insecurity. At the interpersonal level, a lack of financial support from public assistance or family members was linked to household food insecurity. For example, having someone to help with financial responsibilities made an individual less likely to be food insecure compared with

someone who did not have financial help. At the organizational level, health insurance coverage had a major effect on household food insecurity status. At the societal level, obtaining food stamp benefits were linked to household security status (Goldberg & Mawn, 2014). In this study, the researchers showed the impact of food insecurity on the elderly population. Households that received benefits from the Supplemental Nutrition Assistance Program (SNAP) were more likely to be food insecure compared to those that never received SNAP benefits (Goldberg & Mawn, 2014). Additionally, the social ecological model was used to examine multiple spheres of influence (intrapersonal, societal, and organizational).

Horning and Fulkerson (2014) used a systematic review of 16 market basket surveys (MBS) done in the United States from 1985 to 2012. In this study, the researchers found a link between the social ecological method and increased affordability of healthy foods. The researchers were avid supporters of the SNAP for low-income families, and they used this program to explain how participation in such initiatives can increase consumption of fresh fruits and vegetables.

Gauging (2013) examined the roles that senior residents assume in their families through a sociological lens. Understanding environmental factors and other resources helped decipher the food choices and food behaviors that are made within urban neighborhoods. Additionally, these factors showed how the choices made by an individual affects families and neighbors in a food desert. To further this point, Bruce et al. (2015) examined the network of suppliers that corner stores procure for goods in Baltimore, Maryland. In this study, food and beverage suppliers fell into two categories:

the healthy supplier network ($n = 15$), and the unhealthy supplier network ($n = 41$). The study found that the corner store connection to suppliers in the unhealthy supplier network was two times greater ($t = 5.23, p < 0.001$) compared to the healthy supplier network (Bruce et al., 2015). Additionally, African-American, Asian, and Hispanic corner store owners had less connection to healthy supplier network suppliers (Bruce et al., 2015). In this study, the researchers demonstrated how supplier trends influenced the types of produce available to local shoppers in a food desert.

Themes in the Literature

The present review identified many factors related to the food desert community. It is important to note that more information is necessary regarding various indicators that may lead to a food desert. However, there were several themes characterizing food desert communities discussed in the literature. Some of these themes arose in the study's findings (discussed in Chapter 4), further strengthening the importance of such research in the field of public health.

Proximity to Grocery Stores

Major factors that determined a consumer's food choices were proximity to the grocery store or supermarket as well as marketing within that store. Most food deserts are found in urban areas across the country. The barriers within a rural community are multi-layered, locking people into persistent food insecurity (Rodriguez et al., 2016). Rural food deserts often lack access to fresh food, gather in low-income areas and ethnic minority communities, and are related to poor health outcomes and chronic disease (Ramirez et al., 2016). Rural communities pose their own challenges, and further research

is required to see how the members of these communities obtain adequate nutrition.

Physical barriers can also play a role in access to food. For example, snow or ice-covered streets, and a lack of curb cuts and sidewalks can make it difficult for people with mobility challenges to travel to grocery stores (Pine & Bennett, 2014).

Low-Income

Low-income was cited as a major barrier in some research studies. Living in a low-income community is a major risk factor for not being able to consume healthy foods, thus leading to conditions such as cardiovascular disease, obesity, and even mortality. A twist on this theme is that low-priced food does not necessarily aid in helping members in a food desert. Researchers were able to show that lower-priced foods can also lead to unhealthy eating and obesity. In areas with low access to healthy foods, food delivery services are often unavailable or too costly for most customers to use. Similarly, in areas with high-priced grocery stores, economic difficulties may be more limiting than physical difficulties (Pine & Bennett, 2014).

Grocery Store Closures

The closure of grocery chains across the country has led to more food desert communities. Grocery stores are closing their doors due to decreased profits as well as bankruptcy. As a result, people are required to venture further away in order to obtain healthy foods. Some researchers showed how an impending food desert can affect a rural community. For example, in Appalachia, a food cooperative was implemented when a major grocery store chain closed its doors (Miller et al., 2016). An interesting piece of information that arose from the literature is that, though a community may build a food

outlet within the food desert community, patrons may not necessarily shop at the establishment. Miller et al. (2016) showed that individuals traveled 11 miles to a major grocery store outside of their primary residence rather than shopping at the co-op located in their community. This was attributed to lower food cost at the major food chain versus the prices that were offered in the community. The cost of food often drove consumers outside of their community, especially when residing in a low-access area.

WIC Retailers

WIC retailers are another category in which low-income individuals obtained healthy foods. There is a stigma that is attached to WIC, as some individuals do not want to accept government assistance. It is important to note that not all retailers are WIC-approved. A grocery store or supermarket must agree to accept WIC from community members in order for it to make a potential impact.

Childhood obesity is on the rise in the United States. Most articles noted that a lack of adequate nutrition led to obesity and other health issues. Most individuals with a lack of access to nutritional food tended to shop at convenience stores or eat at fast-food chains. As a result, children were more prone to obesity and other health concerns. Children whose parents received WIC benefits were not exempt. These children were shown to be more obese than their counterparts (McDermot et al., 2017). This information further supported the concept that access to healthier foods as a result of a government program will not necessarily encourage parents to make the right food choices. Some people tend to make food purchases based on cost and proximity. Therefore, advertising is a better measurement of impulsivity than actual food cost.

Summary

There are a number of barriers individuals face when residing in a food desert community. Some of these barriers include low-income, being an ethnic minority and residing within a rural community. There were prominent themes in the literature review outlining the aforementioned barriers. Further policy is needed around the country in order to limit food deserts as well as the impact they have on members within society. Despite having food programs for low-income individuals available, little research has been conducted on the beliefs and opinions about life in a food desert. The documented lived experience of those experiencing the food desert phenomenon may inform community leaders about the need for improved policies related to food access.

To address this gap, a qualitative research approach was used to discover how residents experienced the effects of a food desert. I used this research design in order to gain an understanding of how a number of individuals who live in food deserts have similar and contradictory beliefs and opinions about life there. In this study, I included interviews with individuals living in food desert communities in conjunction with existing data on this phenomenon. Chapter 3 will discuss the research method used to answer the research questions. Additionally, a discussion of the procedure, study participants, data collection, and interview questions outlining the specifics of how the study was conducted will be discussed.

Chapter 3: Research Method

Introduction

The purpose of this study was to assess how inadequate access to fresh and affordable fruits and vegetables influenced the beliefs and opinions of the residents of a USDA-designated food desert. It also assessed whether these factors affected self-reported personal health related to food choices. The literature review in Chapter 2 indicated the importance that the lack of fresh and affordable fruits and vegetables can have on an individual. In order to answer the research questions effectively, the details of the study must also be explained. This chapter is divided into the following sections: research design and rationale, role of the researcher, methodology, and issues of trustworthiness.

Research Design and Rationale

In this study, qualitative research interviews were used to obtain an understanding of the world from the participants' point of view, to understand the meaning of their lived experiences, and to understand their lived world (Creswell & Poth, 2017). A major reason for using a qualitative interview was to gather information from individuals about their personal opinions, beliefs, and feelings (Howson, 2013).

Rather than using closed-ended questions, an in-depth interview was carried out, which allowed study participants to talk freely about their experience and allowed me to gain more information about the phenomenon being studied. The in-depth interviews were audio recorded, transcribed, and analyzed to categorize and explore the text,

specifically, to identify themes. The information gained was used to explain or predict an event, process, or set of experiences (Howson, 2013).

Research Questions

The research questions focused on three phenomena: beliefs, opinions, and shopping behaviors of low-income residents of a food desert. The following six research questions guided this study:

1. What are the beliefs related to food accessibility of low-income individuals living in a food desert in a Gulf Coast state?
2. How do the beliefs of low-income individuals living in a food desert in a Gulf Coast state affect food shopping behaviors related to food choices?
3. What are the opinions related to food accessibility of low-income individuals living in a food desert in a Gulf Coast state?
4. How do the opinions of low-income individuals living in a food desert in a Gulf Coast state affect food shopping behaviors related to food choices?
5. What are the shopping behaviors related to food accessibility of low-income individuals living in a food desert in a Gulf Coast state?
6. How do the shopping behaviors of low-income individuals living in a food desert in a Gulf Coast state affect food choices?

Theoretical Framework

The theoretical base for this study was the SEM. This model provided the framework for interventions that address multifactorial health problems at various levels of a person's environment. This framework helped identify the health implications that a

food desert can impose upon an individual, interpersonal relationships, community, and society as a whole (CDC, 2015). The SEM acknowledges that individuals, their relationship, the community, and society all play a role in health choices and lifestyles because each of these layers is nested within the others.

The SEM fits this study since it views a person's environment as an important factor in his or her welfare, which fits within the environmental aspect of the model (CDC, 2015). Eating behaviors and their impact on a community cannot be fully understood without paying attention to the environmental, societal, and political settings (Rodriguez & Maraj Grahame, 2016). In this study, I focused on multiple factors that explained the difference in the experiences of individuals living in a food desert community.

The SEM provided an effective framework for reaching a better understanding of the factors and barriers that impacted individuals in a food desert and therefore provided guidance for developing appropriate intervention strategies. The SEM outlined the three main antecedents researched in this study (beliefs, opinions, and shopping behaviors) that are linked to design interventions targeted at the individual, organizational, community, and policy levels.

Philosophical Assumption

When viewing the research questions and theoretical framework of this study, it was important to understand the philosophical assumptions linked to it. Philosophical assumptions are the guiding principles behind qualitative research. For example, the epistemological assumption allows researchers to work closely with study participants

(Creswell & Poth, 2017). With this assumption, individual views help the researcher gain knowledge on the phenomenon being researched. The researcher is exposed to study participants in “the field,” finding important contexts for understanding what the individuals are experiencing. For this reason, this study focused on the beliefs, opinions, and shopping behaviors of low-income individuals in a food desert as a way to add value to the study as well as the literature available in the scientific community.

Design of the Study

A qualitative research design was used to examine the beliefs, opinions, and shopping behaviors of residents of a USDA-designated food desert and whether these factors affected personal health related to food choices. Qualitative approaches tend to concentrate on understanding experiences from the point of view of those who live them (Rudestam & Newton, 2015). Qualitative research focuses on individual experiences and finds common associations between different interview respondents in order to better understand the research questions.

Qualitative research is based on a constructivist methodology, and reality is personal and seen through the eyes of the participants (Smith, 2013). The qualitative research process is inductive, and theories are often developed throughout the research process. There are four main qualitative research methods found in human and social science research: ethnographies, grounded theory, case studies, and phenomenological studies (Smith, 2013).

In qualitative research designs, the researchers align human intentions in explaining causal relationships among social phenomena. On the other hand, quantitative

researchers study causal relationships among social phenomena. Additionally, qualitative researchers aim to have a close and personal relationship with study participants while quantitative researchers have an objective, detached stance toward study participants (Smith, 2013). Qualitative researchers are concerned with studying the meanings that individuals create versus the quantitative researcher who studies behavior and other observable phenomena.

A major difference between the qualitative and quantitative researcher is how findings are reported. Qualitative researchers prepare interpretative reports reflecting their own constructions of what is reported versus the quantitative researcher, who prepares impersonal, objective reports of research findings (Smith, 2013). The verification of data also uses different techniques. In the qualitative study, one such verification methodology is triangulation, which occurs when researchers triangulate interview data with observational data. Quantitative research studies are verified through random sampling techniques in order to maximize internal and external validity (Smith, 2013).

In summary, qualitative research stems from an interpretivist view of the world, whereas quantitative research stems from a positivist view of the world. Each method aims to measure things, but in a different way. The qualitative method was appropriate for this study, because social phenomena and processes were explored in their natural settings. The study explored how people cope with living in a food desert as well as how their shopping behaviors were impacted by it. Qualitative research is used to make sense of this phenomena in terms of how it is related to people or how people make sense of

their lived experiences (Smith, 2013). Human emotions are hard to quantify with a numerical value. Therefore, qualitative research is a more effective method of exploring emotional responses than quantitative research. Finally, by using the in-depth interview method, the perspective of study participants can be captured. As a result, new theories can be generated, outlining the significance of human experiences as described by the participants.

Phenomenology

Phenomenology is a 20th century concept (Ungvarsky, 2017). The concept grew out of a movement initiated by Edmund Husserl, although it had been considered by other philosophers. Other researchers who are devoted to furthering this method and appear in the literature include Martin Heidegger, Maurice Merleau-Ponty, Jean-Paul Sartre, and Alfred Schultz (Ungvarsky, 2017). Phenomenology looks at an event through the lens of the person experiencing it, rather than attempting to define how the event took place (Ungvarsky, 2017). A person's insight and explanation of an event is often given precedence in understanding how the occurrence happened.

In phenomenological research, the interview method is a preferred choice. In order to stay away from personal knowledge, Husserl proposed a method called "bracketing", which separates scientific concepts from the study of psychology and the mind (Ungvarsky, 2017). Bracketing requires the researcher to become aware of his or her natural opinion, lived experience, and perception (Bevan, 2014). The phenomenological reduction is an obligation to embrace the phenomenological attitude, also known as the epoché. The epoché is a shift in an individual's attitude that allows him

or her to embrace a critical stance by questioning his or her position pertaining to the phenomena under study (Bevan, 2014). Essentially, bracketing allows the researcher to overcome the mind and become reflexive when asking questions. Reflexivity is the process of self-questioning while also remaining self-consciousness. Thus, self-consciousness necessitates a vital view of bracketed knowledge that includes attitudes in relation to the phenomenon, beliefs, and knowledge maintained throughout the interview (Bevan, 2014).

Qualitative Research Interviews as a Phenomenological Approach

The phenomenological interview must be flexible in order to be effective (Bevan, 2014). The researcher chooses what circumstances afford the best possibilities for study participants without sacrificing data. Phenomenological interviews must also be practical for the researcher since consistency and trustworthiness are important (Bevan, 2014). The structure of phenomenological interviews consists of three areas: contextualization, apprehending the phenomenon, and clarifying the phenomenon (Bevan, 2014).

