



Research

Food Insecurity in the South: A Case Study of Food Desert Identification and Community-Based Solution in Hattiesburg, Mississippi

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Abstract

Food insecurity is a major development within both rural and urban communities within the United States. A common denominator of food insecurity throughout the country is the lack of accessibility to affordable and nutritious food. The presence of such an issue is not only a focal area for public health but also areas such as community development, economic development and equity. Issues of equity related to food insecurity include, but not limited to representation at community meetings, perception of the community and lack of marketing by local economic development professionals. We focus upon food insecurity in Mississippi, using a case study for the City of Hattiesburg, Mississippi. This paper seeks to detail and address the previous factors along with a detailed description of food insecurity, to identify food desert, and to address the issue such as community gardens, local land use policies and perceptions that affect the implementation strategies to mitigate food insecurity.

Introduction

Humans need food for both survival and nourishment. Food can be either purchased or grown depending on the willingness of the individual or the condition of the soil. A majority of Americans choose to purchase food from a local supermarket or related stores. However, for many, this option is not available, due to their location, which hinders their access to fresh fruits and vegetables. Their limited access is attributable to lack of transportation, economics and unwillingness of supermarket chains to locate in their community. Convenience stores that fill the niche where a supermarket should be located provide some basic services, and supply limited produce products such as fresh fruits and vegetables. The main items sold at these convenience stores are soft drinks, snack foods and similar products. Even fresh fruits and vegetables are provided, however, the quality and price of the produce products are not in alignment to what the residents desire to purchase.

The United States Department of Agriculture (USDA) defines food deserts as areas with limited access to affordable and nutritious food, particularly such areas composed of predominantly lower-income neighborhoods and communities (http://www.usda.gov, accessed December 10, 2015). The absence of fresh fruits and vegetables leads to many to turn to foods that are high in saturated fat and sugar and low in price. The overconsumption of foods high in saturated fats and sugar leads to obesity and numerous ailments. This lack of nutrition and prevalence of obesity leads to many chronic diseases such as diabetes, high blood pressure,





heart disease and high cholesterol. The Mississippi Department of Health's Obesity Action Plan (2015) states that Mississippi has the highest adult obesity rate in the nation at 35.1 percent. Also included in the report is that by the year 2030, 66.7 percent of the people in state will be obese. The Plan also reported that the State of Mississippi spent \$925 million in health care costs directly related to obesity in 2008.

Food deserts have been recognized as a problem for many years. However, research efforts began with the Farm Bill Act of 2008 (also referred as the Food, Conservation and Energy Act of 2008). The Farm Bill directed the USDA to conduct a one-year study to assess the extent of areas with limited access to affordable and nutritious food, identify characteristics and causes of such areas, consider how limited access affects local populations and outline recommendations to address the problem (USDA Report to Congress 2009, p. i). The preliminary findings indicated that transportation was the main deterrent to accessing fresh fruits and vegetables. However, the same report did not indicate the findings were conclusive to such claims. Also, an individual can look at other data and first hand observations that lack of transportation is a concrete reason why many lack access to fresh fruits and vegetables. If an individual does not have vehicle or lack of access to mass transit---the probability of going to a supermarket, which is over a mile is very low. Congress passed another version of the Farm Bill in 2014 and more funds were directed towards original areas with specific allocations to Farmers Markets at \$300 million annually and \$125 million for Healthy Food Financing Initiative to make nutritious food more accessible.

Purpose of the Study

The purpose of this research is to provide a case study of a local non-profit organization's role in addressing food insecurity in an underserved community. The Edwards Street Fellowship Center located in Hattiesburg, Mississippi and its incorporation of a community garden has served the needs of its users and surrounding area.

Literature Review of Food Insecurity and Food Desert

More than 1 billion people are estimated to lack sufficient dietary availability and at least twice that suffer micronutrient deficiencies in the world, and universal access to sufficient, safe and nutritious food is another factor for food insecurity (Barrett, 2010). Patterns that were prevalent to food insecurity were noted and agencies such as USDA and FAO (U.N. Food and Agriculture Organization. For example, FAO estimated that the number of undernourished people as 1020 million globally.

