

**Universiteit Utrecht** 



# **Bachelor Thesis**

**Resisting Food Deserts** 

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Resisting Food Deserts

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# 1. Introduction

Food deserts have gained considerable attention due to their notable widespread effects on the health of residents, and the urban environment. A food desert, as defined by the United States Department of Agriculture (USDA), is an area spanning one mile in diameter in an urban area, or 10 miles in a rural area, in which residents are unable to access healthy affordable foods (Larry, S. 2011). This is a big problem for low-income communities as they represent a considerable structural barrier in attaining a healthier lifestyle. These structural barriers shape the lives of those affected by food deserts, in the form of obstacles that constrain decision-making and access to necessary resources.

Many of these communities are affected by structural barriers, such as a lack of mobility, which in the short term is access to a car or bus route, and in the long term is being able to choose where to live. They also do not have access to resources to go to supermarkets, such as a car, or lack a disposable income to buy foods from corner stores, where prices of fresh foods are often higher due to increased relative costs of operation in urban areas. This, in turn, is due to the higher price of land, and increased insurance prices resulting from higher crime rates in the area (Zhang, M. and Gosh, D. 2015). Consequently, these communities are faced with higher rates of morbidity because there is an abundance of fast food chains and liquor stores in their area, filling in the gaps left vacant by the moving out of grocery stores and supermarkets (Alkon, A. H., & Norgaard, K. M. 2009; Apparicio, P, et al. 2007; Barthel, S. et al. 2013; D'Rozario, D. & Williams. J.D. 2005).

The structural barriers that communities face when living in food deserts can be framed within the theoretical background of structural violence, a term coined by Johan Galtung in 1969. Structural violence refers to violence enacted by/under an institution or higher power, that structurally disadvantages individuals by preventing them from meeting their basic needs (Galtung, J. 1969). These needs are not restricted to basic human needs, such as eating, drinking and sleeping, but extend further into social spheres to cover social and cultural needs as well. This concept can be applied to the food system, which encompasses the growth, processing, distribution and accessibility of food and food systems (Mares, T.M. 2014). Here, it can be seen that vulnerable communities, such as those characterized by low income, are being harmed by structural factors over which they have no immediate control. Those who suffer from the impacts of structural violence are not passive victims, since they are able to demonstrate agency by creating urban gardens providing them with access to the healthy foods they lack, as well as fostering community building, self-reliance and increasing their knowledge of healthy foods (Barthel, S. et al. 2013; Block, D.R., Chávez, N., Allen, E., & Ramirez, D. 2011; Eisenhauer, E. 2001).

Communities are able to demonstrate resistance to food deserts by displaying agency. This term refers to; "how people act on, connect to, and transform economic or social relations while expressing either support or dissent" (Counihan C. & Siniscalchi V. 2014: 8). Agency is therefore an individual's capacity to effect change around them.

A point rarely addressed in the literature concerning the topic of food is the impact of food deserts at the neighborhood level (Eisenhauer, E. 2001). This paper seeks to address this gap by investigating the case of South Los Angeles, through conducting interviews with organizations that aim to resist food deserts by creating edible gardens. This study will provide a comprehensive overview of the ways through which food deserts occur, who is affected by them and how, and the communities' resistance to food deserts through enacting their agency. Food deserts are an important problem that many communities face, and it is therefore important to better understand the structural factors that underlie their formation, as well as how people are impacted by them. Through a better understanding of these factors, more focused recommendations can be made to improve deprived areas.

The main research question this thesis will address is: To what extent can food deserts be considered an outcome of structural violence? Four sub-questions follow: 1) What are the characteristics of food deserts? 2) Which factors explain the presence of food deserts? 3) What are the consequences of food deserts? And 4) What are the responses to food deserts?

This thesis will address structural violence within the theoretical framework in order to address the main research question. Food deserts will be investigated at three levels. First, at the regional level. Second, at the global level, with a focus on the United States. Third, at the neighborhood level, with an emphasis on Los Angeles, California. A literature review and Geographical Information Systems (GIS) mapping software will be used, as well as semistructured interviews, in order to analyze the issue of food deserts within different frames.

# 2. Theoretical Framework

# 2.1 Food Deserts

The term 'food desert' was first used in Scotland in the early 1990s's, mostly in the context of lacking healthy foods in impoverished areas; this term was used to define areas characterized by inadequate access to food stores (Coyle, L. and Flowerdew, R. 2011). Food deserts now encompass much more than just inadequate access, given that the literature refers to a lack of "safe, culturally appropriate, nutritionally adequate food obtained through a sustainable food system that maximizes community self-reliance and social justice" (Hamm and Bellows 2003, p. 37).

The aim of dismantling food deserts is to achieve food security, which is the case in which all individuals have access to the factors stated above: "safe, culturally appropriate, nutritionally adequate, and sustainable food" (Hamm and Bellows 2003, p. 37).

The use of the term is therefore relatively new, and has since been more widely used within the context of a nutritional and health issue concerning urban landscapes and geographies. The link between health and environment is inseparable as individuals can only access resources that are made available to them by their environment. For this reason, the study of food deserts is often conducted within the scope of geography or health. Leete et al (2011) conceptualized the term 'food desert' into four key elements: 1) a geographic unit of analysis, 2) disadvantaged people, 3) availability, and 4) accessibility to healthy and affordable foods. These four elements represent some of the most important barriers faced by those living in food deserts. This definition is useful to demonstrate that the problem of food deserts is multifold: it has many different problems that are either symptoms or byproducts of being in a food desert, and these should be addressed as well.

