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## The Effects of Food Security on Socioeconomic Mobility in the United States: A Case Study in Allendale County, South Carolina

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THE EFFECTS OF FOOD SECURITY ON SOCIOECONOMIC MOBILITY IN THE UNITED  
STATES: A CASE STUDY IN ALLENDALE COUNTY, SOUTH CAROLINA

By

Taylor S. Clarke

Submitted in Partial Fulfillment  
of the Requirements for  
Graduation with Honors from the  
South Carolina Honors College

May 2018

Approved:



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T.S.C.

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## **Thesis Summary**

This thesis will examine the relationship between food security – defined as accessibility to an affordable, nutritious, and sustainable source of food – and socioeconomic mobility in the continental United States. This thesis will be primarily focused on the effects of food insecurity on both individuals and communities, examining the chronic long-term effects of such insecurity on areas known as “food deserts,” which are often given status as areas of persistent poverty.

This research will further examine the effects of a sustained poor diet, brought about by food insecurity, on the individual and overarching community in a food desert and how such a diet impacts the individual’s ability to succeed both economically and personally, looking into factors such as health, childhood development, education, personal motivation, time-management, and community cohesiveness.

This thesis will then examine various solutions to chronic food insecurity, both in theory and currently in implementation. As a case view of both a food desert and area of persistent poverty, this thesis will further examine Allendale County, South Carolina, beginning with the background and conditions of the area. This thesis will then move into solutions implemented by the author to remedy food insecurity in Allendale County, including the foundation of the Allendale Economic Development and Food Security Council, various collaborative efforts with both state and federal government, non-profits, business councils, and students at the University of South Carolina, and investment into food security and capacity building initiatives throughout the County.

## ***I. Introduction***

The United States has been consistently ranked as the largest exporter of food in the world. The country exceeds all others in terms of capacity, growth and distribution of foodstuffs, with exports spanning all corners of the globe. The capability and sheer scale of the United States food production is truly remarkable, as the value of food exports from the United States totaled over \$149 billion in 2014. (WorldAtlas 2014). When the United States Department of Agriculture's Economic Research Service surveyed land usage in the country's 2.3 billion acres of land, 36.7 percent, or 798 million acres, was determined to be farmland or grassland and suitable for agricultural growth (Bigelow et al. 2017). Indeed, by labor efficiency and amount of arable land, the United States surpasses the entire world in ability to grow food as well as its ability to profit from its export. However, a noticeable discrepancy arises in the country when examining the difference between food production and food availability for its population. While the United States ranks as one of the highest Western countries in terms of food security, there is a sizable portion of the population that does not have access to healthy food, despite the unmatched volume of the country's agricultural competence (Economist 2017).

Food security (synonymous with food availability) is defined as having physical and economic access to a safe, nutritious, and physically available source of food to meet one's dietary needs. Based on reports and data gathered by the USDA, 16.5 percent of all American households were food insecure in 2016, roughly one-sixth of the population (Coleman-Jensen 2014). These households reside primarily in low-income areas, areas of persistent and widespread poverty. The economic slumps in these areas are driven by the decay of impoverished inner city neighborhoods and the vacancy of resources in rural counties; poverty creates poor food security, which in turn creates greater poverty. Some areas of the United States referred to as "Persistent

Poverty Counties” have exhibited greater than 20 percent poverty for over 30 years. These areas lack food security, jobs, satisfactory public education, and community cohesiveness. Primarily located in the rural South and Midwest, Persistent Poverty Counties (PPCs) are therefore plagued with unemployment, malnutrition, and lack of opportunity. These are, by no coincidence, the same problems that affect poor inner cities in metropolitan areas. The lack of resources in PPCs and urban communities has left them without prospects for advancement or improvement in their quality of life. Basic resources like food, education, and a living wage are critical to the health and flourishing of a community. Primarily, this thesis will be examining how the absence of readily available and nutritious food (food insecurity) has a direct effect on one’s ability to advance in socioeconomic class. Access to healthy and nutritious food impacts communities from an early age, affecting childhood development, education, as well as health of the individual both physically and psychologically. Lack of food security also affects the health and cohesiveness of communities, which inhibits their ability to organize and find their way out of poverty. In poor rural and urban areas, food accessibility is paradoxically both imperative and severely lacking. Areas of this nature, which lack basic food security, are referred to as food deserts.

## ***II. Food Deserts: Their Causes and Conditions***

Food deserts are defined by the USDA as “parts of the [United States] void of fresh fruit, vegetables, and other healthful whole foods, usually found in impoverished areas. This is largely due to a lack of grocery stores, farmers’ markets, and healthy food providers” (Eisenhauer 2001). While residents outside of these areas enjoy readily available food, affordable prices, and healthy options, those who reside in food deserts must make due with less in virtually every aspect. The history of food deserts in the United States begins in the 1970s, marked by increasing shifts of

food sources away from impoverished neighborhoods, particularly in urban areas. In the early 20<sup>th</sup> century, the primary sources of food in urban areas were locally owned grocers. These independent stores operated on a razor thin profit margin (sometimes as low as 1%) with large risk and turnover; some areas admitted upwards of 60% failure rates in the grocery store industry. While larger chain stores were emerging and taking hold of business in the 1920s and 30s, community owned grocers were able to take advantage of protective state and federal laws to maintain a customer base. However, during the Second World War, food shortages combined with the absence of small business owners leaving to fight abroad, allowed large supermarket chains, with resources and capital to spare, to emerge as the primary source of food for the vast majority of communities in the United States. Consolidated market power combined with the addition of computers to large supermarkets created a seemingly unbeatable sustainable competitive advantage. By the 1970s, large supermarkets controlled the vast majority of the food landscape.

Supermarkets were ruthless in their market takeovers. Companies would break into urban areas, undercut the prices of local grocery stores, and gain a firm hold on the market by running their smaller competition out of business. For instance, the expansion of Wal-Mart Supercenters, starting in the 1970s, used very low prices driven by economies of scale and mass production to drive smaller grocers out of business. By the 1980s, the only competition these supermarkets had were other supermarkets. Price wars, hostile takeovers and attempted buyouts were rampant in these areas, with corporations vying for the hearts and stomachs of cities and urban populations.

Costs of maintaining these competitive advantages caused supermarkets to raise prices, creating a cost barrier for those disenfranchised low-income neighborhoods. Seeing no reason to stay in



markets with such little potential, supermarkets shifted away from poor areas – towards the greener pastures and fatter wallets of the middle and upper class. This above practice of profit maximization at the expense of the poor has been referred to as “supermarket redlining” (Eisenhauer 2001).

Indeed, from the 1980s to mid-1990s, the effects of this practice primarily impacted the lower class, with substantial results. In 1995, the poorest 20% of urban areas had 44% less supermarket space than the top 20%, while prices in these low-income “less competitive” areas were just as high if not higher than in affluent or middle class spheres (Eisenhauer 2001). In turn, the urban poor could not afford these inflated prices and were left unable to buy food, healthy or otherwise. With no economic incentive for the corporation to bring back cheap food, due to the lack of buying power in the lower class, supermarkets and companies left these poor areas to decay. Thus, food deserts in urban areas were born and still persist to this day.

The origin of food deserts in rural areas differs from its urban counterpart, without the complexities of supermarket competition and market strategies. The issue that plagues rural American food deserts is distance from their supermarkets. The lack of supermarket and grocery store density in rural America creates time-consuming barriers that limit the populations’ access to food. Many residents must travel for miles to the nearest supermarket, often by public transportation or carpooling with family members. 20 percent of rural areas are classified as food deserts, limiting the food access of over 2.4 million people (Ver Ploeg et al. 2015). The median distance in the United States from town to grocer is roughly 7 miles, with 36 percent of all Americans living more than 10 miles from a supermarket, primarily in western states like Nevada, Arizona and in the rural South. (FlowingData 2007). Distance poses such an issue due

to the lack of adequate and accessible transportation. Those in rural/impoverished areas are typically unable to afford a car to drive to and from the supermarket. In some areas of rural America, public transportation can be inaccessible, nonexistent, or unreliable (often late, not enough space, etc.). This lack of transportation forces many in rural areas to either find rides within their social network or walk to the nearest source of food. A 2015 study by the USDAs Economic Research Service found that only 66 percent of households who receive SNAP (The United States Supplementary Nutrition Assistance Program) benefits used their own vehicle to shop. 21 percent relied on someone else's vehicle and 13 percent walked. This is in contrast to the 95% that use their own vehicle from non-SNAP receiving households (Bitto et al. 2003). In order to avoid the 10+ mile walk to the supermarket, many residents in these areas rely on quick marts, gas stations, dollar stores and fast food restaurants for their household sustenance. This can pose as an even larger problem in isolated, rural areas. In the Mississippi River Delta, rural counties average one supermarket per 190.5 square miles. 70% of the low-income residents of the Delta travelled over 30 miles to the nearest supermarket and many opted to buy groceries from convenience stores and gas stations (Blanchard et al. 2002). These stores are often cheaper and "closer to home" for those without reliable transportation. In addition, many older residents of rural counties are forced to choose these closer options due to their inability to exert themselves over long distances, either by walking or biking. While food is available at these stores, the options presented, primarily junk foods, salt and carbohydrates, have an incredible negative effect on the health of the individual and their life expectancy. Rural residents may not find themselves physically starving to death, but they are at a risk for a higher rate of diabetes, obesity, malnutrition, and vitamin deficiency. Of course, the problems of distance and unhealthy options work in line with the utmost limiting factor in rural and urban areas: poverty.

According to the USDA Food Access Research Atlas, areas that qualify as “low income” and “low food access” differ by certain considerations. Primarily, low-income differentiations are adjusted for regional fluctuations of poverty, based on cost of living (usually between states). “Low food access” is roughly a quarter-mile or greater in walking distance for urban areas and 5-20 miles or more of total travel for rural areas. Vehicle access, as previously discussed, is also a consideration in finding low access areas of food availability. Areas with greater amounts of poverty are likely to have populations with less access to vehicles. If we compare Persistent Poverty Counties [Figure 1.1] to Low Access areas without vehicles [Figure 1.2], we have a visual representation of this correlation. While it is apparent that one does not have to reside in a PPC to lack access to a vehicle, and as a result be food insecure, we can still see the similarities between the effected areas. This is particularly apparent in the Midwest (Kentucky and West Virginia) and the Southeast (South Carolina, North Carolina, Georgia, Mississippi, Alabama and Louisiana). The living poverty faced by the population in these areas remains their biggest barrier to food security, which in turn begets greater poverty, leaving individuals and communities caught in a cycle of starvation, malnutrition or both. Before proposing a pathway out of poverty for these populations we must first understand how poverty affects PPCs and low-income urban communities.

As of 2017, there are 353 PPCs in the United States. These areas have exhibited a minimum of 20 percent poverty for at least 30 years (with data taken every 10 years per US Census). These counties are overwhelmingly concentrated in “non-metro” rural areas (85.3 percent), with the remaining 15 percent in urban metropolitan centers, making “Persistent Poverty County” almost synonymous with “rural” and often, “southern”. Not only are these areas greatly food insecure,

they lack basic standards of education, job opportunities, and public resources. The PPC of Atkinson County, Georgia exhibits a 41 percent unemployment rate (United States Census 2017), and only a 64 percent literacy rate among its population (National Center for Research Statistics 2017). This makes the county comparable to Zambia in terms of basic literacy (Central Intelligence Agency 2017). Humphreys County, Mississippi, another PPC, displays upwards of 44 percent poverty in its populace, equivalent to that of Sudan (Central Intelligence Agency). As one can determine, quality of life in these areas differs greatly from the overall United States. These communities have not been provided with opportunities for upward mobility and those who are born into such areas tend to stagnate for decades in underdeveloped poverty. The cycle of such poverty perpetuates from many factors, with healthy food security being one of the most critical. Food deserts, which are often found in Persistent Poverty Counties, were found to have twice the amount of fast food restaurants and convenience stores on average than food secure regions (Lee 2012). While only 8 percent of food deserts received a new supermarket since 2010, dollar stores have made up two-thirds of new businesses arriving in such areas (Tribune 2015). This phenomenon is due to lack of economic incentive for supermarkets to move in to these areas, often due to their persistent poverty status, as previously discussed. While supermarkets tend to neglect these areas, convenience stores and fast food restaurants appear as substitutes to fill the gap in market demand. These stores offer almost exclusively high-fat, calorie dense food choices, leading to the continuous decline of public health in PPCs, which in turn affects health, cognitive development, and other factors which make upward socioeconomic mobility difficult.