Contextualization

Contextualization occurs when a person's experience is considered by first analyzing the life story from which the experience gains its meaning (Bevan, 2014). Contextualization allows a person to recreate and describe his or her experience as a narrative. This method allows the researcher to ask the study participant to describe places or events, thus highlighting additional areas for further questioning. When a researcher asks contextual questions, it allows an examination of the phenomenon being

researched as it stands out against the background, but is still a part of the overall picture and informs meaning (Bevan, 2014).

Apprehending the Phenomenon

Apprehending the phenomenon allows the researcher to discover a particular experience in detail with additional questions. In this sense, the phenomena are not just linked to one individual, but to each person who experiences the phenomena. When conducting a phenomenological interview, it is imperative that the interviewer documents the experiences of multiple people living the experience. In order to make this concept work efficiently, descriptive questions must be asked along with structural questions that intend to show how individuals assemble their experiences (Bevan, 2014).

Clarifying the Phenomenon

Clarification of the phenomenon is important, because it looks at the lived experience as a whole, while also investigating the phenomenon itself. Imaginative variation is often used with the clarification of the phenomenon in its transcribed format (Bevan, 2014). Husserl proposed that a phenomenon be examined aggressively, therefore imaginative variation makes the interview process more engaging. This method justifies the fact that no two individuals' experiences are the same or complete. Additionally, it adds consistency and dependability to the research process (Bevan, 2014).

In summary, in an attempt to understand the world from the participant's point of view, a qualitative research interview will be conducted. Researchers who use qualitative research change a person-centered perspective in order to understand the human experience without concentrating on specific ideas. The initial perspective of the

experience is unique, and knowledge and insight can be produced in-depth to present a dynamic picture of the individual's life experience and social context. The phenomenological research approach will allow participants to obtain their own meaning of their experiences regarding beliefs, opinions, and shopping behaviors while living in a food desert.

Role of the Researcher

In this study, the integrity of all participants was preserved by forming a trusting relationship based upon honesty and professionalism. Engagement in the study could not be obtained without a trusting relationship between myself and the participants. During the interviews, I concentrated on being a good listener as well as being non-judgmental, honest, and flexible. I had no relationship or affiliation with the study participants, to include those involving supervisory or instructor relationships. Additionally, open-ended questions were asked to allow participants to express their lived experience(s).

Methods

The sections above have outlined the research design, research questions, theoretical framework, philosophical assumption, study design, and role of the researcher. The next sections will address specific steps taken to perform this type of research study. The sections below highlights participant selection, sample size, recruitment strategy, instrumentation, and data analysis. Lastly, the concepts of trustworthiness, credibility, transferability, dependability, confirmability, and ethical procedures are discussed.

Participant Selection

Participants were selected based on the study's eligibility criteria. The eligibility criteria of this study required the participant to:

- Be 18 years of age or older
- Live in the Gulf Coast state and a community impacted by a food desert
- Be able to communicate in English
- Be able to articulate his or her lived experience related to the phenomenon
- Be able to stay throughout the full duration of the interview

Sample Size

The size of the sample correlated with the proposed sample size for phenomenological research. In phenomenology, the number of participants range from one up to several hundred (Creswell & Poth, 2017). In order to reach saturation, Creswell and Poth (2017) recommend a sample size of 10 participants. For the purposes of this study, there was a sample size target of 10 participants. After recruitment, 14 participants were included in the final study.

In a phenomenological study, it is important to sample individuals who have experience of the phenomenon being studied. Therefore, criterion sampling was an effective sampling strategy when all individuals signify the lived experience (Creswell & Poth, 2017). Criterion sampling sought cases that met the study criteria and was useful for quality assurance. Additionally, criterion sampling helped focus the study population and promote the probability of participation. A purposeful sampling strategy was utilized to select the right respondents. This strategy ensured that the sample would include

multiple perspectives and offer depth and diversity. In turn, respondents would be able to offer relevant information on the phenomenon being studied (Creswell & Poth, 2017).

Recruitment Strategy

A qualitative interview was conducted in this study. The interviews did not exceed sixty minutes in length, and the location could take place in a participant's home, public library, grocery store, train depot, or by telephone. Two recruitment methods were used in this study: criterion-purposeful sampling and nonprobability sampling. Study participants were recruited by the use of flyers, often referred to as criterion sampling, in which a researcher looks for participants who possess certain traits or qualities relevant to the study (Koerber & McMichael, 2008).

The IRB approval number for this study is 05- 21-18-0076205 and it expires on May 20th, 2019. The flyers used in this study were submitted to the Walden University IRB for acceptance into the research study. The flyers included the scope and purpose of the study and directed participants to my contact information. The flyers were placed in high-traffic sections in the proposed study area, such as bulletin boards at the public library, bus station terminals, and grocery stores. In order to ensure my privacy, a phone number provided by the Google Voice service was provided to participants.

The Google Voice number allowed the participants to contact me via voice, text, or voicemail. Potential participants who contacted me in this way were screened for possible inclusion in the study. I aimed to include people who represented the widest variety of perspectives within the range specified by the purpose of the study and the

research questions. Therefore, participants had to meet inclusionary and exclusionary criteria in order to participate in the study (Rudestam & Newton, 2015).

A nonprobability sampling technique, known as “snowballing,” was also used to recruit participants. Snowballing is used when a person meeting the eligibility criteria is found and included in the study. A snowball sample is used when the population of interest cannot be identified other than by someone who knows that a person has experienced the phenomenon or characteristic to be included in the study (Koerber & McMichael, 2008). Snowballing was helpful in finding eligible participants from those who had already been included in the study. It was assumed that those experiencing the phenomenon knew others who were experiencing the same thing. As a result of these associations, potential participants were identified, such as relatives, friends, and co-workers.

Instrumentation

In this study, data were gathered by interviewing participants in a quiet environment, free from disturbances, and where they felt safe. I took the following steps with each interview:

1. Made an appointment with each study participant at a time suited for them
Created a quiet environment conducive to in-depth conversation
2. Arranged face-to-face seating
3. Set up digital voice recorder prior to conducting the interview
4. Asked for permission to begin recording
5. Offered water and snacks at various points during the interview

6. Thanked the participant for their time at the end
7. Reminded the participant about agreement, such as confidentiality and the right to withdraw from the study
8. Allowed the interviewee to review the typewritten transcript of the interview five days after completion for clarity and accuracy

Before the interviews took place, the questions were determined. They had to be open-ended, general, and focused on the phenomenon being tested (Creswell & Poth, 2017). When viewing the researcher as the instrument, he or she is responsible for making decisions about the progress of the interview. Additionally, after the interview is completed, the researcher will abstract data from the responses. For example, the researcher will analyze the information on the tape and translate the participant's responses into meaningful descriptions of the lived experience (Creswell & Poth, 2017).

Obtaining consent from the participant by completing a consent form approved by the IRB was important. The consent form was completed prior to the interviews taking place. Reviewing the scope of the study was paramount. It was also important to discuss the amount of time required to complete the interview with the participant, as interviews ranged from 30 minutes to 60 minutes. Lastly, participants were informed of their right to withdraw from the study at any point.

Data Collection

Data collection occurred through interviews designed to explore the lived experiences of individuals living in food deserts. Participants were asked to attend an interview scheduled for approximately sixty minutes in length. Interviews mirrored a

semistructured approach, reflecting on the framework presented in Chapter 2. Open-ended interview questions with prompts to guide the experience were used, although some flexibility in qualitative research interviews was expected and experienced (Bevan, 2014). Prior to the start of the interview, study participants were asked to fill out a form providing basic demographics, such as age, gender, ethnicity, income-level, highest level of education, and household size. A digital recorder was used to record all interviews, and a journal was used to record impressions, reactions, and helped with debriefing and supported reflexivity (Rudestam & Newton, 2015). In order to maintain consistency, a standard collection form was used to record answers from each participant. Additionally, a structured observation form was used for each interview in order to collect information in real-time.

The qualitative research interview is unique in the sense that it puts the researcher in the role of the research instrument through which data are collected (Bevan, 2014). The researcher is a part of the phenomenological study and will constantly take the position of a main research tool. For example, in this study I explored personal opinions, beliefs, and experiences, as well as behaviors that may influence the study and integrate this understanding into the study to foster fairness. Therefore, the concept of bracketing was instrumental in helping me remain objective in order to avoid bias and approach the phenomenon with an open mind.

An audio recorded interview process was used to gather information for this study. Other study processes and methods, such as a longitudinal study, were ruled out due to a lack of adequate time and-or resources. Additionally, these methods were not

adequate for answering the research questions. Lastly, some frameworks were not included in this study because the SEM was more relevant for exploring the research questions. For example, social constructivism and the food systems and public health disparities models were not explored. The focus of the research on these other underlying theories and models would likely yield different results.

Data Analysis

Qualitative data analysis consisted of three phases: preparing and organizing the data for interpretation, putting the data into themes through coding and shortening the codes, and representing the data in tables, figures, or discussion (Creswell & Poth, 2017). These strategies have been expanded upon by Bazeley (2013), who stressed the use of visuals as well as using software in data analysis. In this study, I used ATLAS.ti, qualitative data analysis software. ATLAS.ti is a tool used by qualitative researchers to help reveal associations between phenomena, their intensity, their meanings, and their role in structuring the phenomenon under study (Contreras, 2011). ATLAS.ti allowed me to view survey data and investigate responses to open-ended questions. In turn, I could more easily decipher the themes in the data and explore the significance of those factors to the research questions. ATLAS.ti software also allowed me to transcribe and code the interviews. In order to effectively use this software program, I participated in a webinar on how to use ATLAS.ti for qualitative data collection. This webinar covered topics such as how to perform a literature review, collect data, code, and analyze themes from the data collection process. It also demonstrated how to create visuals, such as charts and

graphs of the data. This webinar was provided by the ATLAS.ti development team via the ATLAS.ti website.

As previously stated, the phenomenological researcher begins the process of data analysis by “bracketing” or separating their own preconceptions from the phenomena under study (Bevan, 2014). In this study, bracketing was achieved by identifying and temporarily setting aside my assumptions and opinions. This process included setting aside emotional reactions, past experiences, and biases that could possibly truncate data collection and analysis. One method I used to bracket was writing memos throughout the data collection and analysis. In this study, I created memos to examine and reflect upon the data. A reflexive journal was also used, identifying preconceptions throughout the research process. Next, the data were read in order to extract meaning from the interview and decide what was relevant to the research questions posed. It was important for me to identify themes that emerged from the data and maintain the lived experiences of the participants, while allowing an understanding of the phenomena being studied (Creswell & Poth, 2017).

Unit of Analysis

The unit of analysis in this study was the interview. In this qualitative study, the oral words or written words of the study participants served as the unit of analysis. In this case, the unit of analysis, which are the oral words of the participants, were used to help me make sense of the phenomenon being studied. In research, multiple things can serve as the unit of analysis (Shaw, 2016). An effective unit of analysis is any construct

(individual or group) that will aid the researcher in understanding the phenomena under study.

Data Management

ATLAS.ti was used to store and code interview data. Backup copies of computer files were created in order to not lose valuable information. An Olympus VN-541PC digital voice recorder was used to enhance data collection. An application, Easy Voice Recorder, was downloaded from the Google Play Store on the researcher's Samsung Galaxy Note 8 mobile device. The application was used as a backup recording tool in the event that the digital voice recorder encountered any problems during the interview process. A data dictionary was kept and included meanings, relationships to other data, origin, usage, and format. The data dictionary was also used to record the definition of each theme. In order to protect the anonymity of study participants, names were masked in the data. Additionally, the master list was stored in a separate file cabinet.

At the beginning of data analysis, data was organized into digital files and organized by a file-naming system. Next, the data was converted to a digital format and stored in the ATLAS.ti program as well as on an external drive. My journal, observation sheets, memos, and other resources were kept separately in a locked file cabinet. All participant information was kept in a locked safe in my home office. All transcribing was performed my office and was not shared with anyone else. All information linked to the research study will be kept for a minimum of 5 years after the study is completed per Walden University's IRB requirements. After this time is reached, all documents will be

shredded and discarded. Additionally, all digital data will be permanently erased from my personal computer and external hard drive.

Method of Analysis

Data in qualitative research requires the preparation and organization of data for analysis, then reducing the data into themes through a process of coding and condensing the codes. Finally, the data is then represented in various figures, tables, or a discussion (Creswell & Poth, 2017). In order to meet this requirement, I followed the steps below for effective data analysis:

1. Manage and organize data
2. Read and make memos of emergent ideas (Creswell & Poth, 2017, p. 187)
3. Classify codes into themes
4. Develop and assess interpretations
5. Represent and visualize data into tables and figures

Additionally, I used ATLAS.ti to organize text, code, annotate, and compare segments of information. For example, the quotation manager in ATLAS.ti was used in order to avoid having too many codes. The quotation manager also allowed me to view interview transcripts side-by-side and extract relevant data. Additionally, I ran code co-occurrence analyses to avoid overlapping codes. In turn, the code co-occurrence feature allowed me to see connections in the data.

Issues of Trustworthiness

Trustworthiness establishes the validity and reliability of qualitative research. Research is deemed trustworthy when it accurately represents the lived experiences of the

study population (Cope, 2013). Strategies can be used to address credibility and trustworthiness in research. For example, triangulation can be used. Triangulation is the process of using several sources to draw conclusions. In this case, I used multiple methods of data collection to gain a comprehensive view of the phenomenon under study. These methods of data collection could include observations, interviews, notes, and journal entries recorded during the research process (Cope, 2013). Research strategies that help with trustworthiness includes prolonged engagement, persistent observation, and reflexivity.

An audit trail is an assortment of notes and other resources used in the research process that documents the researcher's decisions and ideas. An audit trail can also be used by other researchers to draw the same study conclusions. A large portion of trustworthiness is credited to the researcher using a method referred to as member checking. Member checking is when the researcher goes over the themes that emerged from the study with the study participants. Through member checking, the participants should be able to certify the conclusions if the researcher has correctly interpreted and coded the data (Cope, 2013).

Credibility

Credibility refers to the truth of the data or the study participants' views and the interpretation and depiction of them by the researcher (Cope, 2013). Credibility is increased when the researcher tries to relate to the study participants or shares the research findings with them. One way to support the concept of credibility is by using methods such as audits, observations, prolonged engagement, reflexivity, triangulation,

and member checks (Cope, 2013). The credibility of a study can be clearly seen when individuals can recognize a lived experience and are able to relate to it. In this study, the participants were able to check their own interview transcripts and any notes I took, further establishing credibility.