# 2.2 How are food deserts measured?

When discussing the ways in which food deserts may occur and who they affect, their methods of measurement must also be examined. There seems to be no agreement on the best way to measure the extent of a food desert or decide the scope of an affected area (Apparicio, P., Cloutier, M., & Shearmur, R. 2007:2). Most of the methodology relevant to food deserts takes a one-dimensional approach when measuring the number of food stores in an area, for example, the ratio of stores per unit of population (Apparicio, P., Cloutier, M., & Shearmur, R. 2007:2);

Alkon, A. H., & Norgaard, K. M. 2009). Eisenhauer, E. 2001). When looking at food deserts, it is also important to keep in mind that different terms may be used as synonyms for each other when they are significantly different, for example: grocery stores, supermarkets, corner-stores, and express-stores all classify different types of stores and different sizes, but they all sell food goods which is why they may be used interchangeably within the literature.

A study conducted by Behjat, Amirmohsen, et al (2017) performed a systematic review of the ways in which food deserts are measured. The results from their analysis concluded that there are four main approached used to measure food deserts: 1) food availability, 2) geographic accessibility, 3) deprivation indicators, and 4) geographic units of analysis. The accessibility measure will yield different results compared to other measure, so this is important to control for as it will drastically alter what qualifies as a food desert (Apparicio, P., Cloutier, M., & Shearmur, R. 2007).

# 2.3 Structural Violence

Structural violence was a term first coined by Galtung in his work *Violence, Peace, and Peace* Research in 1969. This term does not have one universal definition. Structural violence generally refers to violence enacted by/under an institution or higher authority, that structurally disadvantages individuals by preventing them from meeting their basic needs (Galtung, 1969). These needs are not restricted to basic human life, such as eating, drinking and sleeping, but extend further into social spheres to cover social and cultural needs as well.

Structural violence is invisible, in the sense that it is not direct violence upon the body. This is not to say that it cannot result in physical harm, such as illness or injury, which may be indirect results of structural violence. Certain examples of structural violence can be seen in social inequality. By doing something as common as following the group norm, people are likely the perpetrator of some form of structural violence that affects another person or groups of persons who are not part of this system, or are systematically excluded from it. An example of this is racism; people that are not part of the dominant system are completely excluded from it and marginalized. This creates an experience of marginality or exclusion, that is systematic in its nature and application, and results in persistent disadvantages that affect all spheres of life. In his work on Suffering and Structural Violence (1996), Paul Farmer states that the victims of structural violence often have the shared experience of "occupying the bottom rung of the social ladder in inegalitarian societies" (Farmer, 1996: 263). His work on structural violence illuminates the ways in which poverty remains the primary cause of increasing morbidity and mortality as a consequence of inaccessibility to resources. Social inequality is characterized by the asymmetrical distribution of power (Farmer, 1996: 276). The basis for discrimination can be any upon distinguishing factor, be it social or biological, and this can become central to someone's suffering (Farmer, 1996: 278).

Since structural violence is invisible, it is difficult to immediately identify when it occurs, and by whom it is perpetrated. It is not unlikely that the same is classified as both victim and offender, though on different levels. A problem with identifying structural violence is that there is no "one person" who is held fully responsible, due to its systematic enactment, often by institutions of belief systems on mass scales. Structural violence is not defined or punishable by law. However, it is a deeply embedded social phenomenon that affects the lives of countless people, and the way they embody these lived experiences of discrimination and pain (Galtung, J. 1969).

# 3. Methodology

The topic of food networks, their accessibility, and their responses can be a difficult field to study and generalize. These topics have been investigated through conducting semi-structured interviews with people involved in the field, looking at Geographical Information Systems to identify food deserts in the United States as well as the layered factors that limit access, and exploring literature relevant to this topic. The use of these three approaches aims to help mitigate problems of fragmented understanding by creating a well-rounded image of the experiences of individuals resisting food deserts by participating in alternative foodscapes, which are the "places and space where food is acquired, and the institutional arrangements, cultural spaces, and discourses that mediate our relationship with our food" (MacKendrick, N., 2014). The use of spatial analysis of food deserts and an overview of past literature on the topic aims to structure this research within the larger body of work, while conducting interviews will provide a more qualitative understanding of food deserts on a neighborhood level.

# 3.1 Semi-structured interviews

The conduction of semi-structured interviews was done mostly by phone call, and if that was not a possibility, by email. The focus of this research was on the techniques of resistance used in the United States, which made face-to-face interviews impossible. The use of semistructured interviews was to guide the conversation to the specific framework of my research: their experiences of food deserts and/or efforts to resist them. This method of interviewing allows for more freedom to explore topics the interviewee presents within the conversation, which encourages two-way communication between interviewer and interviewee. This allows for elaboration of topics that may come up spontaneously and had not been considered previously, due to their lived-experience nature. This type of interview is precisely beneficial in this framework of research because conversation will ultimately remain very relevant to the research topic.

For each interview, a small set of open-ended questions was made in order to create a loose trajectory for the conversation. By doing this, main topics of interest could be addressed each time, which would create more focus within the interviews. Semi-structured interviews also allow for follow-up questions on certain topics, as well as conversations more adapted to the interviewee. The questions were all of very similar nature during each interview, with slight adjustments tailoring the questions to the individual's position, either within their workplace, the social movements they were a part of, or their personal experiences.

To get in contact with potential interview candidates, several online social platforms and websites were searched for contact information. Emails were sent out to each of these individuals or projects in order to explain the aim of my research and request their possible contribution. Each person contacted was offered the option to remain anonymous in the research if they so desired. The possibility of being in contact by phone call or by email was given, with a preference for phone calls as they are a more organic form of communication that facilitate more in-depth conversation.

A characteristic problem of doing interviews while abroad is the that of non-response. This issue was often encountered throughout the research process, and many follow-ups had to be made with the individuals that did agree to communicate. This problem reduces the number of interviews that are able to be conducted, which therefore considerably reduces the amount of

first-hand experience and explanation that may have enriched the discussions on the research topic.