In the US, the USDA has put forth efforts to capture data related to food insecurities, which include food deserts. As stated earlier, the Farm Bill of 2008 was the first major act within the United States that focused specifically on the food desert issue. In their report to Congress, "Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences, (2009)" the USDA provided a comprehensive framework related to food deserts. Key findings of this report are as follows:

• Of all the households in the United States, 2.3 million live more than a half a mile from a supermarket and do not have access to a vehicle. An additional 3.4 million households live between one-half to 1





- mile and do not have access to a vehicle. This shows that transportation plays an integral factor in deciding whether someone has access to nutritious food. Also, there are local convenience stores that carries mostly non-nutritious food.
- People living in low-income areas with limited access spend significantly more time (19.5 minutes) traveling to a grocery store than the national average (15 minutes). Increased travel times leads to less spending by those who are classified as low income, because increased transportation cost is in proportion to increased travel time.
- The major factor related to transportation and access to nutritious foods was roadway connectivity. This factor focuses upon travel routes in a related tract.
- The incorporation of policies to attract new stores or improve existing ones such as financing for new construction (CDBG programs, Empowerment Zones programs), community level interventions (Farmer's Markets, community gardens, etc.), transportation related improvements (mass transit, sidewalks and transportation subsidy on top of existing SNAP) and promotion of community development policy that incorporates food systems planning in new consolidated or comprehensive plans are all tools/strategies that improve communities in regard to addressing the food desert phenomena.
- The USDA is the governmental agency that has taken the lead on food desert research and policy. However, other agencies such as the U.S. Department of Treasury and the Department of Health and Human Services also play integral roles in food desert research. The aforementioned agencies' role is evident in 2010 passage of the Healthy Food Financing Initiative (HFFI). HFFI provides \$400 million to expand access to nutritious food in these communities through efforts such as developing and equipping grocery stores, small retailers, corner stores and farmers markets selling healthy food (U.S. Department of Health and Human Services,

http://www.acf.hhs.gov/programs/ocs/programs/community-economic-development/healthy-foodfinancing, last accessed April 6, 2016.). USDA, Treasury and HHS have defined a food desert as a census tract with a substantial share of residents who live in low-income areas that have low levels of access to a grocery store or healthy, affordable food retail outlet. Census tracts qualify as food deserts if they meet low-income and low-access thresholds:

"low-income communities" are qualified based on having: a) a poverty rate of 20 percent or greater, OR b) a median family income at or below 80 percent of the area median family income; and "low-access communities" are qualified based on the determination that at least 500 persons and/or at least 33% of the census tract's population lives more than one mile from a supermarket or large grocery store (10 miles, in the case of non-metropolitan census tracts). As of 2015, this has been modified to now be an area that is 0.5 mile from a supermarket (USDA, <u>http://apps.ams.usda.gov/fooddeserts/fooddeserts.aspx</u>, last accessed December 11, 2015)

A group of scholars founds that racial disparities is related to food deserts, geographic location and transportation related issues. For example, Raja et al. (2008) focused upon food access differences between

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neighborhoods of color and others. Raja, et al (2008) indicated that black neighborhoods have about 0.43 times the number of supermarkets compared to white neighborhoods, which was not as negative as originally thought. However, in reference to grocery stores, the black neighborhood total is 1.15 as compared to other neighborhoods at 1.59. The totals may be perplexing with regard to the hypothesis tested but the study area takes into account travel time not solely within the block group area.