Transferability

Transferability refers to the chance that the findings of the study have meaning to others in similar circumstances. Transferability determines whether the findings fit in or are transferable to comparable situations. Therefore, transferability refers to emphasizing how things that are learned in one context can be applied to another context (Rudestam & Newton, 2015). The researcher must describe the data sufficiently to allow comparison in order for the reader to assess and evaluate the transferability of the data to another setting.

In the case of criterion-purposeful samples, the selection of the participants fulfilled the need of the study. Study participants that had the experience and knowledge of the phenomenon being studied were recruited, i.e., low-income persons living in food desert communities in a Gulf Coast state. A study has met this condition if the results have meaning to individuals not involved in the research study, and readers can relate the results to their own lived experiences (Cope, 2013). The condition of transferability is also contingent on the purpose of the study and may be applicable if the goal of the research is to make generalities about the phenomenon (Cope, 2013).

Dependability

Dependability is another way to measure trustworthiness in qualitative research. Dependability is a criterion that refers to the reliability of the data over similar conditions

(Cope, 2013). A study is considered dependable if the study findings can be repeated with similar participants in similar conditions. Thus, dependability is accomplished when another researcher harmonizes with the decisions of the previous researcher at each stage of the research process (Cope, 2013). In a qualitative study, the instruments to be assessed for consistency are the researcher and the participants. One way to assess consistency is through an audit (Cope, 2013). An audit can be used to replicate the steps a researcher finds, such as data, interpretations, and recommendations. Additionally, this process establishes the confirmability of the study.

Confirmability

Confirmability is a standard for measuring the trustworthiness of qualitative research (Cope, 2013). Confirmability is the researcher's ability to establish that the data are accurate portrayals of the participants' responses and not based on the researcher's biases or views. Confirmability can be exhibited by the researcher providing direct quotes from the participants that depict each theme, by describing how conclusions and interpretations were established, and by demonstrating that the findings were derived from the data (Cope, 2013). The purpose of confirmability is to demonstrate that the evidence and thought processes give another researcher the same inferences as in the research context. Confirmability occurs in the same context as credibility, transferability, and dependability (Cope, 2013). Again, an audit can be performed to examine the information gained from the study. It analyzes raw data from tape recorders, findings of the study, themes, codes, categories, and development of data collection instruments (Cope, 2013).

Ethical Procedures

Measures were taken to protect research subjects in this study. The data collected from participants were kept on file for the duration of this study and secured in my private office. Also, I was the only person with access to any data collected from the participants. To ensure the protection of human subjects, I submitted an application to Walden University's IRB (see Appendix A). The purpose of the IRB was to ensure that all research complies with the university's ethical standards as well as United States federal regulations.

The welfare of study participants guided all stages of this study. Participants received a document explaining the scope of the study (as shown in Appendix D). The document indicated the participant's ability to cease involvement without any penalty. Participant information was coded from the beginning of the study and did not include any identifiers from initial inception into the study. Finally, all research materials will be stored in a secure location, accessible only by the researcher, for 5 years, before destruction.

Summary

The goal of this chapter was to outline the research method used to answer the research questions. A discussion of the procedure, study participants, data collection, and interview questions outlined the specifics of how the study was conducted. Multiple aspects of the research study were outlined in this section, providing an overall picture of how the research questions correlate with the research design and phenomenological approach.

In Chapter 4, I discuss the research findings with reference to the research questions and literature review. Additionally, Chapter 4 will discuss the themes that emerged from the study and compare these to the themes described in the literature review. Lastly, an extensive summary of the lived experiences of the participants in the study will be presented and analyzed.

Chapter 4: Results

Introduction

The purpose of this study was to assess how inadequate access to fresh and affordable fruits and vegetables influenced the beliefs and opinions of the residents of a USDA-designated food desert. It also assessed whether these factors affected self-reported personal health related to food choices. Despite having low-income food programs (such as SNAP) available in food desert communities, little research has been conducted on the beliefs and opinions about life in these areas (Hilmers, Hilmers, & Dave, 2012). To address this gap, a qualitative research approach (interviews) was used to discover how residents experienced the effects of a food desert.

The design of this study represented an opportunity to gain information about whether participants who lived within food deserts had similar or contradictory beliefs and opinions about healthy food access. Interviews were also used to understand participants' thoughts about food access in a food desert, as well as obtain information about shopping behaviors. The cost of food items and transportation to a supermarket or grocery store were also researched.

In order to identify how community members experienced the effects of a food desert, a semistructured interview with 27 open-ended questions was conducted (see Appendix B). The following research questions guided the study:

1. What are the beliefs related to food accessibility of low-income individuals living in a food desert in a Gulf Coast state?

2. How do the beliefs of low-income individuals living in a food desert in a Gulf Coast state affect personal health related to food choices?
3. What are the opinions related to food accessibility of low-income individuals living in a food desert in a Gulf Coast state?
4. How do the opinions of low-income individuals living in a food desert in a Gulf Coast state affect food shopping behaviors related to food choices?
5. What are the shopping behaviors related to food accessibility of low-income individuals living in a food desert in a Gulf Coast state?
6. How do the shopping behaviors of low-income individuals living in a food desert in a Gulf Coast state affect food choices?

The findings discussed in this chapter highlight the complex interaction of factors related to living in a food desert. Multiple themes are discussed; they summarize a range of positive, as well as negative, lived experiences about the phenomenon under study. The findings of the study are similar to the themes that emerged in the literature review (see Chapter 2). Chapter 4 covers the following topics: setting, demographics, data collection, data analysis, evidence of trustworthiness, results, and summarizes the answers to the research questions, which lead into the interpretation of the findings.

Setting

Multiple locations were offered as venues to conduct interviews in the targeted community: a public library, a grocery store, a train depot, or the participant's home. The public library had private rooms where an interview could take place. The grocery store did not provide anywhere to conduct interview. The train depot had the challenge of

limited seating and the disruption of too much noise. The most ideal places to conduct interviews were either the public library or the participants' home environment. Each participant chose her or his own interview location. Table 1 details where the interviews took place:

Table 1

Place of Interview

Interview Setting	
Participant 1	Home
Participant 2	Home
Participant 3	Public Library
Participant 4	Public Library
Participant 5	Public Library
Participant 6	Home
Participant 7	Home
Participant 8	Home
Participant 9	Home
Participant 10	Public Library
Participant 11	Home
Participant 12	Public Library
Participant 13	Public Library
Participant 14	Public Library

As shown, 50% of participants chose the public library and 50% of the participants chose their home environment. There were times when participants needed to reschedule their interviews due to a work commitments or family obligations. It was also difficult for others to travel to the library via public transportation on certain days. All interviews conducted were face-to-face, and light refreshments were provided for all participants regardless of the interview location.

Demographics

Participants who met the eligibility criteria set for the study were selected. The eligibility criteria of this study required the participant to

- Be 18 years of age or older
- Live in the Gulf Coast state impacted by the food desert
- Be able to communicate in English
- Be able to articulate his or her lived experience related to the phenomenon
- Be able to stay throughout the full duration of the interview

The recruitment criteria preceding this section serves as a baseline to indicate what type of participants were needed for this research study. The following sections summarize the information gathered from the demographic form used prior to the interviews. Each question on the demographic form is presented below in table format. There were fourteen participants included in this study exceeding the target recruitment number of 10.

Age

The first question on the demographic form asked for the participant's age range. Age ranges were provided for the participant to choose from. Twenty-one percent of participants were between the ages of 25-34 years; 29% were between the ages of 35-44 years; 21% were between the ages of 45-54 years; and 29% were between the ages of 55-64 years.

Table 2 summarizes the age-ranges of all participants in the study:

Table 2

Age Ranges of Participants

What is your age?	Number of responses
25-34 years old	3
35-44 years old	4
45-54 years old	3
55-64 years old	4

Gender

The second question on the demographic form asked for the participant's gender. There were only two choices for this question: male or female. There were thirteen females (93%) and one male participant (7%). Therefore, more females than males were represented in the research study. This fact is of importance when discussing the limitations of the study.

Ethnic Background and Education Level

The third question on the demographic form asked for the ethnic background (race) of the participant. The participants chose from several available options. Thirteen African-American participants (97%) were included along with one Caucasian (7%) participant. The fourth question on the demographic form asked for the highest level of education that each participant has completed. The participants chose from several available options. Twenty-nine percent of participants had some college credit with no degree; 7% had trade/technical/vocational training; 14% had an associate degree; 43% had a Bachelor's degree; and 7% had a Master's degree.

Table 3 summarizes the highest level of education completed by each participant represented in the study:

Table 3

Highest Level of Education

Level of Education	
Some college credit, no degree	4
Trade/technical/vocational training	1
Associate degree	2
Bachelor's degree	6
Master's degree	1

Income-Level

In this study, the literature concerning food deserts focused on the low-income level of a population. Flyers were placed in low-income areas designated as food deserts by the USDA for this particular Gulf Coast state. The flyers specified recruiting participants “experiencing inadequate access to fresh fruits and vegetables in low-income communities” (see Appendix F).

The fifth question on the demographic form asked the participants about their income. The options available on the form were presented in income ranges rather than actual figures. Fourteen percent of participants made less than \$11,000 annually; 14% made \$11,000 to \$15,000; 36% made \$20,000 to \$25,000; and 36% made \$30,000 to \$35,000.

The responses for question five are provided in Table 4 according to range:

Table 4

Actual Income Level of Participants

Actual Income Level	Number of Responses
Lower than \$11,000	2
\$11,000 to \$15,000	2
\$20,000 to \$25,000	5
\$30,000 to \$35,000	5

Note. Income categories without participants are excluded from the table.

Marital Status

The sixth question on the demographic form asked the marital status of the participants. There were several options to choose from. Twenty-eight percent of participants were single, never married; 36% were married or in a domestic partnership; and 36% were divorced. Table 5 summarizes the number of participants by marital status:

Table 5

Marital Status of Participants

Marital Status	
Single, never married	4
Married or domestic partnership	5
Divorced	5

Household Size

The seventh question on the demographic form asked for the participant's household size. Each participant was able to write in their response to this question. The largest household size was comprised of seven people. The smallest household included one person. As seen later in the findings, the household size had an impact on the

respondent's monthly food budget. Table 6 details the household sizes of each participant represented in the study.

Table 6

Household Size of Participants

Household Size	Number of Participants
1	2
2	1
3	4
4	4
5	1
6	1
7	1

Demographic Summary

In this research study, fourteen individuals who resided in a food desert community were interviewed. Thirteen participants were African-American women (one male), and one participant was a Caucasian female. All participants were over the age of 18 years and had some level of college education. Additionally, all study participants lived in low-income areas.

Data Collection

Flyers were dispersed to various public settings in low-income areas (see Appendix F). These settings included a public bulletin board in a grocery store, a public library, and a train depot. In order to gain higher numbers of participants, a \$10 Visa gift card was provided as an incentive for those included in the study. Each interview was scheduled for 60 minutes.

The data collection tool that was used in this research study was a set of twenty-seven interview questions (refer to Appendix B). These questions focused on the participant's beliefs and opinions on affordable and attainable nutritional food options. The interviews were audio recorded in order to accurately recount the information gathered by each participant. Each interview was completed in one session at a location of the participant's choice (home or library).

An Olympus VN-541PC digital voice recorder was purchased from an Office Max store prior to data collection. An application, Easy Voice Recorder, was downloaded from the Google Play Store onto my Samsung Galaxy Note 8 mobile device. The application was used as a backup recording tool in the event that the digital voice recorder encountered any problems during the interview process. A notebook was also used for documenting certain aspects of the interview, such as mannerisms and topics not covered in the interview script.

Data Collection and Analysis Procedures

Semistructured interviews were conducted. An interview protocol (see Appendix C) with open-ended questions was used, and follow-up questions were asked for clarification. The interview protocol covered areas such as interview instructions, consent form instructions, and audio recorder instructions. Participants were also provided a copy of the interview protocol prior to interviews. The interview protocol was provided to participants in order for them to note the order of events pertaining to the interview.

Consent

Participants in the study were protected under confidentiality standards set forth by Walden University's IRB. Each participant was provided a consent form, which provided information regarding this study and any risks and benefits from participating in this study. The consent form also provided each participant with an in-depth explanation of his or her right to confidentiality as well as the right to withdraw from the study at any time. Each participant was then instructed that he or she would receive a \$10 Visa gift card for participating in the study whether or not they completed the study. The consent forms were distributed to participants prior to the interview for them to read, complete, and sign in advance. If the participant did not understand the information on the consent form, I further explained the information as well as the interview process. The participants were then asked if they would allow the interviews to be recorded, and all agreed to this request.

Once the interviews were completed, the participants were allowed to review their responses to ensure that each question was answered in a way that thoroughly captured what they wanted to convey. Once the responses were reviewed, participants were asked if they wanted to supply additional information. The participants were then thanked for their participation, presented with a \$10 Visa gift card, and invited to include their email on a list for research dissemination after completion of the study.

Transcription

Once the interviews were completed, the audio was transcribed in ATLAS.ti and double-checked for accuracy. The software was used to store and code interview data.

The scripts were analyzed using a coding procedure. Backup copies of computer files were created in order not to lose valuable information. A data dictionary detailing the types of information gathered was maintained. In order to protect the confidentiality of study participants, names were masked in the data, and the master list was stored in a separate file cabinet. After the transcription of each interview, a separate file was saved outside of the ATLAS.ti program in a separate folder located on my home computer. The folder located on the home computer will be stored for five years.

The data were organized into digital files and organized by a file-naming system. Each interview was labeled with the participant's gender, race, and age. Other personal identifiers, including names, were not included in the naming of interview documents. All data were proofread and checked for accuracy. Next, the data were converted to a digital format and stored in the ATLAS.ti program as well as on an external drive. The researcher's journal, observation sheets, memos, and other resources were stored separately in a locked file cabinet. All participant information was kept in a locked safe in the researcher's private home office, which is also where all transcribing was performed. Prior to data analysis, participants viewed their own transcripts for accuracy. After transcripts were reviewed, data analysis was performed.