# 3.2 Geographical Information Systems

Geographic Information Systems (GIS) is a tool that is designed to provide assistance in mapping, analyzing and displaying geographic data. This helps researchers to better visualize their content. The method allows researchers in urban geography to map their data in a way that allows for the overlap of different indicators to be evaluated. This data consists of quantitative data sets in different fields of research that have been compiled into an interactive map. It is therefore only appropriate to use for the visualization of the spread and density of the problem of food deserts, and the factors that demonstrate a stronger impact on food accessibility. With the use of this tool, an informative picture can be given of two things: 1) the prevalence of food deserts in the United States, as understood by the USDA from their official definition, and 2) the factors that are most detrimental to access of healthier foods.

GIS will be used here to map the areas considered to be food deserts, as defined by the United States Department of Agriculture (USDA). The mapping of food desert areas in the United States was started by First Lady Michelle Obama's initiative "Let's Move!", with the primary goal of ending childhood obesity. The "Food Environment Atlas" is the Geographic Information System that will be used to identify the different layers of effect that there are on impacted populations (Economic Research Service, USDA, Food Environment Atlas, 2017). This tool is the first of its kind in the United States on the national level, created in order to be better equipped when assessing those areas in most urgent need of access to healthy, sustainable, and culturally appropriate foods within reasonable distance.

# 3.2.1 Operationalization of variables

The Food Environment Atlas has more than 275 indicators that explain the food environment in the United States (Economic Research Service, USDA, Food Environment Atlas, 2017). These indicators are based on various datasets from the years 2010 and 2015. Data is collected at the county, state, and regional levels. Data from the county level is always used if available (Economic Research Service, USDA, Food Environment Atlas, 2017). The tree diagrams below illustrate the categorization of the data within the datasets. For example, the umbrella term of Access and Proximity to Grocery stores is comprised of overall, household resources, and demographics. These in turn, each have their own subsets that have been mapped. These are the maps used for research in this thesis. See appendix 1 for clarification on the definitions, and sources for the data used in the Food Environment Atlas.





Dataset 2: Socioeconomic characteristics



Dataset 3: Health and Physical Activity



# 3.3 Literature

Literature relevant to the topics addressed in this paper will be used as a source of secondary information. The use of scholarly articles already existing on this topic is a useful to identify areas of past investigation, and gaps in literature. Using already existing literature enables the evaluation of different works with respect to their methodologies and conclusions. These sources help ground this research in the larger body of work on the specific topic of food deserts and bottom-up acts of resistance to them. Evidence from other articles may provide alternative findings or arguments that stimulate other academics to fill remaining gaps in the literature.

The literature encountered during this research addressed a few core issues, such as: racialization of food systems and food deserts, spatial concentration of low-income communities and food deserts, and literature on community gardens as neighborhood cohesion/integration practices. One gap found concerned the combination of these two processes, namely, the use of urban agriculture/garden practices as a form of bottom-up activism in response to food deserts. The present research focus addresses this gap in the literature.

# 4. Sub-question 1: What are the characteristics of food deserts?

# 4.1 Where do food deserts occur?

Food deserts occur everywhere in the world and are not a phenomenon specific to a certain location. There is literature on the topic of food deserts and urban food insecurity from the United States, Canada, Scotland and South Africa (Battersby, J. 2012; Coyle, L. and Flowerdew, R. 2011; Apparicio, P, et al. 2007; Eisenhauer, E. 2001). Battersby (2012) states that in developing regions populations are quickly becoming predominantly urban, and therefore issues of urban food access are creating more food insecurity. Food deserts occur most frequently in urban areas, which is largely due to the fact that a higher percentage of the population resides in urban spaces (Battersby, J. 2012). However, the literature on food deserts

is quite concentrated on developed regions, resulting in a gap in the literature for less developed regions on the topic of food deserts (Battersby, J. 2012).

Lower-income individuals are more likely to move to urban areas in search of better employment opportunities (Battersby, J. 2012). This increases the proportion of low income residents in urban areas, consequently making suburban areas more attractive to middle-class individuals (Battersby, J. 2012). The spaces in which people live are important because they influence their access to resources (Barthel, Stephan, et al. 2013). If someone lives in an area devoid of medical clinics or facilities, their health will be impacted as a consequence. This same phenomenon is applicable to food deserts, where there are structural barriers that prevent certain demographics from accessing healthy foods, and these factors all contribute to lifestyles the inhabitants are able to lead. A structural barrier is part of the environment that someone inhabits and is thus beyond their control. These are 'barriers' because they, to some extent, prevent individuals or groups of people from accessing certain services. Examples of structural barriers that contribute to the vulnerability of individuals impacted by food deserts are socioeconomic status, uneven spatial distribution of (food) stores, poor infrastructure, demographic factors (low income), and low mobility (short and long term).





This map demonstrates that many counties have a low concentration of grocery stores and supermarkets. This is an important structural barrier to accessing food stores if the number of retailers is limited.

Food deserts are therefore generally characterized by a high proportion of low income residents in urban areas, and a low density of food retailers.

# 5. Sub-question 2: Which factors explain the presence of food deserts?

# **5.1** Common global factors that contribute to the presence of food deserts

There are many ways in which food deserts may occur, one of which is the changing structure of a neighborhood. There are many factors that may impact this, such as policy changes that concern the ability of certain stores to be located there, or zoning practices that affect where stores are permitted to locate according to the division of land and the permits given in relation to this. Fragmentation of land makes it harder for larger stores to access adjacent plots to build a bigger development. Finally, the demographic and purchasing power of the community in the neighborhood may play a role in a retailer's decision to locate in the relevant area.