An additional key factor in the perpetuating cycle of poverty and declining health in PPCs is education on proper nutrition and diet. From 1985 to 2000, fresh fruit and vegetable prices rose

40 percent in the United States while junk food and soft drink prices *dropped* by 15 percent (Bornstein 2012). The affordability of these less healthy foods makes them far more desirable and economically sensible for those living in PPCs and food deserts. When compared on a per-calorie basis, junk foods are one-tenth the price of healthier alternatives (Bornstein). Additionally, when considering the fact that these high-fat, high-sugar foods simply taste better than their healthier counterparts, it seems an obvious choice for those living in poverty to have a natural inclination towards them. The small, yet alluring, benefits of unhealthy diets continues the cycle of poor eating habits within impoverished communities and PPCs. The habits picked up by parents tend to be passed along to the next generation through a consistent diet of unhealthy, yet affordable, meals for their household. When parents themselves are ignorant of a healthy diet or basic understanding of nutrition, it can prove difficult to encourage good habits in their children. A study published in the International Journal of Obesity found that a parent's level of education was most strongly associated with obesity in their children. Children in the lowest socioeconomic class were three times as likely to become obese than their wealthier and more educated counterparts (Lamerz et al. 2005).

Urban communities face similar problems to their rural counterparts and PPCs. While a majority of food deserts caused by transportation distance are located in rural areas, the remaining afflicted areas reside in cities and their surrounding metropolitan areas. An example of this clustering can be seen in the area surrounding Atlanta and Augusta, Georgia [Figure 1.3]. The separation between lower and middle/upper class becomes far more nuanced when accounting for urban density. In these contexts, a food desert may be even as small as a single neighborhood. These clusters of food deserts encompass some of the poorest areas in the inner city South, Midwest, and larger cities like New York, Los Angeles, and New Orleans. While average

median income is higher in cities than rural areas, cost of living increases significantly. Poverty in these areas is larger on average, around 16 percent compared to the 13 percent of rural towns (Bishaw et al. 2016). In fact, the poorest neighborhoods in America are located in the South Bronx communities of New York City, with a median household income of only \$8,700 (Venugopal 2011). The effects of such poverty have a different, yet just as devastating, effect on cities from rural communities. Crime and drug usage statistics are far higher in urban neighborhoods, in part due to poverty and lack of job opportunities. The abused drug of choice in rural communities is alcohol, while inner city populations are twice as likely to abuse cocaine and seven times as likely to abuse heroin than their rural counterparts. Daily drug abuse in cities is almost twice as high than in rural areas (TEDS Report 2012).

Food accessibility in these neighborhoods becomes a challenge of not only finding enough money but also in meticulously coordinating transportation to the nearest supermarket. As a result of supermarket redlining, food sources in the immediate area of these neighborhoods are reduced to primarily small convenience stores. The locally owned grocery stores that occasionally serve these areas boast prices 10 to 60 percent more than what can be found in supermarket chains (Eisenhauer 2001). The urban poor find themselves in the predicament of choosing between the lesser of many difficult choices to obtain their food. This can include using underfunded and time-consuming public transportation, hailing costly cabs, shopping at local and cheap, yet unhealthy, corner stores, or buying groceries from a more expensive, locally owned grocer. A 1980 estimate of grocery expenditure found that an urban family spends \$1,500 more annually than a suburban household, roughly equivalent to \$4,750 in 2017 dollars (Eisenhauer 2001). As one can image, this increase in expenditure, of either time or money, can pose a daily struggle to a household living well below the poverty line in these cities.

As we have seen, the challenges faced by both rural and urban communities create multiple barriers to finding an affordable, reliable and nutritious source of food. However, one being born into poverty and, therefore, being unable to afford food, is simply one segment of the cycle that keeps those living in poverty poor (Bradshaw 2007). The lack of access to healthy food proves to have devastating effects on the health of individuals and communities from birth to maturity, severely limiting their socioeconomic mobility.

### ***III. Effects of Low Food Access on the Individual***

Food insecurity affects the individual on multiple fronts. An individual may face challenges to their health, time management, personal budgeting, and psychology, in addition to other factors. Physical health is by far the most obvious and observable of these factors. As we have determined, nutrient-sparse foods that are dense in fats and salt, like fast food and “junk” food, are likely to take up a sizeable percentage of one’s diet in a low-income area or food desert. This type of diet makes those in food deserts prime targets for obesity and malnutrition (Cummins et al. 2006). Fast food is 65 percent more calorie dense than a balanced diet and fast food leftovers have been shown to create larger portions of future meals than leftovers of home cooked meals (Prentice et al. 2003). Populations with a greater frequency of fast food consumption were found to exhibit vitamin deficiencies in calcium, zinc, and vitamin C, among others (Burns et al. 2002). While it has been remarked that there is a “paradoxical” association between food deserts and obesity, this link poses serious risks to those affected.

The United States as a whole has been consistently ranked as one of the most obese nations on the planet. An estimate published by the Center for Disease Control and the National Center for Health Statistics found that 36.5 percent of the population in the United States was considered

Obese (classified as a Body Mass Index greater than 30). In PPCs, this problem becomes even more apparent. Obesity has been shown to disproportionately affect the poor; growing as average income shrinks (Levine 2011). PPCs show far higher rates of obesity than many non-persistent poverty counties, in large part due to their lack of healthy and available food. This epidemic is most overtly clear in the Southeast United States. While not all areas afflicted with obesity rates over 30 percent are “Persistent Poverty,” an overlay can be seen with almost every PPC [Figure 1.4]. To return to previous examples, Humphreys County, Mississippi has an obesity rate of 34.4 percent, almost 9 percent above the national average (by county). Jefferson County, Mississippi, another PPC, exhibits the largest recorded rate of obesity in the nation, at 38 percent. According to the US Census, the county has a 48.7 percent poverty rate. This rate has not dropped below 35 percent for more than 30 years (United States CDC 2017).

Obesity has been shown to drastically reduce the quality of life in affected individuals. Obese individuals are far more likely than average to develop heart disease, diabetes (almost exclusively Type 2 diabetes), have bone and joint problems, suffer from potentially deadly heart attacks, and suffer from malnutrition (Stanford University 2017). The 2016 Global Nutrition Report, with contributions from the World Food Programme, World Bank, and numerous universities and research organizations, found that 44 percent of the world’s countries were suffering from malnutrition. In western countries, primarily the United States, this was due to an overweight and obese populace (Haddad, L. et al. 2016). Malnutrition can lead to decreased immune system function, organ failure and even death. Even if malnutrition does not prove lethal, those who suffer from it are still very likely to develop mental illnesses like depression, show decreased function of mental faculties, and exhibit physical weakness due to loss of lean body mass (RichmondVale 2016). The risks associated with obesity impact the daily lives of the



afflicted and, as shown, pose ever-present challenges. Obese individuals suffering from malnutrition and diabetes must first overcome harrowing issues within in their own body and mind, as well as change lifelong dietary habits. In food deserts and areas of persistent poverty, changing one's diet is often made incredibly difficult by the above economic circumstances. Additionally, improving one's physical fitness to "burn off the fat" is often not possible in PPCs, as they are often more violent (creating a barrier to staying outside for extended periods) and lack basic public fitness infrastructure like parks and running tracks (Levine 2011). The above factors play in to an individual's motivation, physical mobility, and cognitive capacity. One may find themselves tired and unmotivated after work, or even after a few hours of simple physical movement, making it far more difficult to pursue goals, learn, and develop beneficial habits.

Even during working hours, the effects of obesity can be seen. A 2005 study by the Australian Institute of Health found that obese employees had much more frequent and longer absences from work than non-obese employees. Obese women aged 35 to 64 reported less work activity due to long-term health problems. These respondents were far more likely than their non-obese colleagues to take days off of work due to disability. Obese men aged 55 to 64 exhibited similar data to the former. The same demographics were found to have a higher risk for injury on the job, in manual labor fields, due to movement difficulties and lack of properly sized safety equipment (goggles, gloves, etc.) (Park 2009). It is clear that obesity and weight-related health problems can have large effects on one's work performance and ability to produce consistent and exemplary work. This proves to limit the potential of upward mobility within a company or organization for the individual.

Food security also plays a role in one's ability to manage time. In urban food deserts, getting to an adequate grocery store can prove time consuming and overly complex due to the fixed routes of buses and other forms of public transportation. In poorer neighborhoods of the San Francisco Bay Area, 45 percent of the population lives below the poverty line and 21 percent lack access to a vehicle. 53 percent of those surveyed said that a lack of transportation limited where they could shop (Hobson et al. 2002). Further analysis of the same region by the Center for Third World Organization found that in poorer neighborhoods, an average bus trip to the grocery store took 25 minutes, almost an hour in transit for a return trip. This estimate did not take into account time spent shopping or waiting at bus stops (in some cases, city bus lines may only run once an hour, forcing passengers to wait). Factoring in these other time-consuming activities, a simple trip to the grocery store could take upwards of two to three hours for residents of these poorer communities. The study found that in some Bay Area neighborhoods, a sizable percentage of residents were forced to take these time consuming trips due to lack of walking accessibility to a supermarket. For example, the North Richmond area of Contra Costa County has *no* supermarket access within a half-mile walking distance (Hobson et al. 2002).

As previously discussed, in rural areas, the distance to and from a supermarket is vast and residents in these communities may have to take as much time, if not more, to obtain a week's worth of healthy groceries. Due to environmental factors like poor quality education and lack of economic opportunity, most living in food deserts and in poverty work hourly "blue collar" jobs, largely manual and unskilled labor. These jobs are often low paying and require long hours. Affected individuals may work eight to ten hour days, possibly even multiple jobs at the same time, to provide for themselves and their families. When factoring in weekly trips to the grocery store that could take upwards of three hours, the individual is left with little time to exercise,

spend time with family, read, or even simply enjoy fleeting moments of leisure time.

Additionally, this predicament does not take into account cooking and preparing food, another necessity that eats away at one's free time. While over 60 percent of those earning less than the average salary in the United States substitute home cooked meals for fast food more than once per week (Devine et al. 2009), many still choose to cook their own meals to provide themselves and their household with balanced meals and nutritious food (whenever available). The average time spent to prepare, cook, and clean up after a meal is roughly two hours (Barlow 2011).

Totaling the estimated times of transportation, shopping, preparation, and cooking, and one can spend up to five hours after a full eight-hour work day to have enough to eat. Consequentially, this creates an opportunity cost of time for those living in food deserts. Obligations like medical appointments, coordinating public transportation, and taking care of children take precedence over having a home cooked meal and certainly take precedence over leisure time. This sense of "time-scarcity" becomes increasingly more prevalent as income levels decrease, leading some to choose the more convenient and time-effective route of eating fast food or ready-made meals high in sodium and fat (frozen pizzas, TV dinners, etc.)

As a result of such time constraints, the individual invests a majority of their available time into survival at a basic level, which severely impacts their health, levels of stress, and mindset.

Opportunities for career mobility diminish as the individual puts more of their time into feeding their family and running their household. This prioritization creates an environment where one cannot improve their resume, obtain higher education, or even network effectively simply due to a lack of time. A study published in the *Journal of Family and Economic Issues* has found that both time and money were needed to maintain a household. If an individual could not afford to "buy time" in the form of hiring help to take care of chores and other obligations, they faced

economic consequences. Conversely, when extra available time was incorporated into such households, poverty rates improved, even without the addition of outside income (Douthitt 2000).

Personal budgeting is further affected by food insecurity. To those living in a food desert or area of persistent poverty, food becomes a critical part of the personal budget. Lower income households have been observed to spend the largest percentage of their income on food of all levels of income earners. A study by the Economic Research Service finds that, since the early 1990s, households with the lowest quintile of income have been shown to spend between 28.8 and 42.6 percent of their annual before-tax earnings on food and groceries (including the additions of assistance programs like SNAP). This results in the lowest level of income earners exhibiting more sensitivity to changes in food prices, resulting in a volatile shift in percentage of income spent on food annually for this quintile [Figure 1.5]. A 1994 study shows that low-income shoppers show more price sensitivity to specific products like breakfast cereal (Jones et al. 1994).