Method of Analysis

I followed the steps below for effective data analysis:

1. Managed and organized data in ATLAS.ti
2. Read and made memos of emerging ideas in ATLAS.ti

3. Created unique codes to correspond with interview answers. In vivo coding was used for this process in ATLAS.ti
4. Created definitions for codes in the ATLAS.ti program
5. Coded each interview included in the research study in ATLAS.ti
6. Developed and assessed the interpretations in ATLAS.ti. The interpretations were then compared to interview transcripts to ensure that the codes were appropriate and reflective of the participants' lived experience(s)
7. Represented and visualized the data by constructing tables of key findings

Coding

In vivo coding was used to code the interviews (refer to Appendix G). In vivo coding is a form of qualitative data analysis that places importance on the actual verbal words of the participants (Manning, 2017). It is also known as *verbatim coding*, *literal coding*, and *natural coding*. This method of coding focuses on words and how social interactions come together to form a phenomenon (Manning, 2017). With this approach, the emphasis is placed on the lived experience(s) of the participants and how they give meaning to the data. In vivo coding is appropriate for all qualitative studies, especially for beginning researchers who are learning how to code data and studies that focus primarily on honoring the participant's voice (Saldana, 2014).

Phenomenological Themes

The goal of this qualitative study was to identify the main components (themes, subthemes, and meanings) of lived experiences of individuals and his or her beliefs and opinions about healthy food access in a food desert. Phenomenological themes are the

structures of experience. When analyzing a phenomenon, the researcher aims to establish what the themes are, the experiential structures that make up that particular experience (Van, 1990).

Van (1990) describes a theme as; (a) the experience of focus, (b) an intransitive process, and (c) a form of apprehending the phenomenon someone tries to understand. Phenomenological themes are not objects or generalizations; they are lived experiences viewed as meaningful wholes (Van, 1990). Any lived experience account is a suitable source for discovering thematic aspects of the phenomenon it depicts.

Data analysis involved three steps; *Naïve Reading*, *Thematic Structural Analysis*, and *Comprehensive Understanding* (Lindseth & Norberg, 2004). *Naïve reading* involved reading the text several times in order to grasp the meaning as a whole. During *naïve reading*, I switched from a natural attitude about the lived experience(s) to a phenomenological attitude. The naïve understanding of the phenomenon guided the structural analysis. *Thematic Structural Analyses* are ways of seeking to identify and formulate themes (Lindseth & Norberg, 2004). The meaning units derived from structural analysis are then compared to the background of naïve understanding. They were then further condensed to form sub-themes, and then assembled into main themes. *Comprehensive understanding* took place when the text was read again as a whole with the naïve understanding and the authenticated themes in mind, and with an as open a mind as possible (Lindseth & Norberg, 2004).

Themes

The data analyses identified six dominant themes that characterized the lived experience of the interviewees. Those themes were as follows:

- Beliefs about ability to obtain fresh fruits and vegetables for self and family;
- Opinions related to awareness of the consequences and benefits of good/bad food choices;
- Opinions on how neighborhoods can have better access to fresh fruits and vegetables;
- Food choices and shopping behaviors are affected by price and family budgets;
- Behaviors related to food shopping, and this was impacted by available mode of transportation and travel distance to nearest grocery store;
- Views on traveling outside of local neighborhood to purchase fresh fruits and vegetables.

Issues of Trustworthiness

Credibility

Credibility was established by using triangulation and member-checking.

Triangulation involved multiple methods, such as using a journal to make additional notes while interviewing participants in public settings as opposed to private ones. In order to ensure that the research findings were comprehensive and well-developed, member-checking was also utilized. At the conclusion of each interview, the transcript

was shared with the study participant. This allowed participants to explain what their intentions were, correct errors, and provide additional information if necessary.

Transferability

The interviews in this study were conducted at a public library or in participants' homes. They took place around the participants' other obligations, such as work or school schedule. Therefore, many interviews took place at night (around 8:00 PM) or on the weekends when participants had time available. It was instrumental to adhere to the participant's time schedule and be on time for the interview. There were times when a participant needed to reschedule due to a work commitment or family obligation. It was also difficult for others to travel to the library via public transportation on certain days. The flexibility of study participants and the researcher's scheduling allowed for all interviews to be completed.

Dependability

Dependability was established by an external audit. The data collection instrument and analysis strategy were examined by the researcher's committee members to confirm the accuracy of the findings and to confirm that the findings were supported by the data collected. All clarifications and deductions were examined to determine whether they were supported by the data. The external audit also allowed the data analysis and interpretation to be challenged. In turn, this not only helped gain valuable insight, but helped to build a stronger case for the study findings.

Confirmability

Confirmability was established by the adoption of reflexivity and by performing an audit trail. When collecting and analyzing the data, I viewed my own background and position to see how these influenced the research process. This was accomplished by maintaining a reflexive journal with entries for each interview. I posted entries to the journal after the completion of each interview. The journal was used to document what transpired during the research process with regard to my values and interests. An audit trail was used to establish confirmability by detailing the process of data collection, data analysis, and interpretation. During the audit trail, interesting topics that were unique to data collection and thoughts about coding were recorded. Rationale for why codes were merged was explained as well as the meaning of certain themes.

Results

In this section, I list the research questions individually. Additionally, I link the findings (themes) with the research questions in the study. As previously stated, six themes emerged from the analysis of the data. Furthermore, various statements from the respondents highlight the opinions, beliefs, and shopping behaviors of residents in a food desert community.

Research Question 1

What are the beliefs related to food accessibility of low-income individuals living in a food desert in a Gulf Coast state? *Theme 1: Beliefs about ability to obtain fresh fruits and vegetables for self and family.* Overall, 79% of study participants felt that they had adequate access to fresh fruits and vegetables. When asked interview Questions 1 and 2,

11 interviewees stated that they had good access to fresh fruits and vegetables. One study participant said, “Yes, I can obtain. We have them readily available. I can buy them when I want them.” Three out of fourteen participants (21%) felt that they did not have adequate access to fresh fruits and vegetables. When asked to explain, the following statement was made by one participant, “Not all the time. Sometimes when I go in to the local grocery store, they really do not have a good selection of fruits and vegetables. It is very limited. So, I often do not purchase these items.” It is important to note that most people agreed to feeling that they had access to fresh fruits and vegetables, but also stated that the access was sometimes not ideal, as stated below: “Yes, but it could be better.” “Most of the time. Sometimes good quality produce are not in my area.”

Question 4 on the interview asked participants what they have noticed in the community about the options of food choices. Participants responded to this question with statements highlighting their beliefs about the selection of fresh fruits and vegetables for themselves and family members. Respondents also shared their experiences with purchasing fresh fruit and vegetables in other neighborhoods. The following quotes reflect the wide range of beliefs associated with Question 4 regarding food options: (a) “Yes. We have plenty of fresh fruits and vegetables in stores or roadside stands.” (b) “We do not have good options. We do not have many options.” (c) “There are not really a lot of options. I have gone to other places and they have had things like Almond Milk, etcetera. Reduced sodium foods. Healthier option things. They do not offer those in certain areas.”

Overall, eight participants (57%) believed their neighborhoods did not have good options of food choices. Six study participants (43%) felt their neighborhoods did have good options of food choices. Many participants noted either an increase in convenience stores, corner markets, or fast-food restaurants in the community. A small percentage of participants noted the lack of organic food options in their neighborhoods.

Those participants who felt that their neighborhoods supplied good food choices noted access to a farmers' market or roadside stand with fresh produce. The participants with access to a farmers' market or roadside stand were those who lived in rural communities outside of the city limits. Those participants who felt that their neighborhood supplied less than ideal food choices noted less offerings of fresh produce in convenience stores or corner markets. Overall, the belief among the respondents was that they had access to fresh fruits and vegetables; however, the options of fresh produce to choose from were limited.

Research Question 2

How do the beliefs of low-income individuals living in a food desert in a Gulf Coast state affect personal health related to food choices? *Theme 1: Beliefs about access, related to ability to obtain fresh fruits and vegetables for self and family.* The belief of access to fresh fruits and vegetables drove grocery shopping behaviors related to food choices. For example, most participants noted changes that needed to occur in their neighborhood for better access to fresh produce; however, only a few thought that they lacked adequate access to fresh produce. Most participants stated that changes linked to the environment needed to be implemented in their community. For example, a few

participants stressed having the addition of streetlights and sidewalks in their neighborhoods in order to make it safer to walk to a food outlet.

In this study, the majority of participants believed that they had fresh fruits and vegetables available in their community for purchase. Therefore, their shopping behaviors were driven by this fact. Most of the study participants noted that they had availability, even though the access may not be ideal. However, the consensus is that living in a food desert designation did not have an effect on the perceived belief about access to fresh produce.

Research Question 6

How do the shopping behaviors of low-income individuals living in a food desert in a Gulf Coast state affect food choices? *Theme 2: Food choices and shopping behaviors are affected by price and family budgets.* Thirteen study participants (93%) felt that they had the ability to purchase fresh fruits and vegetables when income allowed. Question 3 on the interview asked the respondents if they felt they were able to purchase fresh fruits and vegetables when they had the money to do so. Twelve participants responded to Question 3 with a verbal “yes.” One participant elaborated on this question, demonstrated by the following quote: “Yes, but sometimes they are more expensive than junk food. So you have to take into consideration the fact that you are going to be spending more money on something that is healthier for you.”

One study participant (7%) felt that she did not have the ability to purchase fresh fruits and vegetables due to costs, demonstrated by this quote, “Not all of the time, because of my income.” Overall, the majority of study participants felt they could

purchase fresh fruits and vegetables when their income allowed. Only one participant felt that she could not purchase fresh fruits and vegetables, even when her income allowed.

The data showed that the availability of funds can increase or limit purchases.

Many participants in the study reported budgeting \$250 to \$500 dollars per month on food. Some people stated that their food budget took up the largest portion of their income. The budget also depended on the family size. For example, larger families budgeted more money to groceries than smaller families. The majority of participants shopped on paydays or when they had access to better finances. Seven individuals (50%) stated that they used coupons and-or took advantage of store sales when grocery shopping. Additionally, eight participants (57%) stated that they purchased items in bulk and stockpiled them for later use. Those who did not buy in bulk made this decision because of the mode of transportation used (car or bus system) for grocery shopping, and also because they did not want to waste food by not being able to eat it all. Additionally, they noted the short shelf-life of fruits and vegetables as a reason not to buy them in bulk. The following quotes demonstrate the influence the budget had on food shopping behaviors:

- I do not really budget. I just get what is needed for meal prepping. I purchase to help prevent problems. I watch for high sodium, sugar content, and carbohydrates.
- I think that buying fresh fruits and vegetables is actually cheaper than fast food and other unhealthy food options.

- Well, like I said you know, I have to go get what my money can buy, not what I really want. I have to watch it and not go overboard.
- The less money I have, the less likely I am to purchase fruits and vegetables. Also, the opposite is true.
- Well, the more healthy foods are more expensive. I mean, I can buy some fruits and vegetables, but it is based on how much money I have available.
- Sometimes it is poor. But, most of the time, good choices.
- Healthy food is more expensive.
- It does not affect my budget.

Respondents indicated that personal budget does have an effect on grocery shopping behaviors. The less money that people had, the less fruits and vegetables they bought. Alternatively, the more money they had, the more fruits and vegetables they bought. People did, in some cases, tend to buy fruits and vegetables, even if they felt the costs for these items was higher than what they wanted to pay. In this study, the respondents did not feel prices were reasonable for fresh fruits and vegetables, although they did have the money to purchase them. They chose to buy what they perceived was a healthier option for them, regardless of the financial effect. Most people were aware of how their budget affected food shopping behaviors, because they noticed that healthy food costs more than unhealthy food. This effect is also seen when looking at the amount of shoppers who used coupons (50%) and those who bought in bulk (57%). Using coupons and buying in bulk are ways to leverage receiving more items for one's money. Many participants noted that they would buy in bulk if an item was on sale, or they would

double-up on items if a coupon had a “buy one, get one free” offer. The responses indicated that food shopping behaviors influenced food choices.

Six participants (43%) were influenced by the price of food choices. Four participants (29%) were influenced by the availability of food choices. The other four participants (28%) were influenced by the price and availability of food choices. The following quotes demonstrate these views:

- My food choices depend more on availability than price.
- I'll say price, because I can't just go in the store and just buy stuff.
- I have to think about how much money I have to buy items.
- Availability and price impact my food purchases.

The majority of participants are driven by price than availability. The study revealed similar percentages for those who were driven only by the availability of food and those who were driven by price as well as availability. Participants would buy an item based on the price more than the availability of the item. In other words, just because an item was available did not mean that an individual would purchase it. In this sense, if an item was within the family budget, a person was more motivated to purchase it.

Research Question 4

How do the opinions of low-income individuals living in a food desert in a Gulf Coast state affect food shopping behaviors related to food choices? *Theme 3: Opinions related to awareness of the consequences and benefits of good/bad food choices.* All (100%) of the study participants were aware of how good and bad food choices available

within the community impacted individual health. The following quotes describe some of these opinions related to food choices:

- Living a longer, healthier lifestyle.
- It can greatly impact health for better, causing weight loss, decreasing unhealthy related illness.
- Fresh fruits are highly impactful in a person's health, as it works to improve all aspects of body and health.
- Healthy eating will have a positive impact on disease prevention, energy, and overall feeling good.

As mentioned, study participants were knowledgeable about the benefits of healthy versus unhealthy eating habits. The collective opinion of the participants was that consumption of fresh fruits and vegetables lead to good health and promoted longevity. Respondents ($n = 12$) stated that they sought after fresh produce in order to obtain or maintain good health. This indicates that food shopping behaviors of individuals living in this low-income area were motivated by the pursuit for good health. Participants regularly bought fresh fruits and vegetables when fresh produce was reasonably priced, and-or when they were financially able to.

Participants also described the health status of those living in their neighborhood as it related to food availability. Some participants noted the abundance of fast-food restaurants in their areas. Several of the responses about the perceived health status of others in the neighborhood appear below:

- They enjoy maintaining their health.

- Some are healthier due to better food choices.
- People seem to be in good health.
- People in my neighborhood are not really healthy, because of the food choices that we have... the lack of.
- There is more fast food than healthy places to eat in my neighborhood.
- I have noticed a great deal of my neighbors are extremely active and lead a relatively healthy lifestyle from an optical standpoint.
- Most neighbors are older and healthy, maybe due to them being used to eating fruits and veggies all of their lives. Younger people's health may differ in the long term due to fast foods and processed foods.