The change in **size of food stores** is quite a significant factor. Stores have increasingly moved from smaller, family-owned businesses, to big 'superstores' or 'supermarkets'. With the change from small scale family-owned stores, to big corporate-managed supermarkets, the locations of these stores have changed due to restrictions on the access of land (Zhang and Gosh, 2016). Supermarkets are usually bigger in size, approximately 50,000 square feet, which is much larger than corner stores or family-owned stores (Zhang and Gosh, 2016). This is a heavy factor in why there are less stores that sell more fresh produce and healthy food alternatives in the city center. There are increasing amounts of "express" corner stores that mostly sell canned and preserved goods that have a long shelf-life (L., Coyle and R. Flowerdew 2011). Large stores move to the edge of the city where they have access to more surface area and encounter fewer zoning restrictions (Wrigley, N. 2002).



Figure 2: Households, no car & low access to store, 2010 (per housing unit, county level).

Having low access to a mode of transportation such as a car increases the difficulty of accessing a store because individuals may have to walk, or rely on possibly unreliable bus routes that they may not be able to afford.

**Lack of transportation** is another important factor. Low short-term mobility, in terms of not having reliable and affordable transportation, is a big factor in the formation of food deserts. There may be resources present, but if there is no way to access them they are essentially unable to be utilized. Not all households have access to a car, or to an affordable and reliable bus route. These factors mark the difference between difficult access to a supermarket and no access at all.

Finally, the **purchasing power** of a given population is important to consider because it is quite a big disincentive for retail stores to place themselves in areas where the population is not able to afford their products. Purchasing power is the value a given household gets out of its income, compared to the prices on the markets they interact with. Despite having the possible intention of maintaining low prices for low-income residents, the relative gap between these prices and incomes is still too large. Thus, for simple economic reasons, supermarkets move to the suburbs where the middle class resides, because the higher purchasing power enjoyed by the middle class offers more business incentive (Eisenhauer, E. 2001).



*Figure 3: Poverty rate, 2015 (percent of population with income under poverty threshold, county level).* 

This map shows that there are quite a few areas that qualify as having 16-20% of households characterized as under the poverty threshold. These areas generally overlap Figures 1 (Low access to store) and 2 (Low income and low access). This means there is a relationship between areas with high rates of poverty, and accessibility to food stores. Based on the map: the more poverty there is in an area, the less accessible retailers are. Poverty could decrease the ability to access a store because of the costs tied to getting to the store, such as fuel prices if they have a car, bus ticket prices, or other costs that may be involved.

# 5.2 Retail Redlining as a discriminatory spatial practice in the US

Food deserts do not occur in and of themselves; they are created by spatial practices that dictate where specific communities and retail stores are, and therefore who can access them. The practice of supermarket redlining can be defined as the "disinclination of chain supermarkets to locate or relocate existing stores from inner city impoverished neighborhoods to affluent suburbs" (Zhang and Ghosh, 2015: 79). The emphasis is placed on supermarket redlining because redlining in the housing market has been made illegal by the Fair Housing Act of 1968, which stipulated fair housing opportunities for everyone, regardless of race, ethnicity and other individual factors. However, redlining in retail is yet to be made illegal, although attempts are being made to change this (D'Rozario and Williams, 2005).

Other definitions are more specific in describing discrimination in supermarket redlining, such as "a spatially discriminatory practice among retailers, of not serving certain areas, based on their ethnic-minority composition, rather than on economic criteria, such as the potential profitability of operating in those areas" (D'Rozario and Williams, 2005: 175, emphasis mine). In essence, supermarket redlining is a spatially discriminatory practice which involves certain disincentives to invest in a specific area. This usually occurs in poor areas, and in the United States, it is not uncommon to see that poor areas are also the most racially and ethnically diverse areas, composed of many minority groups or groups of color.

As a consequence of supermarket redlining, there are less retail opportunities in poor urban areas. Disinvestment within a community creates the perception that the neighborhood is bad to invest in for different reasons, which therefore leads to the flight of business from that area. This results in the under serving of these areas. Two things can happen: the residents of these neighborhoods can leave to buy food from other retailers further away, which costs time and money for transportation, or smaller businesses settle in these areas and charge more for their products, which are often of a significantly lesser quality (D'Rozario and Williams, 2005).

Supermarkets or retail stores often cite reasons relating to the urban environment as being characteristically unfavorable. Some of these characteristics are the high cost of investing in the inner city, labor costs, insurance costs, level of stock loss due to perishability or theft, and high renting costs (Alwitt, L. F., & Donley, T. D., 1997; Zhang, M., & Ghosh, D., 2015). As retail stores have gotten bigger over time with the introduction of shopping malls and supermarkets instead of small family owned stores, they face problems with finding retail space in the urban environment, as they are typically 50,000 square feet (Zhang, M., & Ghosh, D., 2015). These retail stores have to compete for multiple plots of land that are adjacent to each other in order to build stores of their size. This is difficult to do in poor urban neighborhoods because of the fragmentation of property ownership, as well as zoning laws in these areas (Alwitt, L. F., & Donley, T. D., 1997).

Redlining contributes to the formation of food deserts because it creates cycles of under serving the area of disinvestment. Eisenhauer (2001) identifies certain factors in poor urban neighborhoods that contribute to this, such as pushing out of smaller stores (low profitability), pushing out of big stores (zoning- or discriminatory practices), the middle-class exodus, low

infrastructure, zoning practices, spatial entrapment, as well as the 'price wars' that occur when chain stores compete for market dominance in a given area. These are all factors that can create spaces in which food deserts exist. Factors such as spatial entrapment can lead to more unemployment which would reduce even more options to go outside their immediate vicinity to buy food products, thereby increasing their food insecurity (Zhang, M., & Ghosh, D. 2015). This poverty spiral creates further geographic isolation which worsens the symptoms of poverty these communities already exhibit (Eisenhauer 2001).

