# Food Access: A Racial and Socioeconomic Problem

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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## Introduction

Food insecurity is a growing endemic in the United States; the U.S. Department of Agriculture defines food insecurity as a lack of consistent access to enough food for an active, healthy life (Coleman-Jensen, 2017). In 2019, about 13.7 million households, or 10.5% of all U.S. households, experienced food insecurity ("Food Insecurity…", n.d.). However, this phenomenon affects different socioeconomic and racial groups unequally, and this research paper will investigate the socioeconomic and racial patterns that are seen with food insecurity. In 2016, 31.6% of low-income households were considered to be food insecure, compared to the national average of 12.3%. A study showed that from 2001 to 2016, found that food insecurity rates of non-Hispanic black and Hispanic households were at least twice that of non-Hispanic white households (Coleman-Jensen, 2017). Another study reports similar results in food insecurity among American Indian/Alaska Native households (Jernigan, 2017).

Food insecurity is highly influenced by accessibility, which is seen in the phenomena of food deserts; food deserts are areas with low availability or high prices of healthy foods (Powell 2007). According to the USDA, in 2015, about 19 million people lived in a food desert and 2.1 million households both lived in a food desert and lacked access to a vehicle ("Food Insecurity…", n.d.). This too affects lower-income and minority households at a much greater rate than their white, higher-income counterparts. Some studies suggest that half of all low-income neighborhoods in the U.S. are food deserts ("Food Swamps…", n.d.). Research shows food deserts more abundant in minority neighborhoods; black and Hispanic neighborhoods have fewer large supermarkets and more small grocery stores than their white counterparts (Brooks, 2014). Using the STS frameworks Actor Network Theory (ANT) and Political Technologies, this paper aims to answer the questions: how does socioeconomic and racial inequality play a role in

food access in the U.S., and how does society in the U.S. shape food access around these inequalities? Furthermore, it aims to bring light to how current policies fail to address these inequalities.

## Methods

The scope of this project will only cover the socio-economic and racial patterns that arise with food accessibility through literature review. The first stage will be to provide relevant background information for the topic, like the definition of a food desert. The second stage will look into the socioeconomic and racial patterns that are seen with the locations of food deserts and grocery stores. The third stage will look into socioeconomic and racial patterns that are seen with the differences in pricing of higher quality and healthier foods. The fourth and final stage will look into socioeconomic and racial patterns that are seen with differences in barriers to food access, like transportation, budget, and zoning. The relationships and patterns that are found will be discussed using the frameworks of ANT and political technologies.

## Background Information

### *Food Deserts*

Food deserts are areas that lack healthy food access. These areas came about in the 1960s and 1970s when many white, middle-class Americans started to move to the suburbs; this led supermarkets to move with them, away from the inner-city areas. Over time, supermarkets started to tailor their business models to better suit this more affluent, suburban group, rather than those who lived in inner-city areas. To even further exacerbate the problem, banks also redlined poor inner-city areas, furthering the decline of supermarkets. Food deserts are also seen in rural areas, where widely dispersed populations make it hard to financially support supermarkets, especially in low-income areas (Leib, n.d.).

*Actor Network Theory and Political Technologies*

These inequalities in food access can be looked at with two STS theories, political technologies and ANT. Political technologies can be looked at as technological development or inherently political technologies. This thesis will discuss the former. Technological development shows how artifacts can be used to increase the power, authority, or privilege of some over others (Winner, 1980). In this case, political technologies look at how food access can be used to increase the privilege of white people and those with a higher socioeconomic status.

ANT treats everything in the social and natural worlds as a continuously generated effect of the webs of relations within which they are located, which is defined as the network in this case. It treats this relationship network as a black box; it assumes that nothing exists outside this web. The actors in this network could include objects, subjects, human beings, machines, animals, "nature," ideas, organizations, inequalities, scale and sizes, and geographical arrangements (Cressman, 2009). In this particular case, ANT considers the network of food access and the relevant stakeholders in society, like grocery stores, transportation, and low-income families.

*Ethical Considerations: Technological Mediation*

Food access can be viewed in with an STS ethical framework: technological mediation. Technological mediation is a theory that views technology as a part of our relations with the world; they are mediators that help us experience the world and be present in the world. One way that technologies do this is to help shape human actions and practices. The other way is that technologies help humans perceive and experience the world. Food access acts as a mediator between humans and the world.