The majority of participants viewed the health status of neighbors in a favorable way. Most people attributed exercise and a healthy appearance to the consumption of fresh fruits and vegetables. Others correlated the plethora of fast-food restaurants in their neighborhoods with poor diet. A lack of adequate fruits and vegetables in certain areas was also tied to individuals being unhealthy due to poor food choices.

Participants bought more fresh fruits and vegetables as a result of living in neighborhoods with healthy neighbors. These respondents went on to say that they purchased fresh produce in order to lose weight or to become healthy. Others mentioned wanting to become healthy because of a loved one or because of the negative effects of another person's poor health. For example, one participant stated that, "There are not many healthy people in my neighborhood." This participant noted that there was an abundance of fast-food restaurants and convenience stores in the neighborhood. As a

result, she felt that she observed more obese and overweight people. Additionally, she went on to say that she did not want to be like others, therefore healthier food options were purchased.

In this study, the participants defined what good food and bad food meant to them. During the interviews, I did not define good and bad food choices to the participants. The concept of fresh fruits and vegetables being linked to good health was a phenomenon that emerged from the participants' perceptions about good health, often linked to their lived experience(s). This can be seen from the following quote:

I do not feel my best when I do not eat right. Eating right to me includes having a selection of fresh fruits and vegetables. For example, if I eat the wrong things, like junk food, chips, and candy...I often do not feel good. When I eat food that is alive, such as fresh produce, I have more energy and it has a positive change on my health. My blood pressure is lower, I lose weight, and I can think better.

Lastly, participants with a higher level of education were likely to consistently purchase fresh produce while those with a lower level of education were less likely to do so. For example, participants with more education were more likely to purchase fresh produce regardless of the cost. In contrast, participants with less education were driven more by the cost of fresh produce when making food choices. In this case, if fresh produce was more expensive and not easily affordable, the participant chose to go with a less costly item, such as fast-food or junk food. Table 7 lists the education level of participants and the quality of food purchases (based on cost):

Table 7

Education Level and Quality of Food Purchases

Education Level	Purchased Fresh Produce (Regardless of Cost)	Purchased Fresh Produce (Based on Cost)
Some college credit, no degree	-	3
Trade/technical/vocational	1	1
Associate degree	-	2
Bachelor's degree	6	-
Master's degree	1	-

Participants with a higher income also purchased more fresh produce than those with a lower income. Table 8 lists the income level of participants and the quality of food purchases (regardless of cost):

Table 8

Income Level and Quality of Food Purchases

Income Level	Purchased Fresh Produce (Regardless of Cost)
Lower than \$11,000	1
\$11,000 to \$15,000	1
\$20,000 to \$25,000	5
\$30,000 to \$35,000	7

Note. Only income categories in which there were responses are included in the table.

The study participants contributed better health, personal finances, distance to stores, and a lack of transportation to reasons that cause a person to choose healthy food options as opposed to unhealthy ones. These subthemes are demonstrated by the following opinions:

- The concern of health and life would be the primary reason for choosing a healthy diet.

- I believe that the environment, as well as personal finances, can be highly influential in a person's choice in choosing less healthy food choices.
- Income, distance, and transportation.
- Busy working and not enough time to eat healthy.
- Not having healthy choices within walking distance from their home.
- Possibly trying to get healthy and get in shape.
- Trying to lose weight, maybe. Maybe going to the doctor and having to get your blood pressure under control, or diabetes. Trying to be healthier.
- They do not have a lot of money. Being stressed out. Emotionally eating.

The participants noted many reasons that people would choose either healthy or unhealthy foods, with important factors being distance to a store or a lack of transportation to one. Some participants were aware of the benefits of eating healthy to improve health outcomes. A few participants mentioned limited finances as a barrier to choosing healthy food choices. This theme is demonstrated by the following quote:

I would love to purchase more fruits and vegetables, but sometimes I am limited by my income. Therefore, I shop for what I can afford so that I won't go hungry.

As stated, in this study, participants with more education consumed more fresh produce in comparison to those with less education. Additionally, participants with a higher income tended to purchase fresh produce regardless of the product price. Participants with a lower income tended to make fresh produce choices based on the product price. For example, one higher income participant stated:

I do not operate on a budget. I usually go to the store and purchase whatever fruits and vegetables I want. I do this regardless of the price because I believe in maintaining my health. My health is positively impacted by eating healthy foods, such as fresh fruits and vegetables.

Research Question 5

What are the shopping behaviors related to food accessibility of low-income individuals living in a food desert in a Gulf Coast state? *Theme 4: Behaviors related to food shopping, and this was impacted by available mode of transportation and travel distance to nearest grocery store.* In this study, the majority of respondents traveled to the grocery store by car. Although the majority of participants had a personal vehicle, they were aware of the barriers faced by those with no mode of transportation. The following quotes demonstrate this awareness:

- I use my personal vehicle to obtain food. I buy more when I travel this way.
- I use a car, but most people in my neighborhood use the bus line. They buy less food, because they don't want to carry so much home. It is sometimes not safe.
- Not having a car could affect your ability to obtain fresh fruits and vegetables. Things are really spaced out in my neighborhood. You need a car to go most places.

The availability of personal transportation enhanced food purchases. Participants with personal vehicles available to them bought more items from the store. Additionally, those with a vehicle tended to travel to the store more often to purchase food. The

availability of a car also allowed participants to travel outside of their neighborhood when searching for fresh fruits and vegetables that were not available in their communities. Ten participants (71%) traveled ten miles or more to a grocery store, while about a third of participants (29%) traveled ten miles or less to a grocery store. The following quotes capture this experience:

- I travel less than ten miles to a grocery store. I get what I need near.
- I travel about fifteen minutes to a store. I buy what I need there when I go to avoid going that far again.
- I travel far to get the fruits and vegetables I need.
- About fifteen minutes, I travel to get better produce.

Most participants noted that they traveled further distances to get fresher produce. Additionally, others traveled further distances, because that was where the nearest grocery store was located within the neighborhood. Six participants (42%) were able to stay within their neighborhoods when shopping. These shoppers traveled less than five minutes or five miles to a grocery store. The majority of respondents stated that they would travel outside of their neighborhoods to purchase fresh fruits and vegetables if those items were not available locally. A few participants stated that they would not travel outside of the neighborhood due to their proximity to stores with a good selection of fresh fruits and vegetables.

Research Question 6

How do the shopping behaviors of low-income individuals living in a food desert in a Gulf Coast state affect food choices? *Theme 5. View on traveling outside of local*

neighborhood to purchase fresh fruits and vegetables. Thirteen of the participants (97%) stated that they would travel outside of their neighborhood to purchase fresh fruits and vegetables if produce was not available locally. Multiple factors influenced a person's decision to travel outside of the neighborhood for fresh produce. When asked if they would travel outside of the neighborhood to purchase fresh fruits and vegetables, the following quotes were obtained:

- Yes. In other areas, they have higher income residents that have access to better quality foods. In certain areas where you have a black race, you don't really have Whole Foods, Trader Joe's, and Sprouts. You have to go outside to buy these foods if you are really conscious of your health. If you are in a black community, you have to travel outside to get those foods.
- Yes, because I want some fresh fruit and vegetables. If I want cabbage, okra, I will travel outside, also if it is cheaper.
- Yes. Fresher, more organic choices.
- Already do, especially to farm stands. Can't get any fresher.
- Yes, because I don't like the selection at Wal-Mart.
- No, because I am close to what I need.

Overall, participants would travel outside of their neighborhoods to obtain fresh fruits and vegetables if those items were not available locally. The factors that drive this decision includes better selection and cost. One participant noted the lack of adequate fruits and vegetables in African-American neighborhoods. This participant also noted that more food options are available in more affluent areas than in their neighborhood.

Traveling to a more affluent area to buy fresh produce was the standard for those seeking better selections.

Research Question 3

What are the opinions related to food accessibility of low- income individuals living in a food desert in a Gulf Coast state? *Theme 6: Opinions on how neighborhoods can have better access to fresh fruits and vegetables.* All participants had suggestions for how their neighborhoods could have better access to fresh fruits and vegetables based on interview Questions 9 and 11. A few of the responses are mentioned below:

- Farmers market coming through. Farmers market like once a month, once a week. To have local farmers to come through and see their produce. That is a good thing to have, local markets.
- Awareness out there and educating people on the importance of eating fruits and vegetables. If I see flyers and information like that, it will help.
- Keep the stores stocked with fresh fruits and vegetables.
- Possibly by having a produce truck to visit neighborhood.
- Produce trucks, neighborhood gardens, and convenience stores with healthy food options.
- Mobile farm stands.
- Going to the store and tell them to put out fresh fruit and vegetables, talking to the manager, discussing the problem with him on the problems we are having on getting fresh fruits and vegetables.
- Neighborhood garden and more fruit and vegetable stands.

The participants mentioned access to a farmers' market, community gardens, vegetable stands, mobile food trucks, and nutritional education as ways for their neighborhoods to increase consumption of fresh fruits and vegetables. Many participants were adamant about their communities needing to change the way people accessed food. To highlight this finding, one participant stated:

In order for us to raise healthy babies, we need to invest in programs and nutritional literature to educate the public. Eating fresh fruits and vegetables is very important. Changing the way people access food and ensuring the freshest produce is available is vital to the health of our generation.

Even those who felt that they had good access to fresh food options opined that more could be done to increase the amount in their neighborhoods. For example, these participants noted that a better variety of fresh fruits and vegetables and lower costs could encourage people to buy more of these items. Additionally, providing nutritional guidelines in supermarkets was proposed to educate consumers on the importance of buying fresh produce.

Summary

The findings discussed in this chapter highlighted the complex and dynamic role that beliefs, opinions and behaviors play for individuals who live in food deserts, as these factors relate to healthy food access. This chapter also described the setting, demographics, data collection, data analysis, evidence of trustworthiness, and results. Multiple themes, which summarize a range of positive and negative lived experiences related to the phenomenon under study, were discussed.

The data analyses identified six dominant themes that characterized the lived experience of the interviewees. Those themes were as follows:

- Beliefs about ability to obtain fresh fruits and vegetables for self and family;
- Opinions related to awareness of the consequences and benefits of good/bad food choices;
- Opinions on how neighborhoods can have better access to fresh fruits and vegetables;
- Food choices and shopping behaviors are affected by price and family budgets;
- Behaviors related to food shopping impacted by available mode of transportation and travel distance to nearest grocery store;
- Views on traveling outside of local neighborhood to purchase fresh fruits and vegetables.

This chapter also described the research and interview questions, providing information and support pertaining to the study's results.

Chapter 5 focuses on an interpretation of the findings as related to the literature review, limitations of the study, and recommendations for further research. Additionally, policy implications to address some of the issues residents in this study faced will be discussed. Finally, the positive social change aspect of the research study will be discussed, outlining how this research study adds to the dialogue on food desert communities.

Chapter 5: Discussion, Conclusions, and Recommendations

Purpose of the Study

The purpose of this study was to assess participants' access to fresh fruits and vegetables, and how it influenced their beliefs and opinions about living in a USDA-designated food desert in a Gulf Coast state. It also assessed whether those factors affected individual health related to food choices. Despite having low-income food programs available, little research has been conducted on the beliefs and opinions about life in a food desert.

Nature of the Study

This study's qualitative design allowed me to understand how some individuals who live in food deserts had similar and contradictory beliefs and opinions about life there. Shopping behaviors were assessed to determine how these factors affected food choices. To record how community members experienced the effects of a food desert, semistructured interviews with open-ended questions were conducted.

Key Findings

Beliefs about Ability to Obtain Fresh Fruits and Vegetables for Self and Family

Access to fresh fruits and vegetables drove food shopping behaviors. The belief among the participants was that they had adequate access to fresh fruits and vegetables; however, the fresh produce options were limited. The majority of respondents believed that they had good access to fresh produce. This drove their shopping behaviors. The consensus was that the food desert designation did not have an effect on the perceived

beliefs about access to fresh produce. For example, many participants believed that they had good access to fresh produce, since it was available in their neighborhood.

The opinions among participants regarding food accessibility were largely that their neighborhoods did not have good options of food choices (57%). Participants' opinions focused on what was available in the neighborhood and whether it was perceived as "fresh" and "healthy." Most participants noted that the selection of fresh fruits and vegetables available in supermarkets in their neighborhood was rotten or of low quality. Some respondents believed that food accessibility in the neighborhood was not satisfactory when taking these standards into consideration.

Opinions Related to Awareness of the Consequences and Benefits of Good/Bad Food Choices

The opinions of participants drove the food shopping behaviors related to food choices. The majority opinion was that fresh fruits and vegetables led to good health and promoted longevity. Therefore, individuals sought fresh produce. Participants bought fresh fruits and vegetables when they shopped regularly, when fresh produce was fairly priced, or when they had extra money.

The opinions of participants drove their food shopping behaviors in relation to food choices. Many expressed that they bought fresh produce to lose weight or to become healthy. Additionally, others mentioned a desire to become healthier because of a loved one or because of the negative effects of another person's poor health. Additionally, participants often viewed the health of their neighbors favorably. For example, most participants perceived their neighbors to be healthy based on an observed lifestyle.

Neighbors who were seen exercising or eating healthy were labeled as healthy.

Participants tended to buy healthier food items as a result of their perception of what constituted a healthy diet. The perception of the health of others drove food choices. For example, respondents labeled fresh fruits and vegetables as “good food” whereas junk foods were labeled as “bad food.” This definition arose from the lived experience(s) of most participants in the study. For many respondents, eating fruits and vegetables led to positive health outcomes.

The food shopping behaviors of low-income food desert residents are based on multiple factors, such as the distance to a store, the lack of transportation, and the lack of adequate income. These factors dictated what type(s) of foods the individual purchased. For example, if a participant lived in an area with less fresh produce, they would choose less suitable items for their diet, such as junk food. Also, if an individual was limited on time, they would choose to eat at a fast-food restaurant. Another example included people not having enough money to buy healthier foods. In these circumstances, the participants noted the price of unhealthy foods versus healthy options. Often an unhealthy food item was chosen if finances were limited.