The other researches on food desert provide a countywide study, using Census Block group and economic concepts such as Gini coefficients and applying Poisson regression with GIS based variables. In utilizing geographic information systems (GIS) with Poisson regression, prevalence ratios are computed regarding walkability to supermarkets, fruit and vegetable markets, grocery stores and restaurants. Transportation is often a component used when discussing food deserts due to lack of sidewalks, mass transit and similar amenities that further hinder the access to fresh fruits and vegetables. Studies done by Hendrickson et al (2006), Weatherspoon (2012) and Kaufman (1998) all have an emphasis on site specific locales and what characteristics are prevalent in determining whether or not a food desert classification is necessary. In referencing the aforementioned, Hendrickson et al (2006) investigated food access issues for low -income residents living in urban and rural Minnesota. Specifically, their study examined the actual foods available in these communities by surveying the food on store shelves, and consumer perceptions on food availability within selected communities using qualitative and quantitative methods (focus groups, surveys) (Hendrickson et al, 2006). Weatherspoon et al (2012) found that Detroit, Michigan is one of the most severe food deserts in the United States in terms of size and duration. Some areas of Detroit have had limited access to nutritious food since the 1969 riot and certainly for most of the city, and the degree of food desert has worsened especially since the closing of the last supermarket chain in the city in 2007. In his study of the public health issues related to food deserts in Detroit, Gallagher (2007) found that "fringe" retail focuses on high calorie, high fat and/or salty snack foods and sugary drinks and are located on average 0.2 miles from households, while mainstream grocers, including small independent grocers are on average two or three times that distance (p. 9). In other words, the healthy alternatives are located at a distance, and when access to a vehicle and mass transit is not an option, individuals turn to what is nearest. Hence, the high rates of obesity in low-income communities across the country might be related to access to healthy food.

Community garden as a policy tool to food desert

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The establishment of community gardens in both large and small communities is one of various policy tools to address food security related issues. Community gardens have been a visible component of the American landscape for years and are typically started as a response to public issues, including lack of fresh fruits and vegetables, recreation to education. The origins of community gardens can be traced back to the 1890s with an almost continuous chain of urban communal garden efforts (Lawson, 2005). During this time period, the focus of gardens was promoting vacant cultivation associations to provide land and technical assistance to unemployed laborers in cities including Detroit, New York and Philadelphia (Lawson, 2005, p. 1). Over the time the definition of a community garden has changed from vague to very specific. The American Community Garden Association defines a community gardens include social interaction, beautification, reduces family budgets and provides nutritious food (AGCA, 2015). Approximately 23 percent of land in the average American city lies vacant due to various reasons, and the vacant landscape can be utilized for various benefits





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such as beautification, providing food for residents and abating criminal activity (Schukoske, 2000). This is a substantial total and indicates the need for the space to be filled by a specific land use. The vacant land found in cities is often owned by local or state government. The costs of maintaining such land can be a detriment to governmental budgets. Therefore, tools such as community gardens, which are ran by non-profits or similar groups, provide an alternative to utilization of vacant lot in solving food deserts (Bell and Standish, 2009). Offering tax incentives, improving existing stores, creating farmers' markets and fresh food financing are additional policy tools to consider ((Bell and Standish, 2009). To overcome the barriers of locating in underserved communities and receiving traditional financing, a task force was formed and recommended the creation of a statewide fund to support fresh food retail development. The state then appropriated \$30 million over three years to create Fresh Food Financing Initiative (FFFI) and has now approved more than 75 new or improved grocery stores (Bell and Standish 2009, pp. 84-85).

Strategies and genesis of community gardens in Mississippi

The following statistics show the seriousness of food desert in the State of Mississippi (Mississippi Department of Health, 2015):

- Over the next 20 years, Mississippi's obesity could contribute to 415,353 new cases of type 2 diabetes, 814,504 cases of coronary heart disease and stroke, 751,568 new cases of hypertension, 487,642 new cases of arthritis and 111,069 new cases of obesity related cancer.
- There is a 40 percent increase in medical cost per year in an obese person than a non-obese person.