It can be observed that as one's income increases, the percentage of income spent on food decreases. In fact, the upper quintile of income earners spends between just 6.5 and 9.2 percent of their income on food, with shifts of only one to two percent over the last two decades (Tuttle et al. 2016). This economic trend is known as Engel's Law. The law states that due to food being a necessity product, it has an income elasticity of demand between 0 and 1 and is therefore only responsive to price changes up to a certain point (in this case, income). While middle to upper class individuals' income may be higher than someone in poverty, their demand for food remains the same, as do their general spending patterns. Engel's Law shows that the poor spend roughly the same amount on food as their financially secure counterparts, with far less disposable income

to spare. By accounting for this economic disparity among those living in food deserts, one can see how creating a personal budget could be difficult and demoralizing, especially among those rural and urban poor that are not financial literate. After essentials such as housing, food, and transportation were paid, those making less than \$21,000 annually (a large portion of PPCs and food deserts) were found to have 15 percent of their income left to use with discretion. In the case of the poorest two percent of Americans, they had only \$367 of disposable income annually, or just \$1 per day (Goldstein 2012).

Households in the lower one-third of income in the United States spent roughly twice as much on transportation than the upper one-third of households (15.7 percent versus 8.2 percent). Most of these expenditures went towards gas, auto repairs, and public transportation, in part due to the necessity of driving or riding to far-away grocery stores. Additionally, the lower one-third of income earners spent four times as much of their disposable income on additional cheap and unhealthy groceries in the home than on eating out at restaurants. Eating out may prove to be more expensive for low-income families due to increased prices, wait times, and cost of additional transportation (Pew Charitable Trusts 2016).

Furthermore, there are other expenses that must be addressed in respect to housing, food, and transportation. The personal budgets of the impoverished food insecure are consistently strained by the simple cost of living. A comprehensive nation-wide study conducted by Feeding America found that 66 percent of its applicants had to choose annually between food and medication. 69 percent of applicants had to choose between food and electricity. 34 percent had to make this choice every month. (Weinfield et al. 2014). The need to minimize costs wherever possible and make due with less is therefore instrumental to remaining out of debt for the food insecure. Cost-effectiveness is a deciding factor for lower-income households when shopping, which can

discourage them from spending slightly more on healthier foods when at the grocery store. A study by the Journal of the American Dietetic Association found that, in a survey of roughly 800 low-income consumers, one-third reported that “cost was a barrier to healthful eating,” especially in terms of buying fruits and vegetables (Cassady et al. 2007). Additionally, shopping for a considerably healthy Mediterranean-style diet of fish, fresh fruits, vegetables, and nuts has proven to cost approximately \$1.50 more per day than a diet of processed foods, darker meats, and refined grains. This roughly translates to an additional \$550 per person annually, a legitimate cost barrier to healthy eating for impoverished households (Rao et al. 2013). Based on previous estimates, those making less than \$21,000 yearly would have a maximum of \$3,150 remaining after paying for basic necessities (at 15 percent of disposable income). Provided a single-parent family with two children, shifting to a healthier diet would cost 52 percent of such disposable income, leaving approximately \$1,510, or \$4.14 per day, to cover others costs such as entertainment and recreation (provided that one forego the assumed above expenses of utilities and medical bills).

One can see, therefore, how such a shift in diet would be effectively impossible for many low-income families from a financial standpoint. As previously discussed, such poor diets imposed by poverty, even when substituting fast food for legitimate groceries, can prove to have adverse health effects like obesity, heart disease, malnutrition, and cancer. These health concerns prove to be more costly over time due to more frequent medical care, causing potential debt and financial stagnation (Finkelstein et al. 2011). It should be noted that any costs incurred due to poor diet can constrain the individual considerably, lessening their ability to financially afford what little leisure time they have. This lack of disposable income in personal budgets also proves to limit how one could save for retirement or invest capital to see returns in the future. The

economic immobility set in motion by poverty and food insecurity can greatly decrease the affected individual's quality of life.

Lastly, food insecurity and poor diet have been shown to affect the mental health of those living in food deserts, PPCs, and low-income areas. This includes effects on psychology, motivation, and development of mental illnesses. Studies have shown that living in a food insecure household can greatly increase one's levels of stress and erode one's self-perceived sense of control over their life (Heflin et al. 2005). These periods of extreme stress, exacerbated by poverty, have been shown to precede the onset of mental illnesses like major depression, particularly among single mothers. Lack of vital nutrients like vitamins, minerals, and Omega-3 fatty acids have been proven to cause and exacerbate mental illness (Rao et. al 2008). A sustained pattern of missing nutrients has been found in the diets of those suffering from depression, schizophrenia, and anxiety disorders.

Symptoms of these illnesses have been shown to improve substantially when such nutrients, in addition to folic acid, were introduced into the diet of an affected individual (Rao et al. 2008). An additional study of almost 1,100 men with decreased vitamin intake found that subjects experienced increasing levels of irritability, deteriorating psychological disposition, and nervousness over a two-month period. Decrease in amounts of dietary Vitamin B12 has been shown to cause increases in the likelihood of depression and dementia (Heflin et al. 2005). While there have been numerous studies on the association between obesity and mental illness, there has been no conclusive evidence of causation between the two. Severe obesity has shown a slight causal effect on mood disorders in women, particularly in bringing about depression and anxiety (Weinfield et al. 2014), but many reports point towards inconclusive results. However, as a side

effect of malnutrition (given a food-insecure area), obesity has been shown to come about as mental illnesses like depression develop (RichmondVale 2016).

Mental illnesses caused or exacerbated by poor diet in food deserts tend to create a sense of alienation in individuals. One may exhibit poor work performance, increased periods of social isolation, costly mental health treatments such as medication or therapy, and a greater likelihood of self-harm and suicide. Individuals may even be at risk for employment termination, as studies published in the National Library of Medicine show an increased risk of job loss among those suffering from mental illness (Nelson et al. 2011). Even if one is not laid off and cut off from their source of income, many who suffer from mental illness experience large quality-of-life decreases when compared to mentally “healthy” individuals. Surveys of those suffering from mental illnesses report lower measurements in happiness and satisfaction with their lives (Evans et al. 2007). As mental health is tied to diet, those in food deserts are more likely than average to battle mental health issues due to lack of adequate nutrients. This consideration, along with numerous other factors, plagues the individual living in a food desert, on a daily basis, for years on end. The environment created by such crushing poverty, perpetuated by lack of healthy food, makes forward economic momentum nearly impossible.

#### ***IV. Effects of Low Food Access on Communities***

One can continue to observe the effects of food insecurity on individuals as they form communities. While food insecurity and poor diet has been show to affect the individual negatively, the conditions of such an environment expand to relationships between individuals in a community. For our purposes, a food-insecure community will be defined as more than one food insecure household in a given area, primarily neighborhoods (urban) and towns (rural). Food insecurity has been shown to affect the ability of students to learn in lower-income



communities, particularly during early childhood and adolescence (Cotti et al. 2017).

Additionally, an effect on community cohesiveness and economic opportunity can be observed within a community.

One can first observe the effects of food insecurity on education. It has been shown that children who come from more impoverished, food-insecure households have, on average, lower rates of academic achievement and lower grades. This is particularly apparent in elementary and middle school (Evans et al. 2008). This “income-achievement gap” can be prescribed to many factors including lack of parental support, lack of access to educational resources outside of the classroom, and ultimately a lack of a supportive and stable home life. While there are many factors that play into creating such an environment, this section will examine how lack of access to food in such homes inhibits a child’s ability to learn. A study published in the *Journal of Pediatrics* compared cognitive, academic, and psychosocial aspects of younger children and teenagers from food-secure and food-insecure households. In the younger age groups, those from food-insecure households scored significantly lower on the Wechsler Intelligence Scale for Children (used to measure childhood cognitive capacity) and the Wide Range Achievement Test (measuring an individual’s reading comprehension and mathematics skills). In the case of children age 6 – 11, there was an even larger gap in specifically WRAT arithmetic scores. Children from food insufficient households were more than twice as likely as others to repeat a grade (greater than 40% for food insecure students as compared to 20.7% of food secure students) and missed more overall days of school. In both age groups, children from food insecure households were more likely to see a therapist, have fewer friends and have a harder time adjusting socially (Alaimo et al. 2001).

One can additionally observe the link between food availability in the household and academic performance. Professor Orgul Ozturk at the University of South Carolina conducted a study between the timing of the delivery of SNAP benefits to households (food stamps) and math test scores in children. The study found that if food stamps were delivered shortly before a test date, the children would perform significantly higher than if their household received food stamps a month before or slightly after the test date. In fact, it was measured that the children whose household received food stamps in close proximity to their test date outscored *themselves* on measurements from previous tests (Cotti et al. 2017).

It can be seen that when children come from households, and in extent come from communities, of adequate food security (i.e. non-food deserts), their ability to learn, perform academically, and cognitively develop is much higher. Consequently, the populations of communities that are food insecure and impoverished exhibit lower levels of education and cognitive capacity. Only 5% of those living below the poverty line have obtained college degrees and almost one-third have not graduated high school (Center for Poverty Research 2014). While many factors play into one's ability to attain a degree or high school diploma, it can be observed above that food security plays a large role in education and cognitive development from an early age. Those in food insecure communities may find difficulty in building study habits and succeeding academically, often due to fatigue and hunger. These environments can lead to discouragement, poor psychosocial outlook (as we have seen), and may ultimately lead to the affected students dropping out of public school. To draw on previous examples of such communities, 34.7% of the population in Humphreys County, Mississippi, a food desert and PPC, did not graduate from high school (United States Department of Agriculture 2016). These low graduation rates are all too common in areas of persistent poverty. An uneducated populace leads to fewer opportunities

for growth within these areas. Such lack of education within food insecure communities can create barriers to higher education and inhibits one's ability to build a career out of an impoverished neighborhood. Such neighborhoods exhibit little job growth or opportunity for mobility, again inhibiting one's socioeconomic status.

Food insecurity can also be shown to affect social cohesion within a community. As we have seen, food deserts and communities of persistent poverty have lower rates of indicators that "add value" to a community (educated/literate populace, public health, satisfactory public infrastructure) (Masnick 2008, Lamerz et al. 2005, Hobson et al. 2002). However, we will examine how these impoverished areas foster low community cohesion and trust, as well as how food security plays a role. The drivers behind social cohesion have been observed in throughout the history of American thought. This cohesion and its effects on health have been studied in depth, with academic literature dating back to the 1950s (Durkheim 1951). The relationship between such community cohesion, income, and health have been observed to be quite significant, with increased in one area leading to positive effects on the others. However this "feedback loop" is unfortunately true for negative effects as well (Kawachi et al. 1997).

Urban poor have been shown to be concentrated within increasingly homogenous communities. Between 1970 and 1990, the percentage of urban poor living in non-poor neighborhoods dropped from 45% to 31%. The proportion of "poor" (poverty rates of 20%+) living in "very poor" neighborhoods (with poverty rates over 40%) *increased* from 17% to 28% during the same timeframe (Kawachi et al. 1997). These "concentration effects" of poor within even poorer communities creates an environment with little opportunity, an increasingly negative communal outlook and poor social cohesion. A survey of these communities found that residents in neighborhoods of "extreme poverty" were less likely to have a significant other, social support

and close friends (Wacquant et al. 1989). High levels of poverty have been shown to additionally breed distrust in government and political systems, leading to low voter turnout among the poor, resulting in little representation of these communities in government. This can result in community stagnation, breed further distrust in public institutions and cause discontent among the urban and rural poor (Putnam 1995).