Opinions on How Neighborhoods Can Have Better Access to Fresh Fruits and Vegetables

All participants shared ways that their neighborhoods can have better access to fresh fruits and vegetables. They mentioned access to a farmers’ market, community gardens, vegetable stands, mobile food trucks, and food education as ways for their neighborhoods to increase the consumption of fresh fruits and vegetables. The opinions

of low-income food desert residents were that their neighborhoods needed better access to fresh produce. Interview data showed that most respondents would purchase healthier foods or become more aware of their health if more was done in their communities to promote healthier food options, especially in grocery stores. For example, one participant mentioned that the community could highlight educational opportunities and distribute flyers promoting nutritional information. A few of the participants wanted fruit and vegetable nutritional guidelines readily available in produce aisles to guide those who were less knowledgeable about healthy food choices.

Food Choices and Shopping Behaviors are Affected by Price and Family Budgets

The belief related to food accessibility is that participants can obtain fresh fruits and vegetables when financially able. When participants had the income to do so, they purchased fresh fruits and vegetables. When they did not have the income to purchase these items, they were less likely to do so. Overall, in the food desert environment, the participants believed that they could obtain fresh fruits and vegetables; however, some were limited by their ability to purchase them because of cost.

Personal budget did have an affect on a person's food shopping behaviors. Most people were aware of how their budgets affected food shopping behaviors, because they noticed that healthy food costs more than unhealthy food. People also expressed that the less money they had, the less fruits and vegetables they purchased. Alternatively, the more money they had, the more produce they were able to purchase. The shopping behaviors of low-income individuals living in a food desert effected food choices.

Furthermore, research shows that purchasing and consumption of less fruits and vegetables is patterned by socioeconomic status (Pechey & Monsivais, 2016). Wealthier and more educated households purchased more fresh produce. Households with lower income and education purchased less fresh produce. As stated, in this study, participants with more education consumed more fresh produce in comparison to those with less education. Additionally, participants with a higher income tended to purchase fresh produce regardless of the product price. Participants with a lower income tended to make fresh produce choices based on the product price. One possibility for the differential responses regarding fresh produce purchases is that participants with a higher income may live in areas where stores offer more healthful products. Consumers who frequent low-priced supermarkets are more likely to have unhealthy diets (Pechey & Monsivais, 2016).

Multiple factors influenced a person's decision to travel outside of the neighborhood for fresh produce. Many participants would travel outside of the neighborhood to obtain fresh fruits and vegetables when they were not available in their neighborhoods. Other participants traveled outside of the neighborhood to obtain low-cost fresh fruits and vegetables. Therefore, the selection of fairly priced fresh produce motivated participants to travel outside of their neighborhood.

Behaviors Related to Food Shopping Impacted by Available Mode of Transportation and Travel Distance to Nearest Grocery Store

The participants with their own mode of transportation had the luxury of traveling to the grocery store more often if the need arose. Most participants noted that they

traveled further distances to get fresher produce. Others traveled further distances in order to get to the nearest grocery store in their neighborhoods. Few participants were able to stay within their neighborhood when shopping. These shoppers traveled five miles or less to a grocery store. The food shopping behavior related to food accessibility is driven by the distance to the nearest grocery store.

Interpretation of Factors Related to Beliefs, Opinions and Behaviors Related to Living in Food Deserts

Cost

Multiple factors influenced a person's decision to travel outside of the neighborhood for fresh produce. People would travel outside of their neighborhoods to obtain fresh fruits and vegetables when they were not available locally. Others traveled further distances in order to get to the nearest grocery store in the neighborhood. Few participants were able to stay within their own neighborhoods when shopping. These shoppers traveled five minutes or less to a grocery store.

Research shows that many residents in urban and rural areas drive great distances to purchase foods at the lowest prices. In the study by Miller et al. (2016), this point was clearly shown. Residents were willing to travel outside of their community (up to 11 miles) for the best food prices versus buying the food at the co-op that was available near their home residence. Additionally, people living in food deserts who shop for food in convenience stores pay higher prices for food (Pine & Bennett, 2014).

Transportation

In this study, the respondents noted that the lack of transportation was a barrier to reaching a food outlet to obtain healthy food. A lack of transportation leaves an individual at the disposal of what is available via local food sources, such as convenience stores. The present study and the literature show that individuals are affected by the transportation used to buy groceries (Rodriquez & Maraj Grahame, 2016; Chrisinger, 2016). Whatever the case, participants alter their shopping patterns in order to accommodate the mode of transportation that is readily available to them.

Price and Availability

The majority of participants were driven by price as opposed to availability when purchasing fresh fruits and vegetables. Participants bought fairly priced food items more than higher end items that were readily available. In other words, just because an item was available did not mean that the respondent would purchase it. In this sense, if an item was fairly priced as perceived by the participants, they were more motivated to purchase it. The present study and the literature revealed that food shopping behaviors are motivated by price and availability, showing an effect on food choices (Sohi et al., 2014).

Budget

Personal budget did have an effect on a person's food shopping behaviors. Most people were aware of how their budget affected food shopping behaviors, because they noticed that healthy food costs more than unhealthy food. People also expressed that the less money they had, the less fruits and vegetables they bought. Alternatively, the more money that they had, the more fruits and vegetables they purchased. The shopping

behaviors of low-income food desert residents affected food choices in the sense that if a food item was fairly priced, consumers would purchase more of it. For example, if the price of fruits and vegetables were decreased, then the participants in this study said they would purchase more of them. This directly indicates the role that purchasing decisions plays on the price of food in a food desert. In this study, I have shown that the affordability of fruits and vegetables is important.

Perceived Food Desert Status

The results revealed two distinct feelings about adequate access to fresh fruits and vegetables. The availability of fresh fruits and vegetables drove food shopping behaviors related to food choices. The belief was that participants had adequate access to fresh fruits and vegetables. The majority of participants believed that they had good access to fresh produce; their shopping behaviors were driven by this fact. Most of the study participants noted they had availability, even though some food items were not deemed fairly priced by the participant.

Theoretical Connections to Study

The SEM fits this study, since it viewed a person's environment as an important factor in his or her welfare, which fits within the environmental aspect of the model (CDC, 2015). Eating behaviors and their impact on a community cannot be fully understood without paying attention to the environmental, societal, and political settings (Rodriquez & Maraj Grahame, 2016). The SEM provided an effective framework for reaching a better understanding of the factors and barriers that impacted individuals in a food desert and therefore can provide guidance for developing appropriate intervention

strategies. There are multiple health implications that a food desert can inflict upon the individual, interpersonal relationships, the community, and the society. For example, at the individual level, the risk factors for the lack of access to healthy foods are numerous and can include determinants such as income-level, educational-level, and geographical location.

The chronosystem model proposed by Bronfenbrenner helps explain the changes one faces when an impending food desert impacts a geographical area. This unexpected event alters the existing relation between person and environment, thus creating a dynamic that may bring about progressive change in human developmental outcomes. It is important to note that most of these effects are not additive, since the four elements within the SEM simultaneously influence one another (Rosa & Tudge, 2013).

The Socioecological Model: Beliefs, Opinions, and Shopping Behaviors

The individual level of the SEM identified biological and personal history factors that increase the chance of an individual being impacted by a food desert. Factors contributing to this increased chance include age, education, income, and race/ethnicity. Strategies at the individual level promote attitudes, beliefs, and behaviors that reduce the impact of food deserts on individuals. Strategies may include creating community gardens, providing education on gardening, or teaching people how to budget and make better food choices (Rodriquez & Maraj Grahame, 2016).

As previously stated, the SEM assumes that multiple levels of influence exist and that these levels interplay with one another. Golden and Earp (2012) stated that the social, physical, and cultural aspects of the environment have an impact on health. These

researchers state that the environment is multilayered, and the environmental sphere may influence the health of people differently, depending on their personal beliefs and practices (Golden & Earp, 2012). In the present study, this reasoning correlated with people experiencing the environment differently, thus forming differing beliefs and opinions about the communities that they live in. Additionally, a person's experience with environmental context could cause them to develop different practices, in this case, food shopping behaviors.

Shopping behaviors and the purchase of fresh produce are part of a complex interplay of personal, cultural, and environmental factors that are described by the SEM: intrapersonal level (shopping habits, nutritional knowledge), interpersonal level/social environment (beliefs and social traditions impacting eating practices), and organizational/public policy levels (food access and availability). The SEM provides a useful framework for better understanding multiple factors and barriers that impacted the beliefs, opinions, and shopping behaviors of people living in a food desert (Robinson, 2008).

Limitations

There are several limitations to the present study that are worth noting. The study was limited to one geographical area along the Gulf Coast. There were other states to choose from that would have assessed a different demographic of individuals as well as produced different results. Lastly, the lack of a representative study population is also a limitation in this study. For example, more women and African-American participants

were included in the study than other genders and races. Therefore, the results of the study are not representative of all participants living in a food desert in a Gulf Coast state.

Policy Implications

Individual and Family (Micro-Level System)

Actions at the first level seek to transform the individuals' behavior to bring about an enhancement in individual health status (Lewis et al., 2011). Individuals are viewed as nested within a system of broader social and political environments that interact with each other in complex ways to influence human behavior (Rodriguez & Maraj Grahame, 2016). Individuals exist within the micro-system like families and workplaces, nestled within local communities (meso-systems), which in turn, are part of a wider social and political context (macro-system). In this context, the individual makes food choices that are governed by the availability of places to attain food, transportation to a food source (meso-system) and access to good jobs with good benefits (macro-system) (Rodriguez & Maraj Grahame, 2016). Additionally, a political context can get in the way of access to replacement resources – such as food stamps-which can impact food access.

In this study, individual income-level influenced food choices, as cost was a concern. Many participants stated that more information was needed on the benefits of eating fruits and vegetables as well as how to adequately access produce. Consistent with the literature review, a lack of information influenced food choice and access (Rodriguez & Maraj Grahame, 2016). In relation to this research study, one participant believed that it was the responsibility of grocery stores to provide information on eating healthy while also providing fresh produce for consumption. Therefore, grocery stores and community

centers can aid in being proponents of free nutrition education classes, or classes on how to incorporate healthier food choices in the family budget. In turn, as a result of the previously stated intervention, my study can lead to positive social change by encouraging knowledgeable residents and key informants in food desert communities to engage with other residents to empower them to make better food choices. Educating residents on the food environment and the importance of access to healthy food options is important. Mobilizing residents to talk to other residents, local food retailers, and their elected officials is also instrumental to influencing changes in individual behavior.

The creation of new food outlets does not necessarily correlate with better access to food or to better health outcomes. The findings in this study highlight the importance of the consumer's interaction with grocery store workers and consumer shopping behavior. Therefore, policy should focus on the consumer's interaction with grocery stores and supermarkets in their communities. The interaction with the grocery store staff may dictate what low-income consumers purchase on their visits. The interaction of supermarket workers can aid shoppers living in a food desert by helping them make better food choices. Often, these food choices will be based on what the consumer can afford and even proximity to their homes (Chrisinger, 2016). It may be important to offer better prices for healthy foods compared to junk foods. It also may be more beneficial to market healthy food choices, which reduces impulsive buying promoted by junk food marketing (Ghosh-Dastidar et al., 2014). Programs aimed at supporting proper, healthy food choices and its relation to health outcomes may be beneficial in low-income areas. Additionally, more government programs, such as WIC, could be implemented in areas

with a higher number of ethnic minorities, low-income individuals, under-served children, and pregnant mothers. The positive social change implications of my study can be used to improve interactions on the individual level by strengthening the personal relationship between grocery store workers and residents in the community. For example, more responsibility and emphasis can be placed on creating and maintaining positive interactions between grocery store workers and consumers, to promote an open dialogue about the benefits of purchasing fresh fruits and vegetables. This research urges social connections at the individual and family levels by encouraging community members to view the supermarket or grocery store environment as an extension of their world, which will aid them in creating and maintaining a healthy view of the benefits of fresh fruits and vegetables.

Community (Meso-Level)

Most participants in the study traveled long distances to purchase fresh fruits and vegetables. Transportation played a significant role in food purchases at the meso-level. Participants noted that stores closer to them carried lower quality food, and this supported some accounts in the literature. For example, many participants noted that they traveled outside of their respective neighborhood to purchase fresher produce and to capture better prices. The positive social change implications of my research can help participants with no transportation or limited transportation benefit from new zoning commissions when approving new buildings in order to avoid further food desertification (Rodriquez & Maraj Grahame, 2016). Policies aimed at improving access to fresh produce is effective when fairly pricing produce and encouraging entry of food outlets with pricing controls.

A local food pantry can also serve as an alternative food source. In this study, most participants suggested community gardens, since they would serve as a means for increasing food security and self-efficacy. Local farms also play a role in creating food deserts. The local farms could ship fresh produce to grocery stores and convenience stores in order to meet the needs of the people in the community. As a result, residents can consume more fresh produce, and farmers can receive more compensation for their products. In turn, this can lead to a stable food market driven by supply and demand.

Public policy makers could also invite retailers to fill voids in the marketplace when grocery stores close their doors. Specific incentives for retailers can prevent further encroachment of food deserts in low-income areas. Additionally, revisions in municipal zoning regulations to permit limited and responsible conversion of residential areas into commercial retail spaces can prove effective (Cerovecki & Grunhagen, 2016).

The research findings in my study can aid positive social change by creating more food outlets. As a result, low-income communities more than 10 miles from a supermarket or grocery store can obtain fresh produce from other venues. The more food outlets created in a food desert supplying fresh fruits and vegetables, could lead to better health outcomes, advancing the global good of the community.

Government (Macro-Level)

In order to meet the needs of low-income individuals, the government needs to play an active role in policy change. For example, more assistance with qualifying low-income participants with WIC or SNAP could potentially increase income-level, thus increasing fresh produce consumption. In this sense, eligibility requirements for these

services need to be clear and concise, using audience-specific language (Rodriquez & Maraj Grahame, 2016). In general, policy-makers must remain informed of the needs of the community in order to create programs aimed at helping low-income people. It would also be beneficial for policy-makers to create strategies that enable individuals and families meet their nutritional needs in order to control the cost of health care as a result of poor health.