Along with statistics related to health related issues and medical costs, the Department of Health is continuing collaboration with the Partnership for a Healthy MS and MS Food Policy Council to assist with establishing and strengthening policies for increased access to healthy food and beverages (Health 2015, pp. 7 and 8). Not only is collaboration discussed in the literature but also improving what is exists as well as outlined in the research by Bell and Standish (2009).

Identifying food desert for Hattiesburg, MS

The communities in this study were selected using limited access to grocery stores ad identified by the North American Industry Classification System codes (NAICS), higher than state average poverty levels, urban influence codes as established by the Economic Research Service (ERS) and civic engagement around food issues.

The study area for this research is the City of Hattiesburg which is located in the southern portion of Mississippi (see Map 1). The City is known as the Hub City due to its proximity to major cities such as New Orleans, Memphis, Houston and Mobile. According to latest Census estimate, the City has a population of 47,016 (U.S. Census Bureau, <u>http://www.census.gov</u>, accessed December 11, 2015). The aforementioned total marks a 2.7 increase from 2010 which totaled 45,989. Median income for Hattiesburg residents is \$27, 609 which is lower than the state average of \$39,031. Also, the total persons below the poverty level are 36.6 percent which is higher than the state total of 22.7 percent (U.S. Census, 2015). The numbers indicate a city



that has an active business community but still has a large percentage that is below the poverty. Therefore, programs that are offered by non-profit organizations such as Edwards St. Fellowship Center (Map 2) fill a void in the community in handling the food desert issue.

Some statistics showing the poverty level at Hattiesburg, MS are as follows:

- Fiscal Year 2013, 5,507 applications received for SNAP and 3,733 approved.
- SNAP benefit value for FY13 was \$25,642,724.
- SNAP Participation for June 2013 was 7,630 households and 16,487 persons with a benefit value of \$2,168,797.
- TANF Payments for FY13 was \$217,292.
- TANF applications for FY13 were 234 with 5 approved and 212 denied. (MS Department of Human Services, 2013 Annual Report.)

Map 1: City of Hattiesburg, MS Location



Source: Forrest County GIS System, 2015.

In identifying the areas which are subject to food desert, we followed the guidelines_established by USDA and their Web Map Application program, the following map (Map 2) was generated to identify food desert: Tools such as the USDA's Web Map application is based upon a geographic information system (GIS) platform. A GIS system is basically a computerized mapping system that displays capture, stores, manipulate, analyze and display data. The USDA's web application is web based GIS program that is user-friendly and does not require a user to have traditional classroom or online based training. The steps to utilize the program are as follows:

- 1. Go to http://www.ers.usda.gov/data/fooddesert
- 2. Click on 'Enter the Map.'





- 3. Click on 'Find A Place' at the top of the screen and hit the RETURN key on your keyboard.
- 4. A map will appear with a pink circle that indicates your preferred location.
- 5. Areas on the map that are shaded green, orange, and red and yellow are food deserts based upon standards from USDA. Green areas indicate areas based upon the original definition of food deserts with a one to ten-mile radius. However, the orange areas indicate the new definition which begins at the half-mile radius and extends to ten miles. The red indicates a one to twenty-mile radius. Finally, areas in yellow are indicated as food deserts using vehicle access.

Utilizing the steps above, a map will be generated that depicts the results as shown in Map 2. The blue dot found on the map below identifies the address of the Edwards St. Fellowship Center along with areas they typically serve through various outreach programs (Map 2). Blue was used to identify the area as opposed to the web application's typical marker to add emphasis to the location.

The different colors represent different parameters related to the USDA designation. The categories selected were the new definition area of 0.5 miles to 10; 1 to 20 miles and those areas that are considered food deserts utilizing vehicle access. As seen in Map 2, the vehicle access is low but the access to a store is within reasonable distance, if in vehicle. There are very small neighborhood stores but have a limited selection of fruits and vegetables. However, there is a small supermarket that is approximately two miles away but difficult for those without cars and lack of continuous sidewalk infrastructure to walk to the facility. Also, there are no marketed bus routes for residents to be aware of the bus schedule. As evident the utilization of such tools as the Web Map Application, provides a visual depiction of the food desert phenomena which can be used in reports, grant application are: local geographic information systems office which have base data such as roads, city boundaries, community assets and store locations; U.S. Census Bureau that has Census Tract and Block Data which details income, employment statistics and related data and state geographic clearinghouses such as the Mississippi Automated Resource Information System (MA.R.I.S) which has a robust data set which includes physiography, political and administrative and cadastral data sets.