Food security plays a role in this process by exacerbating the effects of an already isolated, impoverished, and underrepresented community. As shown, those living in food deserts are far more likely than average to be malnourished and suffer from mental health issues such as depression and anxiety, due in large part to their available diet. Mental illnesses and “burnout” from lack of satisfaction in life lead to isolation and lack of trust in individuals, which in turn affect community relationships. In fact, isolation for any reason has been shown to decrease one’s ability to obtain food and diminishes their system of social support. A study published in the *Journal of Urban Health*, discussing food security and social cohesion within elderly neighborhoods, found that seniors who were confined to their homes due to mobility problems were both food insecure and lacking social support, even while residing in communities with strong social cohesion (Chung et al. 2012). The isolation that arises from food insecurity perpetuates itself, negatively affecting households socially and psychologically with isolation and distrust spreading throughout community sentiment.

Social breakdown in households due to food insecurity has been shown to cause problems worldwide. A study of households in Burkina Faso found that those who were food insecure during harvest seasons experienced large changes in attitude towards members of their immediate community as well as latent psychological effects. 4 of the 10 heads of households surveyed felt guilty and alienated because they were “not able to provide for their family” as well

as ashamed when they were forced to borrow food from their neighbor. Roughly 20% of the respondents reported feeling lonely and purposefully avoided “getting together with other people”. Some even reported stealing from their communities to feed their families. Food insecurity was shown to leave heads of households irritable and occasionally aggressive towards other members of their household, including children. Deterioration of intra-household relationships led to breakdown of social cohesion within families that ultimately effected the way that they interacted with their neighbors and surrounding communal groups (Nanama et al. 2012)

Conversely, there is an observed positive correlation between food security and social capital (involvement in neighborhood activities or organizations). Households that participated in larger amounts of community activities were far more likely to be food secure, even when accounting for household socioeconomic status. Households that involve themselves in a social or civic organization within a community were far less likely to be hungry or food-insecure over long periods. This shift from long-term food insecurity is due to temporary “relief” of these otherwise food insecure households provided by friends and social networks built up within a community (Martin et al. 2004). One who is on good terms with their neighbor is far more likely to reach out in times of need.

As these studies have explained, the effect of food insecurity creates changes in one’s psychosocial makeup, interactions within their community and household and ability to build a support network. Those who reside in food insecure households or expansive food deserts exhibit increased feelings of alienation, resulting in isolation and diminishing frequency of interaction with their community (Chung et al 2012, Nanama et al. 2012). As food deserts persist, social cohesion between households and individuals breaks down into this isolation and a sense of hopelessness overtakes public sentiment, which in turn reduces one’s ability to “rally” their

disheartened community and change their circumstances. Lack of support networks, both emotionally and in terms of survival, within such impoverished communities cause further social deficiencies in residents, growing and exacerbating the isolationism from which they suffer. The feedback loop of negativity inhibits a community's cohesiveness and growth, forcing them to stagnate economically and reducing their ability to organize.

The economic implications of food security on communities can be examined further. While we have seen that malnutrition limits personal career mobility by creating mental illness, poor motivation, and unsatisfactory job performance in the individual, it can be seen that food deserts offer fewer job opportunities and are far more likely to have a stagnant economy (United States Department of Labor 2018). Simply living in a food desert limits a community's economic performance, particularly in PPCs. This can be observed in terms of economic activity and markets within food deserts as well as by looking at employment rates and average income within these areas.

Firstly, consumers in food desert communities are at an economic disadvantage in their local market economies, especially when shopping for food. Rural food deserts have much lower populations and lower population density than urban food deserts. Due to the relatively small amount of customers with relatively little purchasing power (because of lack of disposable income) within a given food desert, outside businesses tend to remain averse to investing in such communities (Eisenhauer 2001). The few businesses that *do* exist in food deserts and PPCs create a supplier marketplace with few options for substitutes among consumers. These businesses, struggling themselves to survive, are forced to increase prices to make up for a lack of available consumers (Cassady et al. 2007). Consumers in this scenario must become "price takers" who are forced to accept the market prices of goods. The economic model of this supply-

demand relationship shows how less demand tends to cause suppliers to raise prices [Figure 1.6]. Consumers must accept these prices due to the status of food as a necessity good, lack of cheaper substitutes within food deserts, and complications associated with transportation and travelling outside of the food desert (Bitler et al. 2010). Supplier market power remains steadfast within food deserts causing residents to spend more than they would otherwise on basic necessities. As previously discussed, these prices cause complications with personal budgeting and many residents must choose between basic necessities.

When examining the per capita income and economic characteristics of these areas, it becomes more apparent how valuable maximizing the value of every dollar is to food desert populations. For example, Buffalo County, South Dakota, a PPC and food desert, has a per capita income of \$10,763. According to the United States Census, the county exhibits a 39.5% poverty rate (United States Census Bureau 2017). The unemployment rate in the county is 7.6%, almost double the national average (United States Bureau of Labor Statistics 2017). Additionally, food, healthcare and transportation costs are significantly higher in Buffalo County than in the greater United States, despite per capita income in the county being only 40% of the U.S. average (United States Census Bureau 2017). This leaves residents with little to no disposable income, as well as no financial room to save money in savings accounts, create “emergency funds” or support local businesses further.

While price inflation is prominent among food retailers, supplier market power is leveraged by businesses working to break-even in most industries within the food desert. As seen, this creates a lack of excess capital flow, hampering both business development and affordable prices for consumers. Not only does this limit a community’s accessibility to local business but also creates an economic slump, perpetuating the cycle of poverty within food deserts.

Businesses that are caught in this cycle are often surviving in much the same way as the consumers supporting them. Much like how the impoverished residents of a food desert are forced into only buying necessities, with little financial freedom to afford additional comforts, businesses too are limited from expanding, promoting workers, hiring more employees, or buying large amounts of “high-quality” products to sell. These limitations are primarily financial. This is additionally one reason why unemployment rates are higher in food deserts and PPCs (United States Department of Labor 2018). Despite the willingness of the many unemployed citizens living below the poverty line to work, lack of job opportunities due to the financial limitations of food desert businesses prevents these otherwise able residents from obtaining a stable source of income.

Of course, there are many reasons that some living in food deserts are not employed (or stagnant in their career). As we have discussed, mental illnesses and isolation brought on by malnutrition inhibits work performance and limits socioeconomic mobility among communities. Spending a larger portion of income on necessities like food makes saving money and affording higher education difficult. Even if one has the desirable skillset to be hired outside of a food desert, lack of disposable income remains a barrier to securing transport (likely a car) to job interviews and networking events, as well as affording appropriate professional attire. In addition, wages are significantly lower in food desert businesses than in more affluent areas. This deficiency of capital flow creates an area of little investment and little economic opportunity for communities affected by food insecurity.

Ultimately, the problems that one faces while living in a food desert create a cycle that they are unlikely to escape from. The food insecure individual may be malnourished, poor, uneducated, and stressed, residing in a community with little social support, infrastructure, or opportunity. As



they continue to struggle with their own needs and the needs of their household, one may find themselves unsatisfied with their quality of life. They are likely surrounded by those in similar situations and there may seem to be little likelihood of the food insecure to free themselves from the conditions that keep them poor and hungry. As we have seen, neither the problems created in the individual by food insecurity or the conditions of food insecure communities are conducive to growth or change. In an isolated environment, this cycle of poverty perpetuates itself.

### ***V. Potential Solutions to Food Deserts***

As we have seen, food deserts bring about conditions in both the individual and encompassing community that create barriers to economic mobility and development. While these conditions may appear difficult to overcome, there are permanent solutions to food insecurity proposed by research organizations, the United States government, and non-profits organizations, both in theory and currently in implementation. With the impetus to improve the diets of those in food deserts and PPCs, there are three common methods to creating an effective and sustainable change: increasing food availability (through supplementing income), decreasing distance to supermarkets, and providing proper education on nutrition and proper diet to residents of food deserts. Often, these solutions are implemented in tandem to maximize their effectiveness. The effects of these initiatives can be seen in both households and communities throughout the United States.

Increasing food availability through income supplementation is one of the most widespread solutions to food deserts. The results of implementing supplemental income programs are shown to have significant impacts on the health of individuals, specifically in children. The United States government's Supplemental Nutrition Assistance Program (otherwise known as SNAP or "food stamps") is the most widespread of these initiatives. The program is aimed at providing

additional income to families for the purchase of food for their household. To qualify for SNAP in the United States, one must earn below a certain income level, a cutoff considered to be the poverty line (for a household of four people in 2018, the total monthly income cutoff is \$2,050). If one makes below the level of income required, as is the case in many PPCs, they can receive supplementary assistance in proportion to their household size. For instance, a household of four people would receive \$640 per month in SNAP assistance. This aid scales proportionally to household population, adding roughly \$144 per month per household member (United States Department of Agriculture 2018).

As of 2015, approximately 45.8 million Americans (15% of the total US population) were enrolled in SNAP. Of these participants, 55% had at least one member of their household employed and actively working. However, 22% of participants in the program had no source of income. The majority of SNAP recipient households did not participate in a “fixed income” welfare program (Gray et. al 2016).

While SNAP provides just \$40 per person per week in supplemental income, the effects of such supplementation for food purchases can be shown to greatly improve a household’s financial status, overall health, and improve the local economy. The Economic Research Service (ERS) has observed that households eligible for SNAP benefits spend roughly one-third of their income on groceries (often due to poverty-stricken areas having higher food prices due to economic strain, as previously discussed). The ERS additionally observes that when SNAP benefits are added to gross household income, 10% of SNAP households rise above the poverty line. The results of these benefits are shown to have the largest effect on the lowest 12% of households (Gray et al. 2016). In “Very Food Insecure” households, SNAP was found to reduce food insecurity from 20% of households to 12% over a period of only 2 to 3 months, an 8% increase

in the amount of food secure households (Nord 2009). The Food Research and Action Center found that for every dollar spent in SNAP allowances, \$1.79 of economic activity is generated in a recipient's local community (Food Research and Action Center 2018). In PPCs, where up to 30-40% of the local population may live below the poverty line, SNAP benefits can provide a valuable catalyst for economic activity, particularly in stimulating the agriculture and food sectors in food deserts and PPCs that are subject to financial strain.

SNAP can also be observed to reduce both health problems and medical costs in recipients. Those who participated in SNAP were found to spend \$1,400 less on medical costs than those of the same income level who were not SNAP recipients, presumably from improved food access preventing the health problems associated with a poor diet discussed previously (the most costly of which being diabetes, obesity, and malnutrition). The same participants were found to cost the government 2.5 times less in Medicaid costs due to decreased likelihood of hospital visits and health concerns (Berkowitz et al. 2017).

The effects of supplemental income programs have additionally been shown to positively effect children in food insecure households. While SNAP has been seen to improve the health of all members in a household, children are observed to be the primary beneficiaries. In fact, 44% of all SNAP recipients were children (Gray et al. 2016). As previously mentioned, there can be a positive relationship seen between administration of SNAP benefits and math test scores in children (Cotti et al. 2017). Furthermore, we can observe benefits of these programs on the health of children in recipient households. SNAP benefits have been shown to increase iron and zinc levels in children by 12.3% and 9.2% respectively, reducing risk of malnutrition (Yen 2010).

Additional government programs, like Women, Infants, and Children (WIC) and the National School Lunch Program are further helpful to improving diet and quality of life in children. These programs are comparable in eligibility to SNAP, with similar effects. WIC, as a supplement specifically designated for women with children to provide food, nutritional education, and groceries, has been shown to improve childhood dietary levels of iron, vitamin C, vitamin A, and vitamin B6 (Yen 2010, Kreider et al. 2012). The National School Lunch Program provides an affordable lunchtime meal to over 19 million children under an income cutoff (slightly above the poverty line for “reduced” lunch and at or below the poverty line for “free” lunch). While studies have had conflicting views on the nutritional value gained from school lunches under this program, having something to eat at school has been shown to improve the health of participating children, lowering Body Mass Index and decreasing obesity by 17% (presumably as a child will not be as inclined to “binge” or “fill up” on large amounts of food when they are fed consistently throughout the day). Children participating in this program are furthermore likely to be present in class and are less likely to repeat a grade in school (Food Research and Action Center 2013, Gundersen et al. 2012). Overall, these government-sponsored programs are shown to have positive effects on the health, diet, and economic condition of food insecure households.