The research findings in my study posit that positive social change at the macro-level is achieved by focusing on the needs of low-income members and educating them on the requirements of obtaining WIC or SNAP benefits. Since WIC and SNAP are government programs aimed at providing food to low-income individuals, they could serve as proxies for educating community members through healthy eating campaigns and workshops.

Conclusion

There is a barrage of advertisements encouraging individuals to “go green” and “buy local.” In turn, there is a drive for Americans to eat healthier and to embrace a healthier lifestyle. In this study, I have shown that there are often significant and intricate hurdles in access to fresh fruits and vegetables for low-income individuals in a Gulf Coast state. These hurdles are in relation to cost, transportation, and distance to a grocery store. In addition, the findings from my study contributes to the increasing need for a better understanding of how the food environment impacts low-income residents of food deserts.

Using an ecological lens, I analyzed participants' accounts to disclose the broader environmental, economic, social, and political systems influencing their choices. I also considered the implications for health and the overall quality of life. The analysis points to the need to move beyond individual interventions to more systemic responses, such as infrastructure improvements and improved social services to address persistent food insecurity.

In this study, I provided significant information to the field of public health. The themes that were discussed in Chapter 4 were reflective of the literature review in Chapter 2. This research study provided the perspective of food desert residents in a Gulf Coast state. It examined their beliefs, opinions, and food shopping behaviors in relation to the opportunities that they have to obtain healthy food. Furthermore, this study showed that the beliefs and opinions of residents drove consumer behavior.

Throughout the literature on food deserts, there was a lack of personal accounts (lived experiences) of how living in a food desert forms beliefs, opinions, and food shopping behaviors. The majority of the literature focused on the definition of a food desert and how they physically affect people. The purpose of this study was to take an in-depth look at what life is like in a food desert through the lens of the participants' lived experience(s).

In the United States, there are many urban and rural areas with limited access to fresh fruits and vegetables. In many cases, individuals live within a few blocks of fast-food restaurants and convenience stores. These locations have limited healthy food options. In other instances, participants had to travel long distances to grocery stores to

find fresh produce. Because the healthier options are further away, people have to rely more on transportation. When reviewing the demographics from the study, the people who live in food deserts are often poor minorities. In this research study, poor minority women served as the majority of study participants.

This research study makes an attempt, after a thorough review of the literature, at assessing the beliefs and opinions of residents experiencing the food desert phenomenon. From a public health perspective, further policy is needed to limit food deserts as well as the impact they have on members of society. The research that was completed in this study will provide more information to the collection of data about food deserts.

The ecological analysis offered displays the complex, dynamic, and overlapping networks that govern choices. The barriers described are multilayered, operating together to potentially lock people into persisting food insecurity, endangering their health and well-being. The beliefs and opinions of residents were more readily understood by using the SEM. The results demonstrate that residents could benefit from recommendations that take into account the interdependence of the five levels specified in the SEM (individual, interpersonal, organizational, community, and societal). Addressing these barriers will potentially promote lifelong healthy eating habits, support optimum health, create vibrant communities, and promote positive social change.

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Appendix A: Interview Questions

1. Do you feel you are able to obtain fresh fruits and vegetables for you and your family? What factors affect your ability to obtain fresh fruits and vegetables?
2. Do you feel that you have good access to fresh fruits and vegetables for you and your family? Why, or why not?
3. Do you feel you are able to purchase fresh fruits and vegetables when you have the money to do so?
4. What have you noticed in your community about the options of food choices?
5. What have you noticed about the health of people living in your neighborhood?
6. What type(s) of circumstances can cause a person to choose eating healthy food?
7. What type(s) of circumstances can cause a person to choose eating less healthy food?
8. How can access to fresh fruits and vegetables impact your health?
9. How could your neighborhood have better access to healthy fruits and vegetables?
10. Why is it important to successfully get healthy food into your neighborhood?
11. What can be done to make your neighborhood healthier?
12. How do access to fresh fruits and vegetables play a role in your overall health?
13. What are your thoughts on access to fresh fruits and vegetables and its link to good health? Do you feel these items affect your health? If so, how?
14. How often do you shop for food?
15. Do you feel you are able to buy fresh fruits and vegetables? Is purchasing fresh fruits and vegetables easy or difficult? In what way(s)?
16. What is your weekly/monthly budget for food?

17. How does your weekly/monthly budget for food affect what healthy foods you purchase?
18. What mode of transportation do you take when you shop for food?
19. How do you get the food you buy home?
20. Does the store where you shop the most have sales? Do you use coupons, etc.?
21. Do you tend to buy in bulk when food prices are lower or when you use coupons? If so, in what way(s)?
22. In what way(s) has the food you purchased impacted your overall health?
23. In what way(s) has your weekly/monthly budget impacted your food choices?
24. Do your food purchase depend more on price or availability?
25. How far do you travel to purchase fresh fruits and vegetables?
26. Would you travel outside your neighborhood to purchase fresh fruits and vegetables?
If so, why?
27. Why do you think people travel outside of their neighborhood to purchase food?

Appendix B: Interview Protocol

Instructions

Good morning/afternoon. My name is Kimberly Willis. Thank you for coming. This interview involves two parts. The first part is a demographic form, in which I will ask you background information. The purpose is to understand basic information about you and your lived experience(s). There are no right or wrong answers. I would like you to feel comfortable with expressing who you are. The second part is an interview that will last approximately 60 minutes. I will give you specific instructions for completing that task once you have finished with the demographic form.

Consent Form Instructions

Before we get started, please take a few minutes to read and sign this consent form. This form serves as your agreement to participate in the study. Remember that you may withdraw from the study at any time with no consequence. If you have any questions, please ask me.

Audio Recorder Instructions

If it is okay, I will be audio-recording our conversation. The purpose of this is so that I can get all of the details while also being able to carry on an attentive conversation with you. I assure you that all of your comments will remain confidential. I will be compiling a paper, which will contain all participants' comments without any reference to individuals. After the conclusion of the interview, I will go over your responses with you. This will ensure that your thoughts have been captured, and the questions have been answered clearly and thoroughly. Thank you for your participation today.

Appendix C: Consent Form

CONSENT FORM

You are invited to take part in a research study about inadequate access to fresh fruits and vegetables in low-income communities. The researcher is inviting individuals 18 years of age or older who live in areas with inadequate access to fresh fruits and vegetables to be in the study. This form is part of a process called “informed consent” to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named Kimberly Willis, who is a doctoral student at Walden University. Please read this form and ask questions before you decide whether to participate in the study.

Background Information:

The purpose of this study is to gain knowledge from individuals who live in low-income communities about inadequate access to fresh and affordable fruits and vegetables, how it influences beliefs, and opinions of residents, and whether these factors affect food shopping behaviors.

Procedures:

If you agree to be in this study, you will be asked to:

- Participate in a 60-minute interview in which you will be asked a series of questions which will assess your beliefs and opinions about access to fresh and affordable fruits and vegetables and whether these factors affect food shopping behaviors.
- The research will take place where you feel most comfortable.
- This interview will take approximately 60 minutes and will be complete after one session.
- This interview will be audio recorded.

Here are some sample questions:

- What are the beliefs related to food accessibility of low-income individuals living in a food desert in a Gulf Coast state?
- How do the beliefs of low-income individuals living in a food desert in a Gulf Coast state affect food shopping behaviors related to food choices?

Voluntary Nature of the Study:

This study is voluntary. You are free to accept or turn down the invitation. If you decide to be in the study now, you can still change your mind later. You may stop at any time. If you decide not to be in the study, the interview will cease immediately.

Risks and Benefits of Being in the Study:

This study has minimal risks. For example, some of the questions may cause you discomfort to answer, however, if any questions causes discomfort you are free to tell the researcher and she will skip that question. Examples of discomfort include stress or fatigue. Being in this study would not pose risk to your safety or wellbeing.

This study could potentially shed light on the lived experience(s) of community members residing in areas with inadequate access to fresh fruits and vegetables. Members of society who have never experienced this phenomenon will be able to understand the beliefs, opinions, and shopping behaviors of individuals living in these areas. As a result, strategies for combating the effects of living in these areas can be proposed, such as implementing changes to the built environment or policy changes.

Payment:

Participants will receive a \$10 VISA gift card. Gift cards will be given to participants after the completion of the interview.

Interview Transcript Review:

After the interview, transcripts will be shared with participants to ensure clarity and thoroughness. This review will take approximately 30 minutes.

Privacy:

Reports coming out of this study will not share the identities of individual participants. Details that might identify participants, such as the location of the study, also will not be shared. The researcher will not use your personal information for any purpose outside of this research study. Data will be kept secure in a locked file cabinet located in the researcher's home office. No one will have access to these records besides the researcher and her assigned chair and committee member. The research findings and results will be kept on a password protected computer and jump drive. Audio tapes of interviews will be kept in a locked file cabinet. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:

You may ask any questions you have now. Or if you have questions later, you may contact the researcher via phone at (334) 209-5126 or via email at kimberly.willis2@waldenu.edu.

If you want to talk privately about your rights as a participant, you can call the Research Participant Advocate at my university at 612-312-1210. Walden University's approval number for this study is **05- 21-18-0076205** and it expires on **May 20th, 2019**.

The researcher will give you a copy of this form to keep.

Obtaining Your Consent

If you feel you understand the study well enough to make a decision about it, please indicate your consent by signing below.

Printed Name of Participant

Date of Consent

Participant's Signature

Researcher's Signature

Appendix D: Research Questions Addressed by Interview Questions

Research question	Interview questions
1. What are the beliefs related to food accessibility of low-income individuals living in a food desert in a Gulf Coast state?	1-3
2. How do the beliefs of low-income individuals living in a food desert in a Gulf Coast state affect food shopping behaviors related to food choices?	4-8
3. What are the opinions related to food accessibility of low-income individuals living in a food desert in a Gulf Coast state?	9-11
4. How do the opinions of low-income individuals living in a food desert in a Gulf Coast state affect food shopping behaviors related to food choices?	12-13
5. What are the shopping behaviors related to food accessibility of low-income individuals living in a food desert in a Gulf Coast state?	14-21
6. How do the shopping behaviors of low-income individuals living in a food desert in a Gulf Coast state affect food choices?	22-27

Appendix E: Flyer



Recruiting Participants for a Research Study

Seeking those experiencing inadequate access to fresh fruits and vegetables in low-income communities.

Participants must be 18 years of age or older and live in an area impacted by low access to fresh fruits and vegetables.

This study is being conducted by Kimberly Willis, a doctoral student at Walden University.

If interested, please contact Kimberly at 334-209-5126. Participants who complete the interview will receive a \$10 gift card to be used at his or her discretion.

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Research Participant Advocate at 612-312-1210.

Kimberly Willis
334-209-5126

Kimberly Willis
334-209-5126

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Appendix F: Codebook

Dominant Themes	Subthemes	Exemplificative Quotes
1. Ability to obtain fresh fruits and vegetables for self and family	<ul style="list-style-type: none"> - Bad selection - High price - Grocery store too far away - No barriers 	<ul style="list-style-type: none"> • <i>Um. Not all the time. Um. Um. Sometimes when I go in to the local grocery store they really do not have like a good selection of fruits and vegetables...</i> • <i>No fresh food options, convenience stores, and Family Dollar only provides packaged essentials.</i> • <i>No, the price is too high for one thing.</i> • <i>Most of the time. Location, season, and cost affects one's ability to obtain fresh fruits and vegetables.</i> • <i>Yes, I can obtain. We have it readily available.</i> • <i>Yes. Because it's available and I have means to purchase it.</i> • <i>Yes, but it could be better.</i>
2. Ability to purchase fresh fruits and vegetables when financially able	<ul style="list-style-type: none"> - Able to purchase fresh fruits and vegetables - Sometimes able to purchase fresh fruits and vegetables - Not able to purchase fresh fruits and vegetables 	<ul style="list-style-type: none"> • <i>Yes.</i> • <i>Yes, but sometimes they are more expensive than junk food. So, you have to take into consideration the fact that you are going to be spending more money on something that is healthier for you.</i> • <i>Not all of the time. Because of my income.</i>

Dominant Themes	Subthemes	Exemplificative Quotes
3. Belief about good access to fresh fruits and vegetables for self and family	<ul style="list-style-type: none"> - Believe have good access - Do not believe have good access 	<ul style="list-style-type: none"> • <i>Yes.</i> • <i>Yes. Plenty in stores or roadside stands.</i> • <i>We do not have good options. You know. We do not have many options.</i> • <i>Uh. There are not really a lot of options. I have gone to other places and they have had things like Almond Milk, etc. Um. Reduced sodium type foods. Healthier option type things. They do not offer those in certain areas</i>
4. Awareness of how good/bad food choices available in community impact health	<ul style="list-style-type: none"> - Awareness of good/bad food choices - Positive impact on health - Improvement in health 	<ul style="list-style-type: none"> • <i>Living a longer, healthier lifestyle.</i> • <i>It can greatly impact health for the better by causing weight loss, and decreasing unhealthy related illness.</i> • <i>Fresh fruits are highly impactful in a person's health as it works to improve all aspects of body and health.</i> • <i>It can improve your health.</i> • <i>Healthy eating will have a positive impact on disease prevention, energy, and overall feeling good.</i> • <i>Well, I mean. We all know that we should eat fresh fruits and vegetables. For</i>

Dominant Themes	Subthemes	Exemplificative Quotes
		<p><i>optimum health. You know. If you had more access, like more farmers markets. If you had, um. Grocery stores that were closer to you, um. Then you know you will be able to buy those things more readily and they will affect your health.</i></p> <ul style="list-style-type: none"> • <i>The benefits are tremendous, access, knowledge of the benefits, and a mindset allows one to be open to making healthy changes.</i>
<p>5. Observation of health status of those living in neighborhood</p>	<ul style="list-style-type: none"> - Healthy - Not healthy - More fast food than healthy food - People into fitness 	<ul style="list-style-type: none"> • <i>They enjoy maintaining their health.</i> • <i>Some are healthier due to better food choices.</i> • <i>People seem to be in good health.</i> • <i>People in my neighborhood are not really healthy. Because of the food choices that we have. The lack of.</i> • <i>There is more fast food than healthy places to eat in my neighborhood.</i> • <i>There are a lot of walkers.</i> • <i>I have noticed a great deal of my neighbors are extremely active and lead a relatively healthy lifestyle from an optical standpoint.</i>