## 5.3 The shrinking middle class, and the middle-class exodus in the US

There are a multitude of spatial processes that may impact the location of food deserts. Two of these are the middle-class exodus and the general shrinking of the middle class in the US. The middle-class exodus refers to the flight of middle class communities from urban areas to suburban areas. This is usually the case because urban areas have now become over-crowded, polluted, and lack green spaces. This is a spatial process because it changes the composition of inner city areas as they are left with only the urban poor and the urban rich. This flight of the middle class means there are fewer resources needed that accommodate to an 'average' household. As a result, the retail stores have followed the move to suburban areas, to accommodate to their consumers that have a higher purchasing power, and to benefit from the more lenient land restrictions in suburban areas (Eisenhauer, E. 2001; Guthman, J., 2008).

The shrinking of the middle-class however, is a result of the increasing polarization between jobs and income (Foster, J.E. & Wolfson, M.C., 2009). This is quite a substantial problem because the middle class is the largest spending power in the economy. With their decrease in numbers, the incentive to locate a retail store in a given area is minimized because of a lack of consumers (Beach, C. M., and Levy, F., 1989). "They attribute the food desert phenomenon to [...] white flight and the net loss of supermarkets to suburbs with larger sites, fewer zoning impediments, and customers with higher purchasing power. To a lesser degree, they situate the food desert phenomenon within the neoliberal restructuring of urban space more broadly, which through disinvestment and endemic unemployment have regulated the inhabitants of some cities to intense poverty" (Guthman, J. 2008: 432).

Thus, the factors that help explain the presence of food deserts can be listed as the increasing size of food retailers, the lack of transportation for residents to access these retailers, lack of purchasing power, retail redlining, and the shrinking of the middle class combined with its exodus.

# 6. Sub-question 3: What are the consequences of food deserts?

# 6.1 Who does it affect and how are they affected?

There is a lot of literature globally, that focuses on who is most affected by food deserts. In this literature, the main assumption is that those most impacted have lower incomes and therefore less access. These are often minority communities or communities of color (Farmer, P., 1996; Barraclough, L. R., 2009; Wrigley, N., 2002; Coyle and Flowerdew, 2011; etc.). People with lower income are burdened by low mobility, both in the short term, through being restricted by transportation, such as an affordable and reliable bus route, or through restricted long-term mobility, for example in their choice of housing (Apparicio, P., Cloutier, M., & Shearmur, R. 2007: 2).

The individuals affected by these exclusive structures usually feel their quality of life is affected. Living in a food desert, quality of life is just one of many factors that suffers. Some other factors are 1) spatial entrapment, 2) decreasing health of the population, 3) second class citizenship, and 4) neighborhood deprivation (Galtung, J., 1969; Eisenhauer, E., 2001; Harvey, D., 2008; Barthel, S. et al, 2013). While there are more aspects than those stated here, these are the primary effects found in the literature on food deserts. Acknowledging that being in a food desert is not a unidimensional issue helps put into context the fact that it is linked to many other problems, rooted in the structures these individuals are embedded in.

There are certain types of individuals and families that are at higher risk to live in a food desert. Factors such as being a single parent, having many jobs, having a low-income, and living in an area with high crime rates all affect the purchasing power of the neighborhood This may create barriers to supermarkets locating themselves in these areas, when they could instead move to suburban areas for easier and more reliable profits (Eisenhauer, E., 2001). Generally vulnerable populations are therefore equally vulnerable to being in food deserts, and since people with low-income usually have few options for long-term mobility, they remain in these impoverished areas.

# 6.2 Morbidity rates and health in the U.S.

A large contributing factor to the increasing interest in food deserts is their effect on the health of the affected populations. Rates of morbidity are especially high in areas considered to be food deserts. Reasons for this trend are considered in literature that examines the general availability of fresh, healthy, culturally appropriate foods to low-income neighborhoods. The link between lack of access to healthy food and obesity as well as other health problems has been well documented (Guthman, J., 2008; Eisenhauer, E., 2001; Barthel, S. et al., 2013; Shannon, J., 2013; Camp, N.L., 2015). The high rates of morbidity in food deserts can be seen as a consequence of having reduced access to stores that offer fresh and healthy products.

Factors that aggravate the rising rates in morbidity are low access to supermarkets or healthy options of food and easy access to highly processed foods. The primary indicators that affect these environments are access to a car or reliable public transportation, low income, being in an urban neighborhood, and access to (good) healthcare. When combined, these factors create 'obesogenic' environments within food deserts that increase the rates of overall morbidity (Shannon, 2014: 249). Health is becoming a focal concern as morbidity rates are rising, and some of these diseases are diet-related, such as diabetes, obesity and cardiovascular problems, which stem from unhealthy fried food and high-carbohydrate diets (Eisenhauer, E. 2001).

The accessibility of healthy foods to populations is not only impacted by their purchasing power; it is directly altered by the different histories that shape the places people are able to live and have access to certain kinds of services (Alkon, A. H., & Norgaard, K. M., 2009). Work done by Alkon and Norgaard (2009) explores the ways in which certain under-privileged communities place their lack of access to healthy foods in relation to "historical processes institutional racism, racial identity formation and racialized geographies" (Alkon, A. H., & Norgaard, K. M., 2009: 290). These overarching factors need to be addressed in relation to the structures in which people fall ill, due to diet-related issues. In the communities their study examined, they found that in the West Oakland Food Cooperative (WOFC), there was one supermarket for a population of 40,000 people. A WOFC participant explains to them: "The

many corner stores sell generic canned goods. You have that option and then the fast food chains are the other option. So, what people have the option to buy is putting more and more chemicals and additives and hormones and all of these things into their bodies." (Alkon, A. H, & Norgaard, K. M., 2009: 295).

Having an unhealthy diet can be seen as a symptom of being in the structural environment of a food desert, where there is virtually no healthy food in the area. Because there are not many healthy food retailers, such as grocery stores and supermarkets, in low-income areas, fast food chains are easily able to operate within these neighborhoods and place themselves near schools and low income housing. In addition to an abundance of fast food chains, there is also often an abundance of liquor stores that further increases unhealthy lifestyles, due to such easy access to these retailers (Alkon, A. H, & Norgaard, K. M., 2009). Increased rates of diet-related illnesses can therefore be seen within a structure that may assist the adoption of unhealthy lifestyles.