## Results

*Relationship Between Food Access and Racial/Socioeconomic Patterns*

From the literature review, one of the biggest trends seen in food accessibility is the higher rate of convenience stores compared to supermarkets in low-income and higher minority neighborhoods. Supermarkets, compared to other food stores, tend to offer the greatest variety of high-quality products at the lowest cost, while convenience stores sell mostly prepared, high-calorie foods and little fresh produce, at higher prices. Even within supermarkets, supermarkets in predominantly black and lower-income neighborhoods have lower Healthy Food Availability Index (HFAI) scores than supermarkets in predominantly white and higher-income neighborhoods; higher SES has been linked to higher Healthy Eating Index scores (HEI–2005 and 2010) (Franco, 2008; Glanz, 2007). Poorer areas and non-White areas also tend to have fewer fruit and vegetable markets, bakeries, specialty stores, and natural food stores.[4] Neighborhood residents with better access to stores that provide access to healthy food products tend to have healthier food intakes.

This inconsistency in diet is mainly due to food accessibility and not personal choice. Racial and ethnic residential segregation has a strong and negative effect on the expenditure on fruit and vegetables (Ryabov, 2016). There is a positive correlation between the physical availability of food stores and food service places and people's adherence to health authorities' recommendations for a healthy diet. For example, in a study, it was shown that Black Americans' fruit and vegetable intake increased by 32% for each additional supermarket in the census tract, while White Americans' fruit and vegetable intake increased by 11% with the presence of one or more supermarkets (Morland, 2002).

Lower-income families live in places with lower food access, especially to healthier foods, so they are more likely to buy less nutritious food and spend less on food in general. This especially applies to those living on food stamps who have very little flexibility in what they are able to afford (Larson, 2009). On the other hand, wealthier families are able to afford a wider range of foods and are able to better adhere to the dietary recommendations set by the 2005 Dietary Guidelines and MyPyramid. In a study completed by Kirkpatrick et al., higher income was associated with greater adherence to recommendations for most food groups. The proportion of adults in the highest income group meeting minimum recommendations were double that observed for the lowest income group for total vegetables, milk, and oils. Among the racial and ethnic groups, the proportions meeting recommendations were generally lowest among non-Hispanic Blacks (Kirkpatrick, 2012).

*Weakness of Current Policies*

In 2008, the Farm Bill passed by Congress led the U.S. Department of Agriculture (USDA) to measure the problem of food access in the U.S. and make recommendations to reduce the impacts of food deserts. However, their definition of food deserts — "low-income census tracts where a substantial number or share of residents has low access to a supermarket or large grocery"—is insufficient in that it is both over- and under-inclusive and cannot accurately identify where food access is limited.

The definition by the USDA fails to include the higher prevalence of unhealthy options in food deserts, such as convenience stores and fast-food restaurants. It also only takes into account geographical distance and not on "social distance". This term is used to coin the implicit "distance" that residents' feel that is influenced by socio-demographic characteristics and by what residents consider to be the boundaries of their own neighborhoods. Studies have shown

that residents' perceptions of food access, which are determined by things like safety and familiarity, can be a huge factor, alongside physical distance, that can influence dietary habits. Finally, the last shortcoming of this definition, is the fact that ignoring vehicle ownership rates or transportation availability reduces the accuracy in identifying areas lacking food access.

The inaccuracy of this definition has led to many studies, who use this definition, to conclude that there is no correlation between consumption habits or health and food access, which has been disproven. Furthermore, federal campaigns to fix foods access, like Michelle Obama's Let's Move! Campaign, are limited in their effectiveness due to the accuracy of identifying areas that have low food access (Leib, n.d.).

*Barriers to Food Access*

In a recent study, it was found that the average Thrifty Food Plan (TFP) market-basket, a standard set by the U.S. Department of Agriculture, cost was $194, and the healthier market-basket cost was $230. The higher cost of the healthier basket is equal to about 35% to 40% of low-income consumers' food budgets of $2410 a year (Jetter, 2006). Even with current intervention, like Food Stamps and the Massachusetts Financial Economic Self-Sufficiency Standard (MassFESS) food budget, it still is not enough. Food Stamp benefit for a single person was $141, and the MassFESS food budget. In another recent study, it was found that the average estimated monthly food cost exceeded the benefit and food budget set by these two agencies. As a consequence, it has been shown people with low income are more likely to identify cost as a barrier to healthy eating and are more likely to engage in poor dietary practices than those with a higher income (Fulp, 2009).