In summary, identifying food desert in communities relies on a mixture of traditional data sources along with web based application tools which give a visual depiction of the area, and reports and related documents in an effort to create healthy, sustainable communities.



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Source: http://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas.aspx

Community garden in Hattiesburg, MS

Since the community fits the general description of a food desert, effort has been undertaken to ensure that adequate accessibility must be addressed through various public policy strategies all with collaboration as the denominator. Among the efforts was the addition of a community garden at the Edwards St. Fellowship Center in 2009.

The Center was founded in 1979 and originally was a vacant Methodist Church. The Hattiesburg District of the United Methodist Church opened the closed church as Edwards Street Fellowship Center (ESFC) and began after-school and weekend programs for children and youth. The mission of Edwards Street Fellowship Center (ESFC) is to provide services to struggling families who are confronted by life circumstances beyond their capacity to overcome without a helping hand. The ministry is centered on a commitment to strengthening families and meeting special needs in the greater Hattiesburg area.

Currently the center serves the urban community on the southeast side of Hattiesburg by offering food pantry program, operating a thrift store and a pet food bank, and managing elementary school tutoring program, and Boy and Girl Scout programs. For the food insecurity issue, during a FY 2014, approximately 14,019 households were served. (Edwards St. Fellowship Center <u>http://www.esfcntr.org/</u>, last accessed December 3, 2015). In order to receive the products of the pantry an individual or family must meet USDA guidelines.

As a component of their mission, they have been maintaining a community garden around their building. They grow potatoes, squash, okra, tomatoes, and other green vegetables. Currently they have two gardens: one for the organic farming, and the other for the conventional farming in growing blueberries. Community volunteers and a couple of workers at the centers' pantry section help manage the community garden. The garden served 800-900 families a month. Additionally, a high tunnel garden is being constructed in order to grow vegetables during the non-growing season. They have an expansion plan by purchasing 2.5 acres of





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adjacent lands, depending on grant availability (Edwards St. Fellowship Center http://www.esfcntr.org, last accessed December 3, 2015). The community garden consists of applicable staff members within the Center along with assistance from the Master Gardener's program and from soliciting volunteers from local churches and other non-profits. The Master Gardeners program falls under the jurisdiction of the Mississippi State University Extension Service. Through this program, individuals interested in gardening and horticulture is offered training by industry professionals. In exchange for 40 hours of educational training, individuals are required to return 40 hours of volunteer service within one year of their training (http://msucares.com/lawn/master_gardener/, last accessed February 19, 2016). The volunteer service requirement allows the community to benefit from the knowledge of the gardeners through training but also provides an aesthetic/community development approach. In other words, the community benefits in more ways than one. The use of the aforementioned volunteers both from the Master Gardeners and community makes the cost to operate minimal. The approximate costs to maintain the garden is \$1,500.00 and pays for grounds maintenance, fertilizers and supplies. Due to the ebb and flow with the number of volunteers, the total to maintain the garden will vary.