There is a strong body of literature on alternative food movements, such as farmers markets and organic stores, and the types of consumers they cater to (Guthman, J., 2008; Camp, N.L., 2015). Julie Guthman (2008) argues that these alternative food institutions and their consumers believe the reason why people of color do not consume 'sustainable and organic healthy' products is because they are not educated on them. "Urban food security projects operate under the assumption that knowledge, access, and cost are the primary barriers to more healthful eating" (Guthman, J., 2008: 432). Again, this perception is based on the assumption that people affected by poor health or poor diet are operating from a place of unrestricted choice. This ignores the fact that individuals and communities are embedded in the structures they live in, and the reduction of urban amenities as well as their resources, for example transportation, affects their access (Eisenhauer, E., 2001). These people are seen through an individualistic lens and their behavior is seen as a personal choice rather than as a result of diminished access to affordable and healthier options.

Urban health is in decline, and it is no coincidence that the urban population suffers from higher rates of morbidity and mortality, compared to middle class and suburban dwellers (Eisenhauer, E., 2001). A study conducted by Cheadle et al. (1991) investigated the relationship between the amount of grocery stores in a given community, and their individual dietary practices. Their

study found that there was a relationship between the concentration of food stores, ethnicity and income of the community.



Figure 4: Adult diabetes rate, 2013 (per person over 20 years old, county level).



Figure 5: Adult obesity rate, 2013 (per person over 20 years old with  $BMI \ge 30 \text{ kg/m}^2$ , county level).

Figures 4 and 5 demonstrate the high rates of morbidity at the county level. When comparing these maps to each other, there are similarities that demonstrate that food deserts have high rates of diabetes and obesity. High rates of morbidity are seen in food deserts because fast food chains often put shops near housing units or near schools. These food options are faster and cheaper than having to go to a grocery store that is further than 1 mile away (in urban environments) (Alkon, A. H., & Norgaard, K. M. 2009).

The obesity and diabetes rates in adults provides some insight into how many unhealthy food retailers are likely available within their area, because rates of obesity are correlated with the availability of unhealthy options, which, in the context of food deserts, is linked to the unavailability of healthy options (Alkon, A. H., & Norgaard, K. M., 2009).

Figure 4 demonstrates that there is a high rate of diabetes, shown by the overwhelming amount of dark shades on the map. The percentages, from 11.1% to over 13%, represent the proportion of the county affected by diabetes. This means that over 1 in 10 residents suffers from diabetes, which is a disease with many accompanying symptoms that increase rates of illnesses. This map does not take into account individuals that are pre-diabetic, which could be a very high number due to the amount of sugar that is present in unhealthy foods (Camp, N.L., 2015).

Figure 5 demonstrates the high rate of obesity, shown by the overwhelming amount of dark orange and red on the map, which represents obesity percentages of 11.1% to over 13% of the county being obese. The map reflects the overall pattern of Figure 4 because obesity and diabetes are related diseases. A high rate of comorbidity is therefore very likely (Camp, N.L., 2015). This map only illustrates obesity rates, it does take into account the rate of overweight residents in the area, which could be a lot more pervasive.

#### 6.3 How are communities affected in Los Angeles?

Neighborhoods considered to be food deserts are affected by more things than just the lack of access to food stores. The ways these communities are affected are not limited to structural factors, such as the neighborhood disorganization and lack of resources. All of these factors infringe upon human rights in some way or another because they inhibit people's access to basic human needs.

All of the above factors can be seen in the cases of communities in Los Angeles. To demonstrate the factors they are affected by, Andrea, et al. (2010) investigated three communities in Los Angeles and found that in these three areas, of the 1,273 stores, less than 2% supermarkets, 30% fast food 22% were were restaurants. and were convenience/liquor/corner stores. This demonstrates the extent to which communities in Los Angeles are plagued by food deserts, and as a consequence, very low access to healthy foods which in turn leads to higher rates of morbidity. More than half of the adults are overweight or obese, and these rates are higher among low income African Americans and Latinos, which puts individuals at significantly more risk to contract diabetes and heart diseases (Andrea et al., 2010). The areas studied had populations that were predominantly non-White. The three communities in south and central areas of Los Angeles had a Latino population that represented 82% of inhabitants.

These three communities were found to be characterized by very high rates of poverty, with almost one third of the families being labelled as below the poverty threshold. The study used small group interviews to better understand the perceptions of structural barriers to accessing supermarkets or healthier foods. Their findings were that: 1) the participants have a limited food budget, and even if they want better quality food for their families they have to budget and settle for less healthy food. 2) supermarkets are too far away and most participants would have to walk over a mile each way, or take a grocery store shuttle which requires that they spend at least 40\$ at the supermarket for access. 3) there is a lot of violent crime in these communities so they do not feel safe shopping after a certain time. And 4) fast food is so easy to purchase as they are all over the neighborhoods, even located right outside of the school grounds (Andrea et al., 2010: 4).

The consequences of food deserts that have been demonstrated above are therefore increased rates of morbidity, spatial entrapment, feelings of inferiority and second-class citizenship, as well as high neighborhood deprivation. All of the above factors help our understanding of the ways in which these communities are discriminated against by an entire structure that creates environments like these and make it very difficult to act outside of their constraints. Structural violence can therefore be seen as a framework they are affected by, because they are constrained by structural barriers that stop them from accessing their basic needs. In particular, marginalization as a form of structural violence is relevant, as it "impedes mobilization by

keeping the minority on the outskirts" (Galtung, J., 1969). These individuals that suffer from poverty, illness, crime and discrimination, are being marginalized by having no way to leave the areas they live in due to their limited mobility. They are alienated from resources that could enhance their quality of life, resources that the middle class have readily available to them.