Decreasing distance to food sources also provides a solution to chronic food insecurity. While grocery stores and supermarkets are scarce in rural food deserts, residents and community-based organizations may take it upon themselves to increase local access to food. The primary methods of doing so are establishing food banks and mobile, locally funded grocery stores or farmer’s markets.

Food banks and food pantries are a staple of accessibility throughout the United States. A 2014 Feeding America study found that 1 in 7 Americans relied on food banks and assistance

programs to provide food for their households (Babic et al. 2014). Food pantries provide a variety of non-perishable goods to those in need of supplementation, usually in food deserts, areas of persistent poverty, and within low-income neighborhoods. While many of these groups are small distributors working out of community centers and churches, often times local pantries will partner with statewide or nationwide food banks to have a larger impact. These larger banks provide a periodic supply of food to local “partner” pantries to create a sprawling network of distributors, with each being integrated into their local community, and market, to maximize effectiveness.

These pantries provide value to the poor and food insecure by removing price barriers to food. While most pantries allow households to receive food once per week, as to disperse supply equally over all participating households, the increases in food security provided by these organizations can benefit their recipients in many ways, as previously discussed (including increased vitamin intake by offering a balanced mix of canned fruits/vegetables, dried foods, and complex carbohydrates like brown rice and whole grain pasta).

However, while these pantries and larger food bank networks are proficient at stopping food insecurity in the short-term, they have trouble making their efforts entirely sustainable. Most food pantries, while more cost-effective than supermarkets at providing food to customers, rely almost entirely on funding from the USDA, support from their larger host food bank, and donations from private entities, like companies, charities, and individuals (Wodon et al. 2013). These organizations provide temporary relief to food insecurity but are effective only as long as their donations last, as they have no means of creating wealth for themselves. The economic effects of food banks can be seen on participating households, as providing food to the millions of Americans that are financially strained allowed some portion of their budget to be “freed up”

for spending (The Perryman Group 2014). However, as most of these households live below the poverty line, the excess money that they save often goes towards their other much-needed expenses, such as rent, utilities, medication, and children (as seen in Section II). Therefore, it is unlikely for a food bank to expect a return on their investment from the households to which they provide food services creating, in turn, dependence on outside support.

The disparity between usage of public and private sector food security efforts can be further examined. Of those that are food insecure, a sizable percentage use supplemental income programs, like SNAP, and provide patronage to food banks concurrently. A joint study between the USDA and University of Missouri found that in Kansas City, MO, over 60% of food pantry visitors were simultaneously SNAP recipients over a 3-year period. Conversely, only one-third of regional SNAP recipients visited a food pantry in the given timeframe. While food pantries usually cater to those who are low-income, it is not always mandated that one must live below the poverty line to receive food. This creates a larger market in a given area for potential patrons of food pantries. Simultaneously, 17% of SNAP-eligible households did not participate in the program, forcing them to find other outlets for affordable food, likely increasing food pantry patronage. The study theorizes that the disparity between food pantry usage and SNAP participation occurs when SNAP holders are forced to use food pantries as a substitute for supplemental income when food shortages occur (Mosley et al. 2004). Another key difference between usage of food pantries and SNAP are age-based demographics. While total participation in the population of SNAP-eligible households is 83%, that number is much lower when examining the participation of older Americans. According to the USDA, only 42% of all eligible elderly Americans participate in the program (Gray et al. 2017). An additional study found that, on average, the food-insecure elderly preferred visiting food pantries to participating

in government assistance programs (Daponte 2000). This may be due to a difference in perception between demographics in regards to accepting “government assistance” but could additionally be an effect of disability or household relationships preventing travel to supermarkets where one would use SNAP benefits.

While there is a predisposition in some demographics against participating in government assistance programs, such programs can be seen to be far more sustainable and effective than private efforts, as examined above. SNAP provides households with not only a larger amount of financial assistance towards achieving food security, but further increases the variety of diet in participant households through providing funds to shop at grocery stores, which often have a larger available selection of produce and foodstuffs than food pantries. Furthermore, programs like SNAP and WIC stimulate local economies in sectors that struggle financially in food deserts, such as grocery stores and agribusinesses. These programs are backed by taxpayer dollars, a far more reliable source of funding than private donations or charity. These dollars are injected into the local, often struggling economy and provide both an opportunity to create a food secure household and a return on investment of an additional 75 cents per dollar into the economic activity of local businesses. While food pantries serve a valuable place in low-income communities, they cannot be seen as the sole solution to overcoming chronic food-insecurity. Government assistance programs, like SNAP, have been shown to comparably have further reaching and far more impactful effects on the health, food security, and welfare of a community than private efforts.

In tandem with government programs, providing proper education on forming a nutritious diet can further improve household dietary habits. This type of education includes discussion on a balanced diet, daily-suggested servings of fruit, vegetables, and grains, and how to ensure one

meets their daily dietary vitamin and mineral goals. While SNAP and other programs can provide the *means* to attaining a sustainable source of healthy food, health education provides the *knowhow* for households to maximize the effectiveness of nutrition supplementation. As discussed previously, many food-insecure households fall into the habit of eating an unhealthy diet of saturated fats and sodium-rich fast food and “ready-to-eat” meals due to financial limitations and taste preferences. While some factors, like lack of available time to cook a proper meal, cannot be overcome by simply providing benefits, nutritional education programs can still be seen to improve the diets of SNAP participants significantly.

The USDA’s SNAP Education and Evaluation Study measured the effectiveness of nutritional education courses on how recipients spent their supplemental income. They found that low-income elementary school children who were exposed to the program while on SNAP increased their daily fruit and vegetable consumption by roughly 25%. The study additionally found that programs were most effective when parents of households were engaged in education as well, as programs provided a comprehensive guideline for improving overall household diet (United States Department of Agriculture 2013). A study from the *Journal of Education and Health Promotion* found that educating elementary school children over a two-month period improved not only their knowledge of what constitutes a proper diet, but additionally improved their dietary habits, attitude, and academic performance. The study concluded that nutritional education was one of the most influential factors in improving childhood diet and decreasing “junk food” consumption. However, it was additionally noted that for application of nutritional education to have long-term actualized effects, parents must also be educated on a balanced diet (Vardanjani 2015). Nutrition education can be shown to both increase nutritional value of diets



and simultaneously decrease obesity, not only in children and low-income families but in college students and senior citizens as well (Lua et al. 2012).

Therefore, nutritional education programs are shown to be significant in improving the diets of not only the food-insecure but of all who suffer from an unbalanced diet. These seminars and programs provide an understanding of proper diet and show those in need how they could apply such understanding to their grocery choices. These education programs, in combination with supplemental income programs like SNAP, can help shift the lifelong dietary habits to which those in food deserts and PPCs have become accustomed. While the strategy to improve public health is a long-term one, providing the food-insecure with the means and knowledge to make sustainable changes to their household and community can prove invaluable. When one has the ability to overcome their dietary and food security-related restrictions, they become unburdened from the afflictions, barriers, and detriments to their quality of life described in Sections II, III, and IV. Once one is able to oust themselves from the cycle of poverty, through in part, government aid, they are free to build financial stability, improve their mental and physical health, build cohesiveness and trust within their community, and begin to improve their socioeconomic mobility. While many impoverished areas throughout the United States, particularly PPCs, severely lack opportunity for growth and exhibit poor infrastructure, educational standards, and standards of living, change can be brought about one segment at a time. Providing solutions to chronic food insecurity is a crucial first step towards developing impoverished areas of the United States. Once one is able to solve the “food security problem” and sustain the most basic need of a community, healthy food, they can move towards job creation, good governance, and lifting such an area out of poverty. This is what I have been

working towards, along with the invaluable help of numerous others, in Allendale County, South Carolina.

## ***VI. The Case of Allendale County***

When I first met with the Office of Congressman James Clyburn, Representative of South Carolina's 6<sup>th</sup> District, I was hoping to find which federal programs were currently in place to aid food security and development initiatives in PPCs throughout South Carolina. I was met by a representative of the Congressman who, when I posed this question, looked at me incredulously and said, "You've got to be kidding". He informed me that federal aid to these areas was not only hard to come by, but would be difficult to make sustainable, particularly in the food security sector. We exchange ideas about food security and poverty in South Carolina and proceeded to discuss private organizations and state institutions that could be helpful to the projects that I was looking to fund. We exchanged business cards and I felt confident in my meeting with the Congressman's office. Those with whom I spoke with were very well informed about poverty throughout the state, as the 6<sup>th</sup> Congressional District represents 8 of South Carolina's 13 Persistent Poverty Counties. While all 13 counties exhibit great amounts of sustained poverty, I was inquiring to the office about one in particular, Allendale County. I had long been interested Allendale, as it was a principle model of a food desert and area of persistent poverty.

Allendale County is regarded throughout South Carolina as the poorest area of the state. The poverty rate currently sits at 42.5% according to the most recent United States Census and has fluctuated between 30-45% over the past four decades. The unemployment rate in Allendale 1.5 times the national average (6.7% when measured in November of 2017) and the County was losing job opportunities at a rate of 2.5% annually in 2016. With a population of 10,419, Allendale's per capita income is only roughly \$11,000 per year. Household income is on average

\$20,081, putting many households, especially those with children, below the poverty line (United States Census Bureau 2018). Leaders in South Carolina state government have described Allendale County as existing in a “state of emergency,” particularly regarding the County’s school district and academic performance (Self 2017). Allendale County’s descent into some of the lowest levels of income in South Carolina came in the mid-1970s after the introduction of the I-95 interstate highway, which rerouted intrastate and interstate traffic, and therefore potential cash flow, away from Allendale and through other Lowcountry cities like Walterboro and Florence, South Carolina. Due to a lack of outside income, the county could no longer sustain itself. Industry and job opportunities left the area and those who were not able to follow remained in Allendale to witness its decade-long decay.

In terms of education, Allendale is one of the most underperforming school districts in South Carolina. 1 in 4 students in Allendale will not graduate high school, with 1 in 10 students dropping out before the end of 9<sup>th</sup> grade. 1 in 5 people in Allendale cannot read at an acceptable, basic level. As a result, Allendale has one of the lowest amounts of college graduates as a percentage of population in South Carolina, despite a University of South Carolina satellite campus, USC – Salkehatchie, basing itself in the city of Allendale (U.S. Census American Community Survey 2016). Allendale County, along with Bamberg, Hampton, Colleton and many other counties have been dubbed South Carolina’s “Corridor of Shame”.

These counties have demonstrated poor academic performance, usually coupled with high poverty, and have caused much discussion in the state legislature regarding how to address the underrepresented, underfunded and underperforming areas of the state. The 2005 documentary that coined the term describes these counties populations as “unable to read and write” (Ferillo 2005). The host of the documentary remarks that his impression of the area was that of

“stumbling into another century”. Indeed, the poor quality of education afforded to residents of these counties is a concerning epidemic. In June of 2017, South Carolina Superintendent of Education Molly Spearman announced that the State Department of Education was taking direct control of the Allendale County School District, which included appointing a new district superintendent and providing state-mandated development efforts to improve the school district’s performance. When I spoke with Superintendent Spearman about the problems facing Allendale County Schools, she remarked that an improvement in “top-level” school board governance was critical to the success of the district, which the Department of Education was in the process of implementing.

It is important to be aware of the above conditions, as Allendale County’s status as a food desert is dependent on its environment, which is both caused by and perpetuates the area’s cycle of poverty. According to the USDA Food Access Research Atlas, Allendale County is a food desert by distance due to lack of adequate transportation, as is common for rural portions of the country. This factor is exacerbated by Allendale’s problematic lack of food availability. In the entirety of Allendale County, there is one grocery store, a small Independent Grocer’s Association (IGA) in the city of Allendale. The city of Allendale is the seat of Allendale County, bearing the County’s namesake, and holds roughly one-third of the County’s population. However for the remaining two-thirds of the County, food availability becomes a severe problem. As one moves further from the city of Allendale, and away from the region’s only grocery store, income drops significantly. In the furthest town in the County from the grocery store, Ulmer, a round trip is roughly 18 miles. Due to Allendale’s lack of public transit, many rely on rides from friends and family to visit the grocery store, with even more relying on the town’s Dollar General, Exxon gas station, and local soul food/butcher shop for their household

groceries. The lack of available supermarkets is so apparent that the Google search results for “Allendale County grocery stores” brings up the IGA, the Dollar General, and the gas station.