The presence of the community garden does not necessarily correlate to individuals eating healthier on the surface. However, the goal of this garden is to provide an alternative while offering an educational outlet that discusses eating healthier which will lead to use and possibly creating a garden at their respective locations. A survey was administered to Edwards St. Fellowship Center clients by Colleen Mestaver in August 2014. The total number of individuals surveyed totaled 247. OF this total, 90 percent were conducted orally and 10 percent were self-administered. Some of the key findings were as follows: 89 or 36 percent have been receiving services from Edwards Street for one to five years; 196 or 79.4 percent learned about the facility from a friend of family and 16.2 percent or 40 from another service organization or other source (television, newspaper, etc.); 123 or 49.8% indicated they get fresh fruits and vegetables in their diet some of the time, 33 or 13.4 percent never get fresh fruits and vegetables in their diet; 245 or 99.2 percent of clients would like to get fresh fruits or vegetables from the center and 77 or 31.2 percent would be willing to work in the Edwards St. Garden (Mestayer, 2014). The totals form this survey instrument indicate that individuals are interested in having fresh fruits and vegetables in their respective diet and a substantial amount are willing to work in the garden. The number willing to work in the garden is not overwhelming but various factors can be attributed to that due to lack of transportation, advanced age and lack of knowledge regarding gardening. Also, the willingness of clients to want to add fresh fruits and vegetables to their diet is a positive sign of change in attitudes towards dieting and healthier living. Also, in regard to increasing volunteers, administrators of the Edwards St. Garden should consider innovative ways to increase their visibility such as utilizing social media. As indicated in the results, 79.4 percent learned about services through a friend of the family. This can only be strengthened through social media to gaining volunteers as well. This also shows that efforts related to the garden are being communicated effectively when word of mouth is more prevalent and social media was not mentioned during the interview process.

Community gardens are different in size but have a common goal which is provide an outlet that addresses an overall issue within a specific area. The Edwards St. Fellowship Center Garden's goal is to provide fresh fruits and vegetables to their clients which include the immediate area known as the Palmer's Crossing Community but extends to other areas within the city. The garden now includes volunteers from various socioeconomic backgrounds and has introduced fresh fruits and vegetables to those that previously had





little knowledge of their food source. Along with this knowledge, communication in the form of newsletters via online or printed are available to residents, churches, other non-profits and community leaders to detail the efforts of the center that includes progress of the garden. The aforementioned provides another avenue where additional volunteers and funding can be acquired to build upon previous efforts and ultimately create a healthy, sustainable community.

Conclusion and Policy Implications

The research shows that food deserts and food systems planning are complex areas. There is no universal solution to the issues. However, one can look for similar denominators that are prevalent in all cases. The common denominator in most cases are: food deserts are located in areas that are low-income, low access to stores that offer nutritious foods means use of convenience stores, lack of healthy foods leads to unhealthy choices which increases rates of obesity and where obesity rates are high also tends to be large amounts of chronic diseases.

The community garden in Hattiesburg has been providing green vegetables to low-income people in the community. Without the garden, the local people would be suffered from the food desert-related health issues. However, the locally respected non-profit organization (Edwards Street Fellowship Center) expanded their food insecurity program from a food pantry program to community garden. The garden has been successfully managed through collaboration among local volunteers, professional gardeners, and the centers' employees and board members.

A majority of the research, including this research, found that collaboration and involvement from decision makers to volunteers can mitigate both the problem and effects of food deserts. Therefore, utilizing the sources, the following actions must be done by those in public policy to address food deserts:

- Create incentive programs to retrofit small grocery stores with equipment that enables them to sell healthy foods (Raja and Yadav, 2008)
- Conduct inventories of the community (ibid)
- Recruit independent stores (ibid)
- View grocery stores as contributor to quality of life (ibid)
- Policy interventions that increase the knowledge of individuals related to healthy eating. (Weatherspoon et al, 2012)
- Increase support from voters for bills such as the Farm Bill
- Consider the incorporation of Farmer's Markets in distressed areas of the community and encourage them to accept EBT and SNAP.
- Attend neighborhood meetings or local churches to gain input from residents
- Work with the legislature on fresh food financing initiatives similar to the State of Pennsylvania
- Transportation related improvements such as sidewalks, bike paths and promoting mass transit more aggressively.

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• Collaborate with other partners such as the Natural Resource Conservation, MS State Extension Service Local Farmer Co-Operative, City and County Officials and the Mississippi Department of Environmental Quality Gardeners

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