Dominant Themes	Subthemes	Exemplificative Quotes
		<ul style="list-style-type: none"> • <i>Most neighbors are older and healthy, maybe due to them being used to eating fruits and veggies all of their lives. Younger people's health may differ in the long term due to fast foods and processed foods.</i>
6. Awareness of factors that cause person to choose healthy/unhealthy food options	<ul style="list-style-type: none"> - Better health - Personal finances - Distance to store - Lack of transportation 	<ul style="list-style-type: none"> • <i>The concern of health and life would be the primary reason for choosing a healthy diet.</i> • <i>I believe that the environment, as well as personal finances, can be highly influential in a person's choice in choosing less healthy food choices.</i> • <i>Income, distance, and transportation.</i> • <i>Busy working and not enough time to eat healthy.</i> • <i>Not having healthy choices within walking distance from their home.</i> • <i>Can you repeat that? Um. Possibly trying to get healthy and get in shape. Trying to lose weight, maybe. Maybe going to the doctor and having to get your blood pressure under control. Or diabetes. Trying to be healthier.</i> • <i>Um. They do not have a lot of money. Um.</i>

Dominant Themes	Subthemes	Exemplificative Quotes
		<i>Being stressed out. Emotionally eating (laughs).</i>
7. Views on how neighborhoods can have better access to fresh fruits and vegetables	<ul style="list-style-type: none"> - Farmers market - Community garden - Vegetable stands - Mobile food trucks - Education on eating healthy 	<ul style="list-style-type: none"> • <i>Um. Farmers market coming through. Farmers market like once a month, once a week. To have local farmers to come through and sell their produce. That is a good thing to have. Local markets. Awareness out there and educating people on the importance of eating fruits and vegetables. If I see flyers and information like that it will help.</i> • <i>Keep the stores stocked with fresh fruits and vegetables.</i> • <i>Possibly by having a produce truck to visit neighborhood.</i> • <i>Produce trucks, neighborhood gardens, and convenience stores with healthy food options.</i> • <i>Mobile farm stands.</i> • <i>Going to the store and tell them to put out fresh fruit and vegetables. Talking to the manager. Discussing the problem with him on the problems we are having on getting fresh fruits and vegetables.</i>

Dominant Themes	Subthemes	Exemplificative Quotes
		<ul style="list-style-type: none"> • <i>Neighborhood garden and more fruit and vegetable stands.</i>
8. Awareness of how the budget influences food choices/shopping behaviors	<ul style="list-style-type: none"> - No effect on budget - Healthy food less expensive than fast food - Get what money can buy - Less money, less healthy food purchased - More money, more healthy food purchased - Healthy food is more expensive 	<ul style="list-style-type: none"> • <i>I do not really budget. I just get what is needed for meal prepping (laughs). I purchase to help prevent problems. I watch for high sodium, sugar content, and carbohydrates.</i> • <i>I think that buying fresh fruits and vegetables is actually cheaper than fast food and other unhealthy food options.</i> • <i>Well. Like I said. You know. I have to go get what my money can buy. Not what I really want. I have to watch it. And not go overboard.</i> • <i>The less money I have the less likely I am to purchase fruits and vegetables. Also, the opposite is true.</i> • <i>Well, the more healthy foods are more expensive. I mean I can buy some fruits and vegetables, but um. It is based on how much money I have available.</i> • <i>Sometimes it is poor. But, most of the time good choices.</i> • <i>Healthy food is more expensive.</i>

Dominant Themes	Subthemes	Exemplificative Quotes
		<ul style="list-style-type: none"> • <i>It does not affect my budget</i>
9. Relationship between mode of transportation and food shopping behaviors	<ul style="list-style-type: none"> - Use of personal vehicle to transport food - Use of bus system to transport food - Buy more food when using a car - Buy less food when using the bus system - Not having a car could affect ability to buy food 	<ul style="list-style-type: none"> • <i>I use my personal vehicle to obtain food. I buy more when I travel this way.</i> • <i>I use a car. But, most people in my neighborhood use the bus line. They buy less food because they don't want to carry so much home. It is sometimes not safe.</i> • <i>Not having a car could affect your ability to obtain fresh fruits and vegetables.</i>
10. Influence of price/availability on food purchases	<ul style="list-style-type: none"> - Availability influences food purchases - Price influences food choices - Availability and price influences food choices 	<ul style="list-style-type: none"> • <i>My food choices depend more on availability than price.</i> • <i>I'll say price. Because I can't just go in the store and just buy stuff. I have to think about how much money I have to buy items.</i> • <i>Availability and price impact my food purchases.</i>
11. Awareness of travel distance to nearest grocery store and how it impacts food shopping behaviors	<ul style="list-style-type: none"> - Travel less time to grocery store to get what he/she needs - Travel further to get fruits and vegetables - Travel further. Makes sure to buy all items to avoid going back - Travel to get better produce 	<ul style="list-style-type: none"> • <i>I travel less than ten miles to a grocery store. I get what I need near.</i> • <i>I travel about fifteen minutes to a store. I buy what I need there when I go to avoid going that far again.</i> • <i>I travel far to get the fruits and vegetables I need.</i>

Dominant Themes	Subthemes	Exemplificative Quotes
		<ul style="list-style-type: none"> • <i>Hmm. About fifteen minutes. I travel to get better produce.</i>
12. View on decision to travel outside local neighborhood to purchase fresh fruits and vegetables	<ul style="list-style-type: none"> - Would travel outside neighborhood - Do not like selection in neighborhood - Would travel to get better quality food - Would not travel because of proximity to store 	<ul style="list-style-type: none"> • <i>Yes. In other areas, they have higher income residents that have access to better quality foods. In certain areas where you have a black race, you don't really have Whole Foods and um. Trader Joe's. And. Um. Sprouts. So, you know. You have to go outside to buy these foods. If you are really conscious of your health. If you are in a black community, you have to travel outside to get those foods.</i> • <i>Yes. Because. I want some fresh fruit and vegetables (laughs). If I want cabbage, okra. I will travel outside. Also, if it is cheaper.</i> • <i>Yes. Fresher, more organic choices.</i> • <i>Already do, especially to farm stands. Can't get any fresher (smiles).</i> • <i>Yes, because I don't like the selection at Wal-Mart.</i> • <i>No, because I am close to what I need.</i>

Dominant Themes	Subthemes	Exemplificative Quotes
13. Awareness of how good/bad food choices available in community impact health	<ul style="list-style-type: none"> - Awareness of good/bad food choices - Positive impact on health - Improvement in health 	<ul style="list-style-type: none"> • <i>Living a longer, healthier lifestyle.</i> • <i>It can greatly impact health for the better by causing weight loss, and decreasing unhealthy related illness.</i> • <i>Fresh fruits are highly impactful in a person's health as it works to improve all aspects of body and health.</i> • <i>It can improve your health.</i> • <i>Healthy eating will have a positive impact on disease prevention, energy, and overall feeling good.</i> • <i>Well, I mean. We all know that we should eat fresh fruits and vegetables. For optimum health. You know. If you had more access, like more farmers markets. If you had, um. Grocery stores that were closer to you, um. Then you know you will be able to buy those things more readily and they will affect your health.</i> • <i>The benefits are tremendous, access, knowledge of the benefits, and a mindset allows one to be open to making healthy changes.</i>

Dominant Themes	Subthemes	Exemplificative Quotes
14. Observation of health status of those living in neighborhood	<ul style="list-style-type: none"> - Healthy - Not healthy - More fast food than healthy food - People into fitness 	<ul style="list-style-type: none"> • <i>They enjoy maintaining their health.</i> • <i>Some are healthier due to better food choices.</i> • <i>People seem to be in good health.</i> • <i>People in my neighborhood are not really healthy. Because of the food choices that we have. The lack of.</i> • <i>There is more fast food than healthy places to eat in my neighborhood.</i> • <i>There are a lot of walkers.</i> • <i>I have noticed a great deal of my neighbors are extremely active and lead a relatively healthy lifestyle from an optical standpoint.</i> • <i>Most neighbors are older and healthy, maybe due to them being used to eating fruits and veggies all of their lives. Younger people's health may differ in the long term due to fast foods and processed foods.</i>
15. Awareness of factors that cause person to choose healthy/unhealthy food options	<ul style="list-style-type: none"> - Better health - Personal finances - Distance to store - Lack of transportation 	<ul style="list-style-type: none"> • <i>The concern of health and life would be the primary reason for choosing a healthy diet.</i> • <i>I believe that the environment, as well as personal finances, can be highly influential in a person's choice in</i>

Dominant Themes	Subthemes	Exemplificative Quotes
16. Views on how neighborhoods can have better access to fresh fruits and vegetables	<ul style="list-style-type: none"> - Farmers market - Community garden - Vegetable stands - Mobile food trucks - Education on eating healthy 	<p><i>choosing less healthy food choices.</i></p> <ul style="list-style-type: none"> • <i>Income, distance, and transportation.</i> • <i>Busy working and not enough time to eat healthy.</i> • <i>Not having healthy choices within walking distance from their home.</i> • <i>Can you repeat that? Um. Possibly trying to get healthy and get in shape. Trying to lose weight, maybe. Maybe going to the doctor and having to get your blood pressure under control. Or diabetes. Trying to be healthier.</i> • <i>Um. They do not have a lot of money. Um. Being stressed out. Emotionally eating (laughs).</i> <hr/> <ul style="list-style-type: none"> • <i>Um. Farmers market coming through. Farmers market like once a month, once a week. To have local farmers to come through and sell their produce. That is a good thing to have. Local markets. Awareness out there and educating people on the importance of eating fruits and vegetables. If I see flyers and information like that it</i>

Dominant Themes	Subthemes	Exemplificative Quotes
		<p><i>will help.</i></p> <ul style="list-style-type: none"> • <i>Keep the stores stocked with fresh fruits and vegetables.</i> • <i>Possibly by having a produce truck to visit neighborhood.</i> • <i>Produce trucks, neighborhood gardens, and convenience stores with healthy food options.</i> • <i>Mobile farm stands.</i> • <i>Going to the store and tell them to put out fresh fruit and vegetables. Talking to the manager.</i> <p><i>Discussing the problem with him on the problems we are having on getting fresh fruits and vegetables.</i></p> <ul style="list-style-type: none"> • <i>Neighborhood garden and more fruit and vegetable stands.</i>
<p>17. Awareness of how the budget influences food choices/shopping behaviors</p>	<ul style="list-style-type: none"> - No effect on budget - Healthy food less expensive than fast food - Get what money can buy - Less money, less healthy food purchased - More money, more healthy food purchased - Healthy food is more expensive 	<ul style="list-style-type: none"> • <i>I do not really budget. I just get what is needed for meal prepping (laughs). I purchase to help prevent problems. I watch for high sodium, sugar content, and carbohydrates.</i> • <i>I think that buying fresh fruits and vegetables is actually cheaper than fast food and other unhealthy food options.</i> • <i>Well. Like I said. You know. I have to go get</i>

Dominant Themes	Subthemes	Exemplificative Quotes
		<p><i>what my money can buy. Not what I really want. I have to watch it. And not go overboard.</i></p> <ul style="list-style-type: none"> • <i>The less money I have the less likely I am to purchase fruits and vegetables. Also, the opposite is true.</i> • <i>Well, the more healthy foods are more expensive. I mean I can buy some fruits and vegetables, but um. It is based on how much money I have available.</i> • <i>Sometimes it is poor. But, most of the time good choices.</i> • <i>Healthy food is more expensive.</i> • <i>It does not affect my budget</i>
18. Relationship between mode of transportation and food shopping behaviors	<ul style="list-style-type: none"> - Use of personal vehicle to transport food - Use of bus system to transport food - Buy more food when using a car - Buy less food when using the bus system - Not having a car could affect ability to buy food 	<ul style="list-style-type: none"> • <i>I use my personal vehicle to obtain food. I buy more when I travel this way.</i> • <i>I use a car. But, most people in my neighborhood use the bus line. They buy less food because they don't want to carry so much home. It is sometimes not safe.</i> • <i>Not having a car could affect your ability to obtain fresh fruits and vegetables.</i>

Dominant Themes	Subthemes	Exemplificative Quotes
19. Influence of price/availability on food purchases	<ul style="list-style-type: none"> - Availability influences food purchases - Price influences food choices - Availability and price influences food choices 	<ul style="list-style-type: none"> • <i>My food choices depend more on availability than price.</i> • <i>I'll say price. Because I can't just go in the store and just buy stuff. I have to think about how much money I have to buy items.</i> • <i>Availability and price impact my food purchases.</i>
20. Awareness of travel distance to nearest grocery store and how it impacts food shopping behaviors	<ul style="list-style-type: none"> - Travel less time to grocery store to get what he/she needs - Travel further to get fruits and vegetables - Travel further. Makes sure to buy all items to avoid going back - Travel to get better produce 	<ul style="list-style-type: none"> • <i>I travel less than ten miles to a grocery store. I get what I need near.</i> • <i>I travel about fifteen minutes to a store. I buy what I need there when I go to avoid going that far again.</i> • <i>I travel far to get the fruits and vegetables I need.</i> • <i>Hmm. About fifteen minutes. I travel to get better produce.</i>
21. View on decision to travel outside local neighborhood to purchase fresh fruits and vegetables	<ul style="list-style-type: none"> - Would travel outside neighborhood - Do not like selection in neighborhood - Would travel to get better quality food - Would not travel because of proximity to store 	<ul style="list-style-type: none"> • <i>Yes. In other areas, they have higher income residents that have access to better quality foods. In certain areas where you have a black race, you don't really have Whole Foods and um. Trader Joe's. And. Um. Sprouts. So, you know. You have to go outside to buy these foods. If you are really conscious of your</i>

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		<p><i>health. If you are in a black community, you have to travel outside to get those foods.</i></p> <ul style="list-style-type: none"> • <i>Yes. Because. I want some fresh fruit and vegetables (laughs). If I want cabbage, okra. I will travel outside. Also, if it is cheaper.</i> • <i>Yes. Fresher, more organic choices.</i> • <i>Already do, especially to farm stands. Can't get any fresher (smiles).</i> • <i>Yes, because I don't like the selection at Wal-Mart.</i> • <i>No, because I am close to what I need.</i>