# 7. Sub-Question 4: What are the responses to food deserts?

The responses to food deserts are especially important because they provide insight into how people are able to demonstrate their agency against constraining structures that create barriers for them to access their needs.

# 7.1 The War Effort and Civic Agriculture

Civic agriculture is a practice that dates back to World War I under the terms of 'war gardens' or 'victory gardens'. It is "the embedding of local agricultural and food production in the community" (Lyson, 2005: 92). This can be done through many ways, but in the context of victory gardens, it is creating local gardens to increase food production and access in the community.



Image 1: Uncle Sam Says, Garden to cut down food costs, 1917. From the publication of the U.S. Government. National Archives Identifier: 5711623

This domestic participation during WWI and WWII was a patriotic practice aiming to support the domestic population during the war, since more materials were distributed to soldiers fighting abroad. An excerpt from the *ABC of Victory Gardens*, published in 1943 as an educational booklet to support patriotic gardening, demonstrates the propaganda that supported civic agriculture: "Our government urges you to raise food because in so doing you will save metal that would have been used for cans. You will save the fuel that would have been used to carry the food to your local store. You will save the space on the railroad trains that is so vitally needed for the transportation of ammunition and supplies for our armed forces. You will have the satisfaction of knowing that you are doing your part in helping to win the war" (Proskauer, 1943: 399).

This practice aimed to "ease the strain on the nation's food supply by raising vegetables" in their own gardens (Miller, C., 2003). The household duty of becoming self-sustaining was part of the individual's involvement in the war effort, so that more materials could be distributed and used in action (Miller, C. 2003). This demonstrates that civic agriculture has been used for a significant amount of time, as a legitimate way to increase the amount of healthy foods communities and individuals have access to.

# 7.2 Civic agriculture through time

This long history of civic agriculture within the American context can further be applied to a more recent understanding of community gardens, urban gardening/agriculture, and guerrilla gardening. Community gardens and urban gardening/agriculture can be used today as ways for people to supplement their low wages through making their own food, so they do not have to purchase food from stores (Barraclough, R., 2009: 172).

In this way, creating edible gardens can be essential to having enough food for survival in some communities. Civic agriculture today is more characterized by having food producers work together and commit to "developing and strengthening an economically, environmentally, and socially sustainable system of agriculture and food production that relies on local resources and serves local consumers" (Lyson, 2005: 92). This means civic agriculture aims to restore and strengthen an area by building a stronger community and by creating edible gardens to sustain mutually supportive social relationships. It is primarily about attempting to solve problems in a given area by addressing them through the promotion of strong local communities (Lyson, 2005).

## 7.3 Agency

The way people aim to enact change to their environments and positions is by exhibiting agency. A specification of agency in food is defined as: "how people act on, connect to, and transform economic or social relations while expressing either support or dissent" (Counihan C. & Siniscalchi V., 2014: 8). Agency is therefore someone's capacity to enable change around them. One way to demonstrate agency is through activism, in this context specifically, food

activism. This is defined as the "aim at the capitalist system of production, distribution, consumption and commercialization [of food]. We include in food activism people's discourses and actions to make the food system or parts of it more democratic, sustainable, healthy, ethical, culturally appropriate, and better in quality" (Counihan C. & Siniscalchi V., 2014: 6). Food activism therefore does not only include acts, but omissions of acts as well, as long as their aim is to contest the present hegemonic system of food. They are not defined by any one act or group; activism takes many shapes and forms and may be practiced by anyone that is willing to contest a space, practice, or system.

The creation of alternative foodscapes is a way in which people demonstrate their agency by changing their urban environments and taking back their 'right to the city' (Harvey, D., 2008). However, the degree to which you can express your agency may be constricted, for example, by possible negative consequences if you choose to openly contest certain spaces or practices. People must negotiate the extent to which they may express their agency, by creating a space of negotiation in which a compromise can be achieved, perhaps just by making a small change in the right direction (Mares, T. M., 2014). This emphasis on the impact and individual can have embodies the idea of one's 'right to the city'

Harvey (2008), in his work *Right to the City*, argues that the 'right to the city' is not an issue of access to services in its core, it is an issue of being able to exercise "collective power over the process of urbanization" (Harvey, D., 2008: 1). The right to the city, in his sense, is seen as a neglected human right. This right gives them access to claim power to shape their urban environments by redesigning the urban fabric. You can shape your own landscape. This is a right, and equally, you are shaped by your landscape. Humans change and are changed by the environment. By showing resistance to hegemonic systems in which the right to the city is confined in the hands of a small elite, the spaces in which activists live will better reflect their needs and further open their opportunities. The quality of urban life has become a commodity to be bought by those who can afford it, "the freedom of choice in the market is only available provided you have the money" (Harvey, D., 2008: 8).

In these ways, civic agriculture in the context of a food desert is a way in which residents may demonstrate their agency by shaping their environments to reflect their needs and wants. These acts of resistance take a step to address the asymmetry of power that overwhelms lower income communities. These areas are drowning in disproportionate rates of illness and mortality, as well as unemployment and crime (Eisenhauer, E., 2001). Agency is a frame in which we may examine the ways people attempt to break out of the structures they are in, and present alternative ways of life to address their specific needs.

#### 7.3.1 Resistance and Agency in Los Angeles

These movements, when specific to food structures, mostly aim to obtain food justice: "the concept that everyone deserves healthful food and that the benefits and risks associated with food should be shared fairly" (Andrea, et al., 2010: 2). Demonstrations of agency are important to make the food systems more democratic, sustainable, healthy, ethical, culturally appropriate, and better in quality (Mares, M., 2014).