This lack of available food choices not only leads to poor diet, but to negative health consequences throughout the County. Allendale exhibits one of the highest rates of obesity in South Carolina, as 35.4% of adults in the county are obese, as well as roughly one-fourth of all children. Poor dietary habits, and consequently inactivity, have plagued the health of the county for decades. When surveyed, 42.5% of adults in Allendale did not eat at least one serving of fruit daily. Less than one-half of the adult population met weekly exercise goals of 2.5 hours of moderate-intensity exercise per week (South Carolina Department of Health and Environmental Control 2013). Allendale County exhibited the highest rate of diabetes in South Carolina at 19.2%, 6% higher than the next highest county (Centers for Disease Control and Prevention 2013). When asked about the health and quality of life in their county, 76.2 % of Allendale residents surveyed said that the County was at least somewhat unhealthy, with the largest “risky behaviors” in regards to health being lack of exercise, poor diet, and being overweight (SCDHEC 2015).

Indeed, when one travels to Allendale, the effects of poverty and food insecurity become apparent. On the 1.5-hour drive from Columbia along Highway 321, one is sure to pass roughly a dozen dollar stores and even more “Food Marts,” gas stations with a small selection of groceries. However, it is notable to point out that in the entire 76 miles from Columbia to Allendale, one passes but one grocery store, a Piggly-Wiggly, along the main highway. Once entering Allendale, its “Persistent Poverty” status becomes clear. After I crossed the county line, I was surprised at what I saw: nothing. After passing a weathered sign that reads, “Welcome to Allendale County,” there is very little that might catch one’s eye. There are simply vast areas of

undeveloped land, stretching along the expanse of highway that passes through the county. The area certainly lives up to its rural reputation. However, when nearing the city of Allendale, more landmarks appeared: Burnt out motels with caved-in roofs, small shacks and trailer parks with limited electricity, and abandoned gas stations peppered the roadside. These remnants of industry had evidently been left for years, with little initiative to repurpose them.

Once I entered the town of Allendale, more was to follow. The town itself is quaint, with a railroad passing through the center and a handful of small businesses and drug stores placed throughout. However, I was still able to discern the quiet desperation that many in the town faced. Off of the main road, abandoned houses, hollowed-out factories, and foreclosed businesses made clear that the area was lacking opportunity and many were suffering in silence. In terms of food, there is a bright yellow Dollar General that one passes as soon as they enter the town. A few fast food joints and a single seafood restaurant were the only other notable eateries. I entered the local IGA to see what was available and to my surprise it was fairly well stocked. There was a small produce section. Non-perishable goods like cereal were stocked reasonably. However, what I noticed while purveying the store was that roughly one-fourth, the entire upper left side of the store, was reserved for “ready-to-eat” meals, frozen pizzas, and alcohol. These items were cheaply priced and filled with sodium, fats, and other unhealthy contents. Though, I did reason that they were likely healthier, and more filling, than what one might buy at the gas station.

To get a better idea of food availability in the county, I visited the Allendale Trinity Church of God. The church, in addition to providing worship services, acts as Allendale’s only food pantry. Volunteers at the church give out bags of food on the 2<sup>nd</sup> and 4<sup>th</sup> Thursday of every month, acting as a source of nutrition for some of Allendale’s poorest residents. During the church’s

“distribution days,” residents are summoned via an AM radio broadcast, organized alphabetically by last name. Each household receives a ticket, redeemable for one bag of food per visit. Bags contain a balanced mix of boxed food, cans, peanut butter, fruit, and other necessities, delivered to Trinity by truck from the Golden Harvest Food Bank in Aiken, South Carolina. I spoke with one of the church’s pastors, Cheryl Jackson, to learn more about the challenges of running a food pantry in such an impoverished area.

“Our clientele is mostly older people” she said, “Most of them are on fixed income and earn very little. If they are not fixed income, then they are low income. We have a couple people that don’t have a car, but most get rides [to the church] from people they know. The challenge comes in finding what their needs may be (...) many are very sensitive about receiving things and we must make sure to maintain their self-respect”. She went on to describe some of the other services that Trinity provides to the community: “We provide counseling for emergency situations (...) we are concerned with how we can be an asset. We do this by handing out food, but also by providing clothing and toys near Christmas time (...) we have even helped to pay some utility bills. [The fact] that we are able to help them make it through the month is very rewarding”. While she is not a resident of the community, but commutes in from outside the county, I continued to ask Pastor Jackson how she think Allendale can improve as a town: “That’s a hard one (...) In Allendale, there are no opportunities for jobs. [Parents] may have to go to Hilton Head and take the bus. By the time they get home, their kids have been home for quite a while and there is no time to see how their children’s day went (...) we need industry, better education, youth programs, and even entertainment. It is a challenge for multiplicity”.

I was able to work with students from the University of South Carolina and travel to Allendale to aid in Trinity’s efforts. On the first night that we visited the church, the eve of Thanksgiving

2017, cars were parked far up and down the road, roughly 150-200 households' worth of recipients. From speaking with church members and looking through Trinity's records, I found that the church serves 300 to 400 people every month, about 10% of the town's total population. We introduced ourselves to the group of volunteers and began handing out food to those in need. While handing out food, I asked many residents from where would they would typically get their groceries. The response was on par with the studies I had read. Some shopped at the Dollar General, while some of those who I spoke with, who were SNAP recipients, walked to the IGA. I asked one woman about what our government could do to better aid those living in poverty, as well as how she felt about their response to the problems that Allendale was facing. Her solution was simple: "We have no representation. We need more that what we got if we are ever going to make this town better" she said. The need for bringing attention to the main issue that nearly half of the County struggled with, a severe lack of socioeconomic mobility, was common throughout those with whom I spoke.

Part of the solution that the federal government has implemented to solve this problem is the creation of Promise Zones. These specially designated Zones are areas of high poverty throughout the United States, both rural and urban. In 2013, the Obama administration promised to provide priority grant status to these areas for development initiatives, as well as to work with local development agencies to bring up these regions of the country, which had been long overlooked by the larger scope of government. The Lowcountry of South Carolina, including Allendale County, was designated as one of these areas [Figure 1.7]. This designation was fitting. After having discovering the issues that Allendale faced, I realized that the community, like many Persistent Poverty Counties, was populated with plenty of individuals willing to make a difference, but lacked the opportunity to do so. The "startup cost" for providing opportunities



was simply too high for the area to offer. In order for the area to recover from decades of neglect, outside forces were required to “kick start” Allendale’s economy.

After coming to this conclusion, I took steps towards realizing this goal of promoting food security and developing the county. I began by starting a food drive at the University of South Carolina. After reaching out to Trinity Church and Golden Harvest to ensure their collaboration, as they were the only distribution centers in the county, I began raising food and money through the month of October. Due to large amounts of student involvement, we were able to provide the church with over \$1,100 and almost 400 cans of food. This translated to feeding approximately 2,000 households, or one-fifth of Allendale County, over the estimated 5 months for which the donations would sustain the pantry. In this success, I realized that there was potential in Allendale, not only in the amicability of its citizens, but additionally in the enthusiasm of others to make a difference. I spoke with Anna Lewin, the Chief Operations Officer of the South Carolina Community Loan Fund, regarding Allendale and its development potential. She mentioned to me that in order to be eligible for grant funding and Promise Zone initiatives, it would be beneficial to not only surround myself with those who knew the area, but those who could assist in the “development” portion of my goals. The Loan Fund offered a \$12,500 grant if such an organization was able to prove there was enough of an agribusiness market to make investment worthwhile. It was this impetus that pushed me to found the Allendale Economic Development and Food Security Council (hereafter, referred to as “the Council”). I reached out to contacts that I had made in the area in order to create a proper and capable organization. After cold-calling and networking for two months, I was able to find a suitable group: the community director of the Golden Harvest Food Bank, a Lowcountry member of the state Department of

Health and Environmental Control, the head of an agribusiness council, and lastly, Wilbur Cave, the founder of the organization Allendale ALIVE.

Wilbur had started Allendale Alive after the end of his term in the South Carolina House of Representatives. The organization focused on providing affordable housing in Allendale County and Wilbur, an Allendale native, was one of the largest proponents of public service in the area. He had even enticed an additional grocery store, a Save-A-Lot supermarket, to base itself in Allendale. However, when the funding he had offered ran out, the supermarket left the area. Through his organization's 501(c)(3) status, the Council had the ability to apply for grants, one of the main forms of income we would utilize to invest in development initiatives.

While forming these connections, I was able to meet with Lottie Lewis, the head of Allendale's largest (and only) business council, All Together Allendale. Through her reputation in the community, I was able to set up meetings with local farmers and businesses to address the problem of food insecurity throughout Allendale. By consulting with these businesses and individuals, I was able to gain a better understanding of the County's problems and how barriers to food security could be removed. The consensus was surprising.

"It's too hot" said Sammy, owner of Sammy's Choice Meats, the local butchery and soul food restaurant. He remarked that he couldn't sell local produce because his store, a staple of the Allendale community, would get too warm and produce would spoil before he had a chance to market it. The farmers that I met with made the same observation. One farmer in particular told me that he would bring his yield to the Allendale Farmers Market (an organization started by All Together Allendale) and he was forced to throw out a majority of it, as it would go bad by the end of the day. After these discussions, each person I spoke with made the same

recommendations. Allendale needed freezers. They needed a place to sell produce that those on SNAP benefits could afford it (an easy task given the relatively low prices of the Farmers Market), while keeping produce fresh enough to sell over time. This became one item on the list of how to combat food insecurity in the area.

Through numerous meetings with a variety of other organizations, I was able to find additional solutions to Allendale's food problem. In addition to freezers, we needed to fund a Mobile Farmers Market to reach those throughout the county who could not afford a car (to counter the problem of distance), as well equipment to support the local community garden – in which residents had previously grown their own food, but had fallen into disrepair when funds ran out. We needed misters to keep produce fresh and egg incubators to support those who could provide chicken (and quail) eggs, an important source of protein that was lacking in the community. I spent time working with the South Carolina Association for Community Economic Development to provide proper training to Allendale's local farmers on how to build the “business” portion of their agribusiness through a series of basic business classes and seminars. I made sure to make a point of supporting local service organizations, like Trinity Church and the Smartbox – an organization that provides cheap afterschool care for children whose parents are unable to pick them up directly after school (Smartbox additionally provided computers and internet access in Fairfax, one of the only public access centers in the County).

Lastly, to capitalize on the potential of Allendale County in the long-term, the local school system had to be supported. Since the state assumed control of Allendale County Schools, new teachers, administrators, and technologies had improved the quality of learning in the classroom. However, many students still came from disadvantaged backgrounds. As indicated by the literacy rates and high school graduation rates, quite a few students in Allendale were either

unequipped to do well in school or did not have enough encouragement at home to *want* to succeed.

As a way to provide relief to the county's education sector, I began working with state senator Margie Bright-Matthews. Senator Bright-Matthews has represented the County of Allendale since the 2016 special election, with an interest in improving the county's education. A subset of Congress was generous enough to donate 250 backpacks to the Senator to distribute throughout schools in her constituency. I was able to form a partnership with Allendale Elementary School through this initiative and travelled to Allendale County, planning to meet the Senator at the school. It was there that I saw what the Corridor of Shame looked like up close. An old grafted canvas, with the logo of Allendale Elementary on the side, was located just outside of the school, serving as its only sign. The school was located in front of an abandoned construction site, with a large, open grass lot in which to park. I went into the schools' older gymnasium to distribute the backpacks, where I met the Senator. She gave a speech to the third-grade class, only around a hundred children, about always striving to learn more and trying your best. I agreed with her sentiment, as many of these students needed encouragement that they may not have received at home.

This investment was just one of many that the Council has made into the economy of Allendale County. By the end of the year, we are projected to have roughly \$17,500 in grant funding with which to implement our determined solutions, as mentioned above. These solutions will create jobs in the county, increase economic activity, and provide a source of cheap and healthy food to those who need it most. These investments are not only critical to the wellbeing of the County; they are a method of helping those that live in persistent poverty realize that they are not forgotten.