These food access problems are even more compounded by the lack of transportation. Low-income residents may have difficulty affording transportation costs to the supermarket

located outside of their immediate vicinity, which limits access to food options. This problem is also worsened in the presence of food deserts, an area that has limited access to affordable and nutritious food (Leib, n.d, Widener, 2017). This problem affects minorities and low-income families at a much higher rate than their white, affluent counterparts. White Americans living in the areas under study had three times greater access to private transportation than Black Americans living in similar locations. Many urban areas lack a supermarket, thereby, limiting access to healthy foods for residents. As a result of the lack of transportation, low-income households are less likely to travel the distance to a supermarket outside of their neighborhood and will purchase food items from the stores that are nearby, thereby sacrificing cost and quality for convenience (Widener, 2017). Even with the availability of public transportation, it brings more limitations to food access than private transportation does, like trying to match with the bus schedule, only being able to buy food you can carry onto the bus, and only being able to go where the bus stops.

## Discussion

### *STS Discussion*

Food accessibility can be looked at through the STS framework Actor Network Theory. In a case where food accessibility is high, the network that facilitates it is functional: supermarkets and food suppliers that supply healthy foods are accessible, the income of buyers allows for the purchase of healthy foods, and transportation is accessible. However, in instances where the so-called network is dysfunctional, problems in food access will arise. As shown in the results, food accessibility is lowered when healthy food vendors, transportation, and sufficient income decreases. Even efforts to “fix” this network, like policies and government intervention, have failed to mimic the functional network that is seen with high food accessibility.

These networks disproportionally affect different groups. As the results show, more white, affluent people are a part of the functional network, while their minority, lower-income counterparts suffer with the dysfunctional network. This pattern leads into the second STS framework that can be used to study this phenomenon: political technologies. In this case political technologies, increase a group's power and privilege over another—food accessibility gives more privilege and power to those who are able to experience it. In America, white, affluent people have more privilege to begin with. With the addition of food accessibility alongside the power they already have, it widens the gap of privilege between white, affluent groups and minority, low-income groups.

This finally leads into the STS ethical framework, technological mediation. Food accessibility plays a role in how different groups experience the world. For example, food accessibility shapes what people eat. Lower-income families live in places with lower food access, especially to healthier foods, so they are more likely to buy less nutritious food and spend less on food in general. This especially applies to those living on food stamps who have very little flexibility in what they are able to afford (Caswell, 2013). On the other hand, wealthier families are able to afford a wider range of foods and are able to better adhere to the dietary recommendations set by the 2005 Dietary Guidelines and MyPyramid. In a study completed by Kirkpatrick et al., higher income was associated with greater adherence to recommendations for most food groups. The proportion of adults in the highest income group meeting minimum recommendations were double that observed for the lowest income group for total vegetables, milk, and oils. Among the racial and ethnic groups, the proportions meeting recommendations were generally lowest among non-Hispanic Blacks (Kirkpatrick, 2012).

Another example is the issue of food deserts: an area that has limited access to affordable and nutritious food. Residents of food deserts spend an average of 4.5 more minutes than the national average traveling to the grocery store. They often rely on "fringe food retailers" such as convenience stores and fast-food restaurants for their dietary needs. This leads to individuals residing in food deserts having diminished health outcomes and less healthy nutritional habits than those not in food deserts, including a higher incidence of obesity and chronic disease (Strome, 2016). People who live in food deserts often rely on public or private transportation, depending on their access, to get to stores with better and more nutritious food. In the worst-case scenario, some individuals don't have access to public transportation and cannot afford private transportation, such as cars, to get to these better grocery stores. In this case, the people must settle for the "fringe food retailers" (Strome, 2016; Dutko, n.d.).

These two examples are prime examples of how technology, in this case, food accessibility, mediates the interaction between humans and the world. It helps shape human actions and practices. People who need to budget for food often will try and find better deals, use coupons, and choose cheaper alternatives. Food accessibility also makes people use different kinds of transportation if they live in food deserts. Finally, food accessibility shapes how humans experience the world. At the most basic level, food accessibility makes people experience food at different levels of nutrition. Lower-income, minority people usually experience lower quality foods, while their richer, white counterparts usually experience higher quality, nutritious foods. This experience can also affect later experiences in life. Low quality and low nutritious foods have many downstream effects, like a higher risk of diseases and a higher risk of obesity. In conclusion, food accessibility can be studied through the lens of technological mediation.