## **VII. Conclusion**

To conclude, the conditions brought about by food insecurity create a series of barriers to escaping poverty. By affecting the mental and physical well being of an individual, hunger can limit one's ability to succeed, or even desire to succeed. When factoring in the effects that price increases throughout food deserts can have on an already strained personal budget, it can be seen that cheap, unhealthy foods are usually a more preferable option to those who already have so little time and money to spare. This, in turn, continues to negatively affect health, household relationships, community cohesiveness, and socioeconomic mobility in perpetuity. While food insecurity inevitably comes about as a *result* of poverty, it also *perpetuates* that same cycle.

Through observing food deserts and PPCs throughout the United States, we can observe the long-term effects of food insecurity on a community. While hunger is far from the only problem that those living in persistent poverty face, it is undoubtedly a factor that plays into the slow degradation in the quality of life, as well as loss of morale, in the populations of these areas. This generational poverty and food insecurity cultivates poor dietary habits and isolationist tendencies in those affected, making collaboration towards overcoming these conditions difficult.

With the introduction of government programs like SNAP, as well as nutritional education, one can subvert the effects of food insecurity and slowly start to move their way out of malnutrition and, at times, poverty. However, for these programs to remain effective, our government must continue to commit funds to them and promote their use in food-insecure communities throughout the United States.

In addition, outside forces dedicated to breaking the cycle of poverty and food insecurity in a community, like Allendale County, *can* have a sizeable effect on the area. However, we must

recognize that outside of Allendale, there are 352 other Persistent Poverty Counties that face a similar predicament. For there to be large scale poverty and hunger relief in the United States, the federal government must intervene to provide opportunity and incentives for industry in PPCs and food deserts. These efforts, in conjunction with community services and activism, can prove to eradicate hunger and greatly enhance the quality of life for those who need it most.

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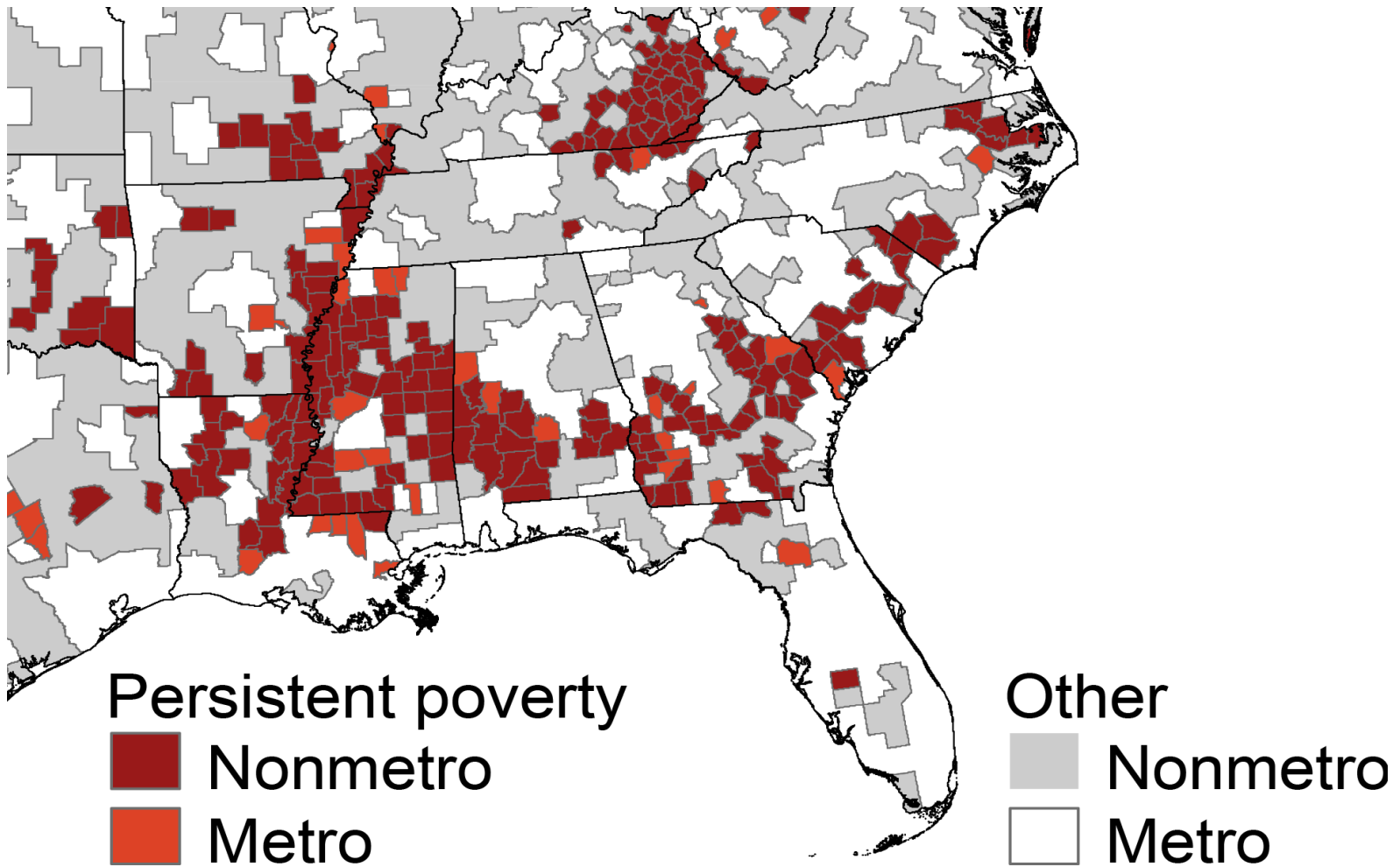
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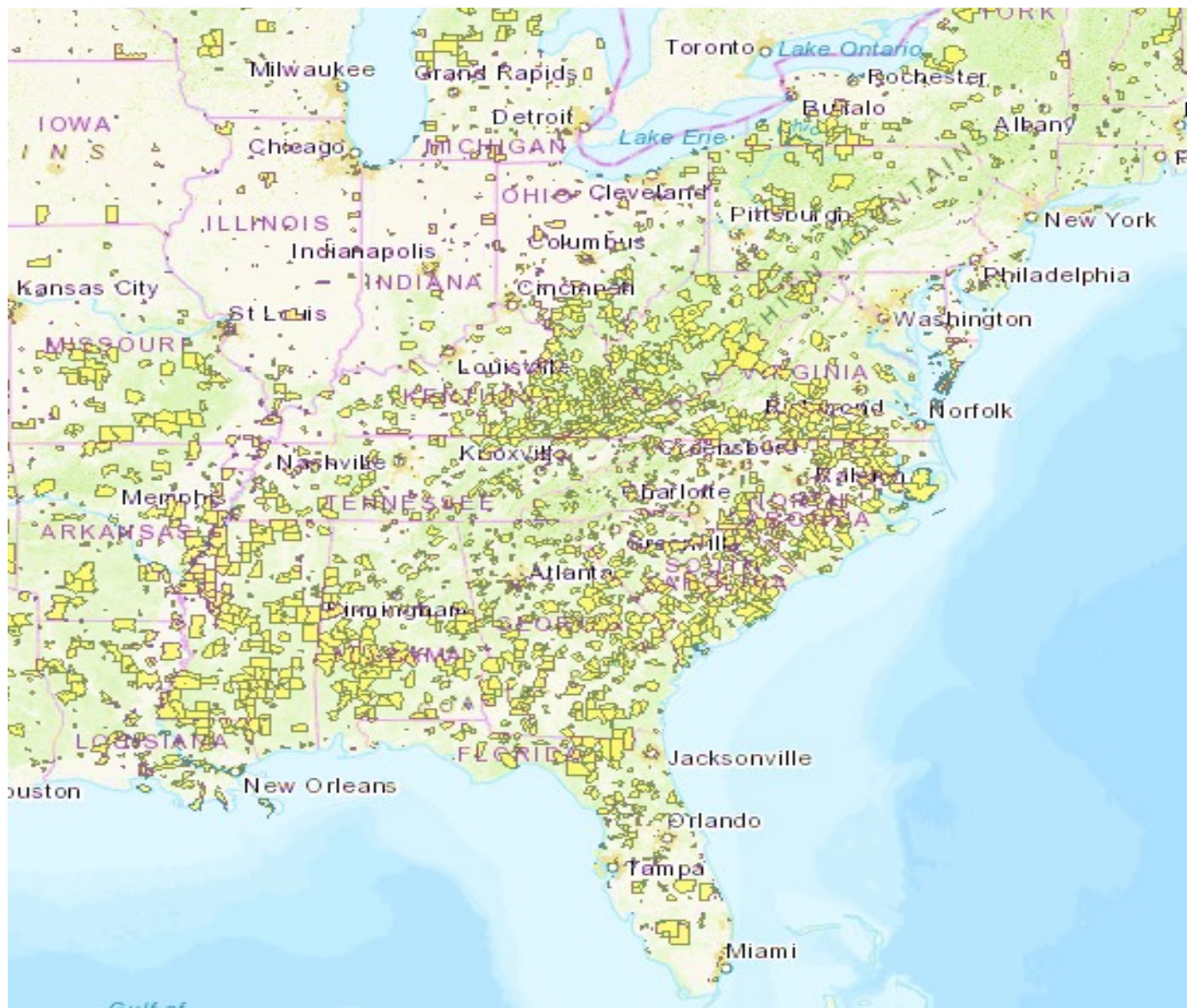
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## Figures and Tables