*Next Steps in Policy Making*

To be able to fix dysfunctional food accessibility actor-networks, one of the largest tools is policy. There is increasing amounts of evidence that policies may improve the food environment, diet, or obesity in the general population (Taber, 2016). As shown in the results, one of the barriers in policy making is the inaccurate definition of food deserts, which allows for inaccurate measurements of food access in downstream studies. Therefore, to combat this problem, food deserts must be accurately defined and take into account multiple factors, like transportation and implicit boundaries made by familiarity and social constructs, instead of just straight-line distance. One additional consideration that researchers must take into account in their studies is the scope of the data they are collecting. As much as possible, researchers should look at food access locally and not county or state-wide, allowing for a more comprehensive study of food access.

As these studies improve and areas of low food access are determined, that is where the action begins. Governments and companies must help increase the prevalence of healthy food vendors, like supermarkets and healthier restaurants, in areas of low food access. In addition, governments must work to reduce barriers to food access, like cost and transportation. Specifically, in urban areas, areas with low public transportation or private transportation, proves to be a high barrier to access to supermarkets and healthy food vendors. Therefore, increasing public transportation to these grocery stores is vital to increase food accessibility.

Additionally, the cost of food is an important factor influencing food access. Preliminary data from natural experiments also suggests that changes in the local food environment result in changes in people's diets, reducing the price of healthy foods can increase higher purchase rates of healthy foods and lower purchase rates of less healthy foods. The results also show how current efforts in supplementing income, like food stamps, for food fails to take into

consideration the high cost of healthy foods. Therefore, this effort to lower this barrier is two-fold: lower costs of healthy foods and sufficiently supplement income to help low-income families pay for better foods.

Finally, with food stamps, restrictions should be loosened to allow for more variety of foods to be purchased. At the current state, consumers using food stamps are not allowed to purchase prepared food. This assumes that these consumers have the ability and time to make their own food ("Supplemental…", n.d.). However, many families may not be able to do so and restricting these types of foods may lead to them buying alternatives like unhealthy fast food. Therefore, restrictions should be lifted to ensure that families have access to healthier foods that take less time and preparation.

These efforts will also help downstream health effects that food access has. Research indicates that consuming nonhydrogenated unsaturated fats, whole grains, fruits and vegetables, and omega-3 fatty acids, which are all considered healthy foods, can protect against coronary artery disease. Access to these foods is limited in low-income communities of color. Therefore, increasing the access to these foods will help decrease the risk of developing diseases and health issues.

**Conclusion and Next Steps**

There are limitations to this study. There are many "exceptions" to the groups that are mentioned in this thesis, like low-income, white groups and high-income, minority groups. However, for the scope of this paper, they will not be discussed. Another limitation is the scope of the thesis. This paper only covered the socio-economic and racial patterns that arise. However, more research can be done to look at the reasons why these patterns arise, like market research or zoning research. Finally, another limitation is the range of sources used. Only previous research

papers and case studies were used. However, there are many more types of sources that could've been utilized, like documentaries or interviews, and should be used in future work.

The research question was how does socioeconomic and racial inequality play a role in food access in the U.S., and how does society in the U.S. shape food access around these inequalities? Furthermore, it aimed to bring light to how current policies fail to address these inequalities. The results show that food access plays a large role in ANT. Supermarkets and food access lean towards (have a tighter connection with) the white, affluent communities rather than their minority, low-income counterparts, thus creating food deserts. Many barriers to access, like money and transportation, play a huge role in this network. Finally, the government fails to accurately and efficiently solve problems in this food access network.

In the same light, the results show how food access play a large role in political technologies and technological mediation. Food access increases the privilege of white, affluent communities and subsequently creates a different experience in how they interact with the world. Many barriers to food access are a result of such differences in privilege and food access continues to widen this gap between the white and affluent and the minorities and low income. In many problems in the U.S., there is a degree of intersectionality. Minority groups tend to be a majority of low-income households, and white people tend to make up a majority of the middle and upper class. Because of the strong residential segregation that is present in the US by income and race/ethnicity, the local food environment may also contribute to socioeconomic and racial/ethnic disparities in health (Moore, 2006). Therefore, in making better policies to increase food access, as minorities gets more access, so do low-income families.

There are many degrees of intersectionality of privilege that is present in the U.S. Future work can look into how different genders and ages are affected differently, alongside the patterns

mentioned here. Future work should also look at the socio-economic and racial patterns that arise with the placement of fast-food and healthy restaurants. This is a phenomenon that goes hand-in-hand with accessibility to healthy food grocers, but it was not discussed in the scope od this thesis. More research should be done to determine how food accessibility is being used as political technologies and how food accessibility plays a role in ANT. This research should be led by STS researchers. However, they should collaborate with different groups of people, like economists, sociologists, and health professionals to look at these problems.

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