United States South and Midwest Persistent Poverty Counties  
Figure 1.1

United States Census, 2010

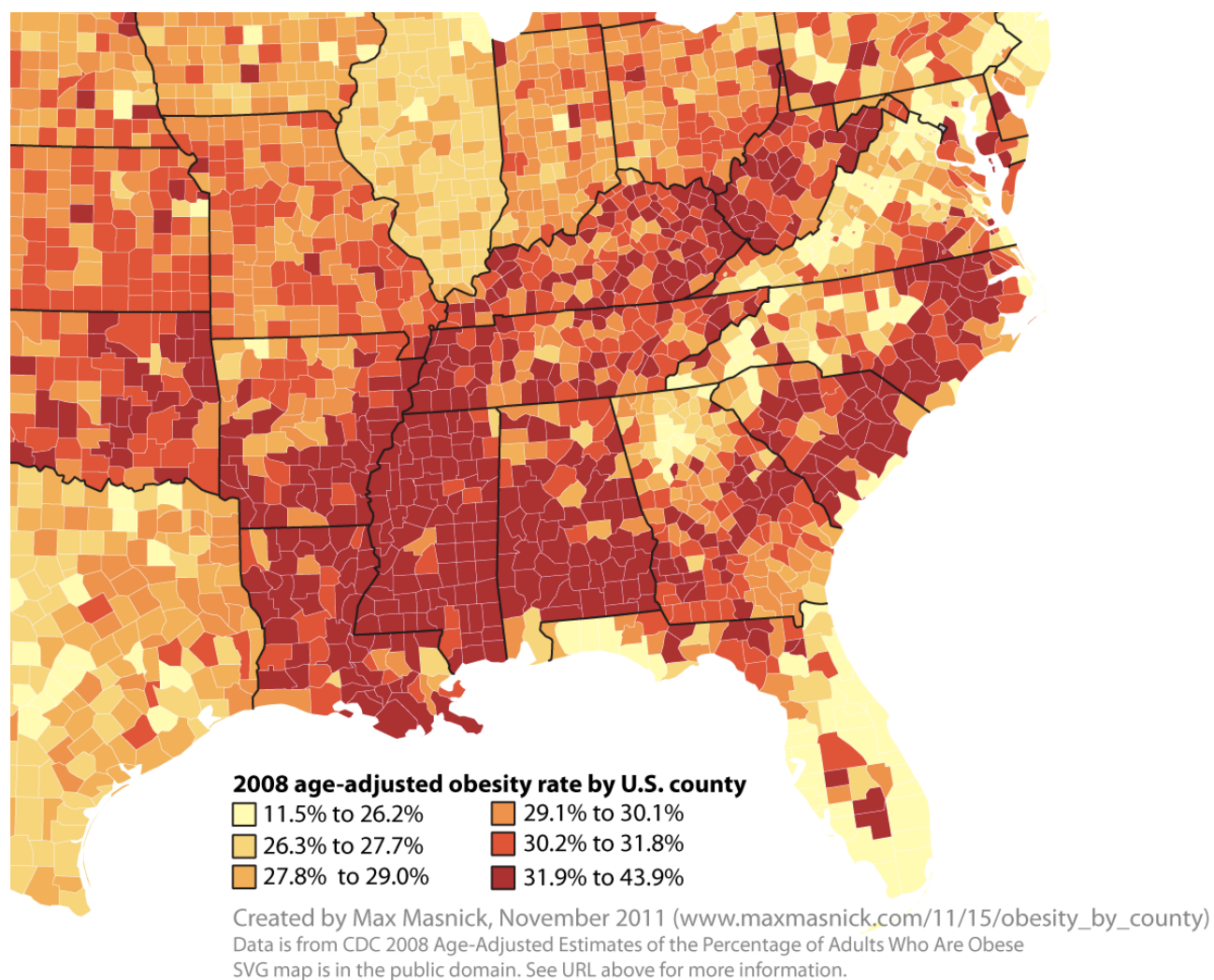


USDA Food Access Research Atlas Visualization – Low Vehicle Access  
Figure 1.2

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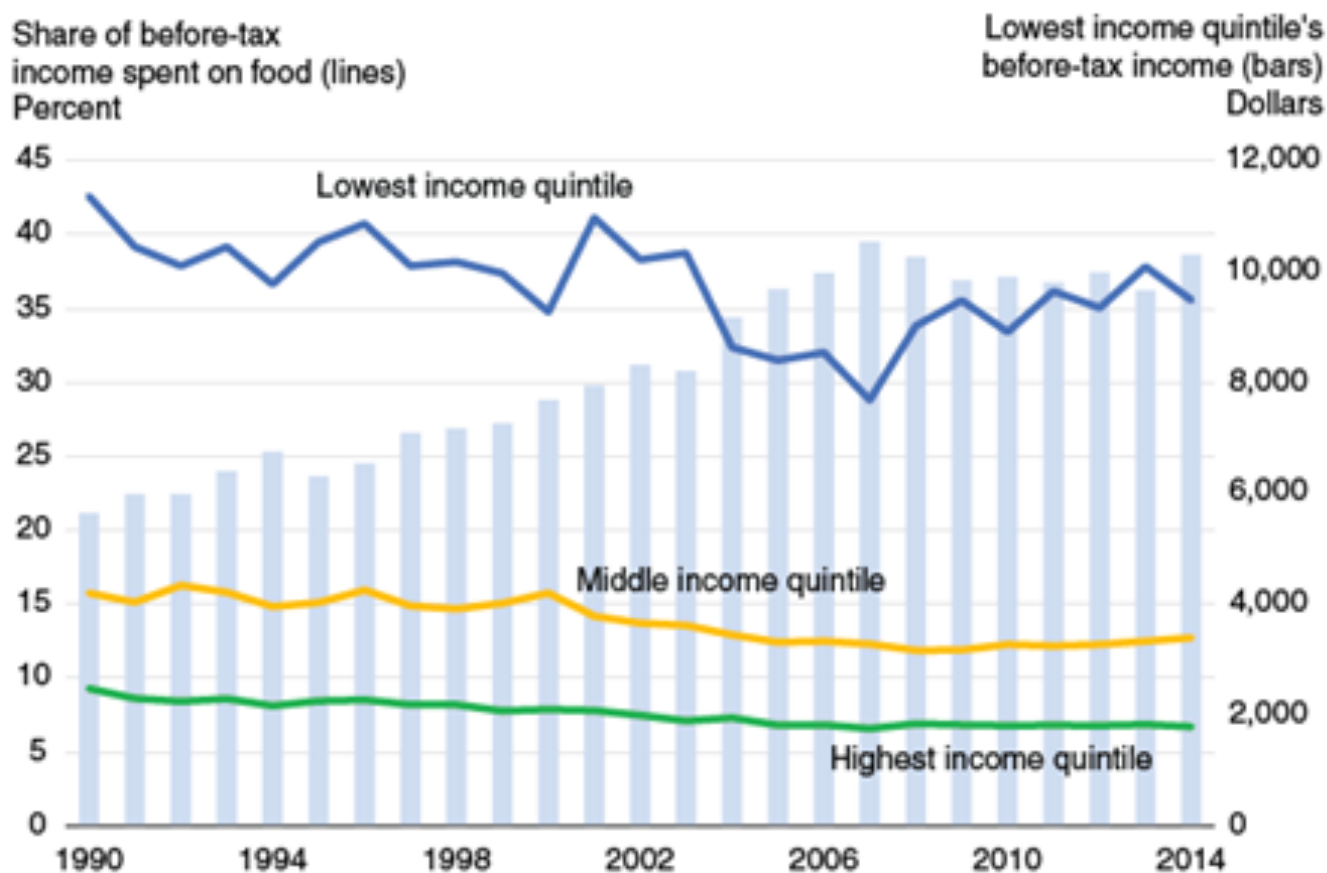




Obesity Rates by County in the South and Southeastern United States  
Figure 1.4



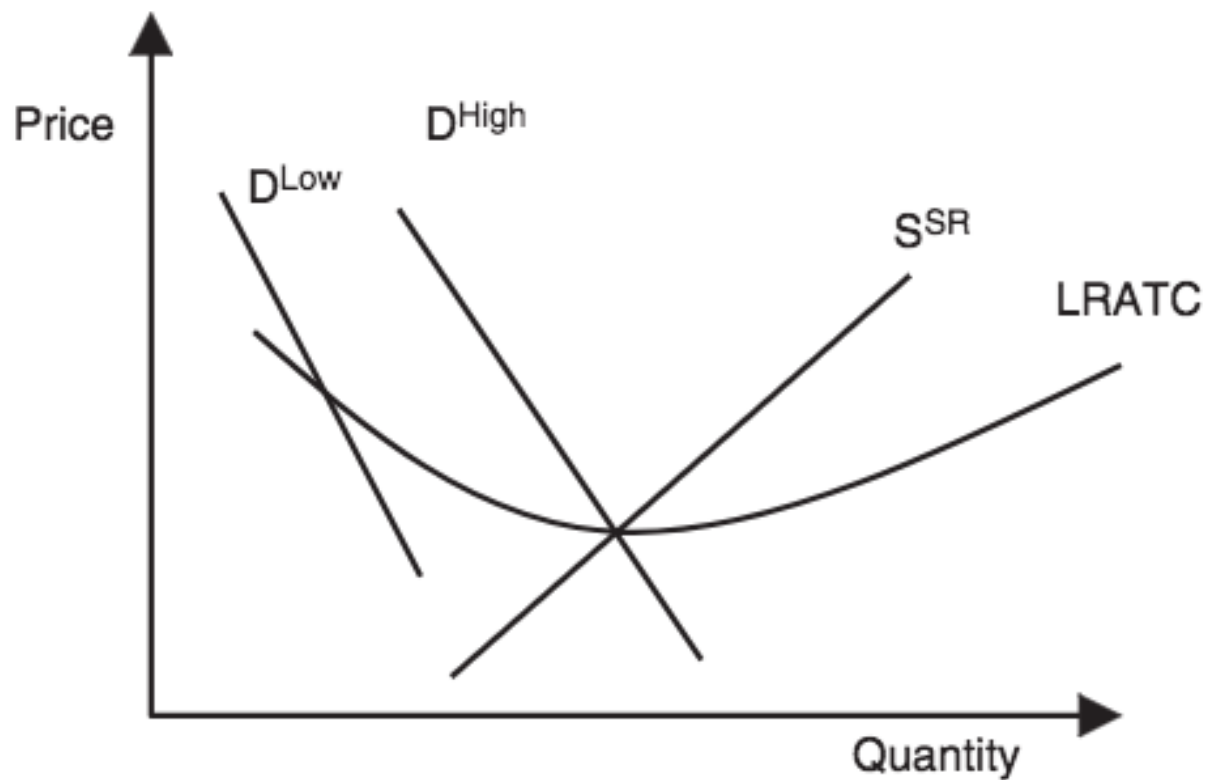
## Lowest income households spent 35.5 percent of their incomes on food in 2014



Note: Average annual income is in nominal (not adjusted for inflation) dollars.

Source: USDA, Economic Research Service using data from the U.S. Bureau of Labor Statistics, Consumer Expenditure Survey.

Percentage of Before-Tax Income Spent on Food by Income Quintile  
Figure 1.5



Long-Run Equilibrium in a Competitive Market

Figure 1.6

This figure demonstrates the economic equilibrium reached in a competitive market economy. When demand is high ( $D$ ), short run supply ( $S$ ) can be modified to reach the lowest price and total cost point. When demand ( $D$ ) shifts to become low, the Long-Run Average Total Cost curve ( $LRATC$ ) is at a higher point and price must rise to compensate and reach the new break-even point.



# Promise Zone Communities

[www.hud.gov/promisezones](http://www.hud.gov/promisezones)

## FIRST ROUND

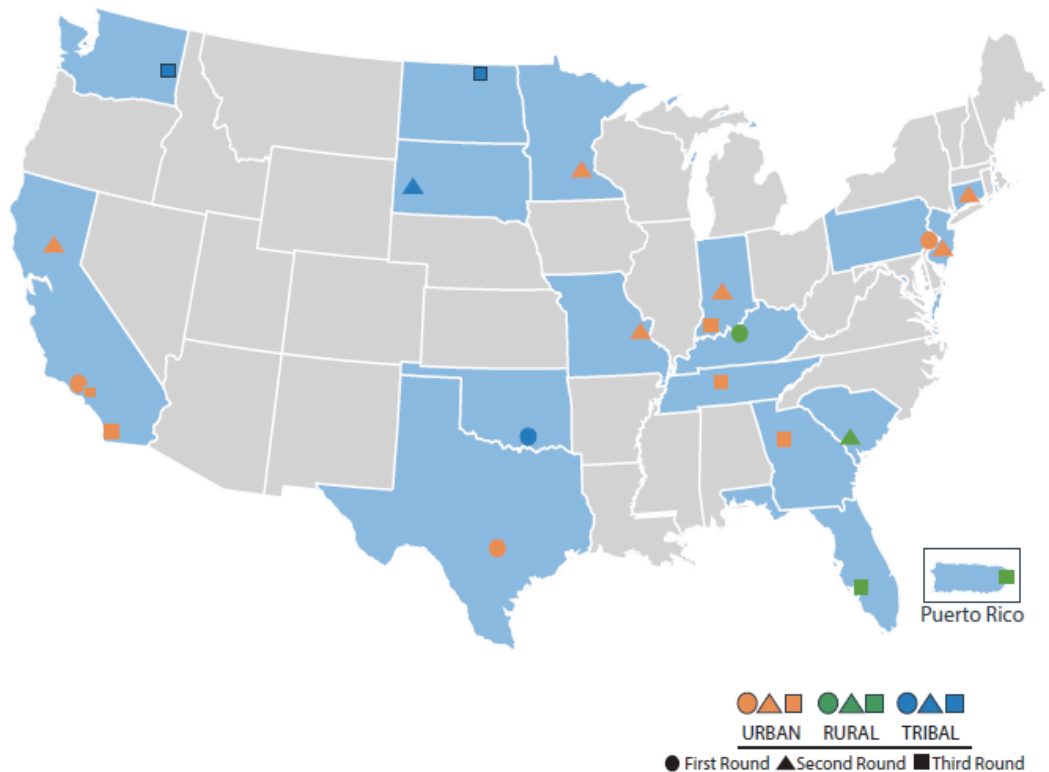
Los Angeles  
Philadelphia  
San Antonio  
Kentucky Highlands  
Choctaw Nation

## SECOND ROUND

Camden  
Indianapolis  
Minneapolis  
North Hartford  
Sacramento  
St. Louis  
Pine Ridge Indian Reservation  
South Carolina Low Country

## THIRD ROUND

Atlanta  
Los Angeles  
San Diego  
Nashville  
Evansville  
Southwest Florida  
Roosevelt Roads  
Spokane  
Turtle Mountain Band



U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

United States Promise Zone Regions  
Figure 1.7