There are a few ways communities or individuals are able to demonstrate resistance against the structures that constrain them. The creation or use of community gardens, guerrilla gardening and urban gardens are demonstrations of agency because these are a group's acts or participations that help change their environments to better reflect their needs. Agency is a term that "often refers to how people act on, connect to, and transform economic or social relations while expressing either support or dissent" (Mares, M., 2014: 8). Community gardens and urban gardens will be focused on as they create more long-lasting change at the neighborhood level, whereas guerrilla gardening, defined as a form of political gardening on land owned by the government or abandoned private spaces, is usually employed to make a political statement (Adams, D., Hardman, M., Larkham, P., 2015). The practice of guerrilla gardening is therefore more short-term activism to make a statement, whereas community gardens and urban gardens are and the community.

The case of South Central in Los Angeles demonstrates how community gardens are able to provide community and health benefits. South Central is the district in Los Angeles in which the South Central Farmers started a big community garden in 1992. This garden was one of the biggest urban community gardens in the United States at the time, with 14 acres of land (Irazábal, C., and Punja, A., 2009). This piece of land benefitted over 360 families that were indigenous Mexican, from central America, and African American (Irazábal, C., and Punja, A., 2009: 244). These gardens are used to 1) supplement poverty wages, 2) continue indigenous and holistic care practices (especially important because a large portion of residents do not have health insurance), 3) create safe spaces for children to play, and 4) create more urban

green spaces which are in drastic short supply (Barraclough, R., 2009). The use of the garden spaces to supplement poverty wages is especially important, given that "overall employment increased by 2% in the 1990s, working poverty increased by 34%" (Barraclough, R., 2009: 172). This puts back into perspective that having employment does not mean that these families or individuals are not under the poverty line.

This area was a rare inner-city green space where the families were able to enjoy food sovereignty and create a strong sense of community building, self-reliance and community mobilization for the bigger cause of food security (Irazábal, C., and Punja, A., 2009: 244). They were a grassroots organization that fostered a space for collective resistance to structural barriers they face to obtain these goods/services. There are many benefits to creating a communal garden space, some of which are increased self-reliance, access to culturally appropriate and healthy foods, learning how to grow fruit and vegetables, increasing urban green spaces and therefore restoring deteriorated urban areas, and greener neighborhoods may even help reduce crime rates (Kuo, F.E., William, C.S., 2001).

Engaging in any of the above actions has many benefits to the individual as well as the surrounding neighborhood. These are important ways people demonstrate their ability to enact change on their environments; to reflect their resistance to a structure that does not provide for them. This demonstrates the ways in which community gardens in South Central were able to successfully cater to hundreds of individuals and provide them access to their basic need of healthy food, as well as empower them to demonstrate their agency and mobilize for a bigger cause.

# 7.3.2 Interviews

Interviews were used as a method of gaining more understanding on the resistance of food deserts in different cases. The Ron Finley Project, and the Los Angeles Community Garden Council (LACGC) were interviewed in order to better comprehend the problems that communities in Los Angeles face. The use of semi-structured interviews was to guide the conversation to the specific framework of this research: their experiences of food deserts and/or efforts to resist them. Of the ten organizations or individuals contacted, two agreed to be

interviewed, Ron Finley Project and Los Angeles Community Garden Council. This is a 20% response rate.

**Ron Finley Project** 



Skalij, Wally. "The Backyard Includes an Olympic-Sized Swimming Pool Full of Plants and Murals by One of Finley's Sons." Los Angeles Times.

The Ron Finley Project is based in South Central, Los Angeles, California, and since conception has reached a wide audience through TedTalks and media coverage. The aim of the project is to "transform food deserts to food forests" by creating edible urban gardens (*The Ron* 

Finley Project).

Ashleigh Carter is the Deputy Anarchist at the Ron Finley project, and she agreed to be interviewed over the phone. The key concepts during the interview discussed the aims of the project combating in food deserts, the



"Ron Finley Sidewalk Garden, before and after." GrowWNY, 24 June 2013, www.growwny.org/wnyea/growing/food-for-thought/.

appropriate term for their mission, and the benefits of their project. The label of her position *Deputy Anarchist* is used to reframe the conversation about food deserts and their mission: it aims to make people consider the focus of the project on dismantling harmful structures.

The project's aims are to combat the lack of healthy food in South Central by creating their own avenues to healthy and sustainable foods, that empower people to dismantle disruptive systems and erect new ones. The project organizes and facilitates 'dig ins' in people's yards or the areas in front of their houses on the sidewalk to create edible gardens. A 'dig in' is an event where the Ron Finley Project with the help of a group of volunteers, dig the plot of land the resident wants to transform into an edible garden. The strip of land between the parkway and the curb is owned by the city but is the tenant's responsibility to upkeep. When Ron Finley planted food on this strip of land he was warned by the police and he was cited for planting without permission. This was finally made legal when he petitioned against the city.

The findings of this interview presented the following points: there are structures that aim to prevent the growing of food by low income community residents, seen by the police citation for the growing of food, the term guerrilla gardening is not appropriate for community building, and projects like this one are legitimate ways to promote sustainable food systems and self-empowerment.

The term guerrilla gardening is not an accurate description of their mission because it implies a style of fighting, it is impulsive and has little strategy. They change the environment and then leave. The term 'gangsta gardening' is more appropriate. This term was created to rebrand the effort, and affect change to the word 'gangsta' in a culture where it means misogyny and the destruction of life. Changing the connotations of the word allows the meaning to change, implying that 'gangsta' is growing your own food, creating life, becoming a self-sustaining entrepreneur. This form of gardening is a long-term effort that is sustained by those who commit to the idea of growing the neighborhood.

Finally, the benefits of the project are that an initiative like this one can create awareness of the need for sustainable food systems. It promotes community engagement, provides alternatives to criminal pathways, develops the neighborhood by creating a vibrant green environment, and creates a 'sub-economy' in which residents are able to share and trade goods with each other

from their gardens. All of these factors form a direct attack on food deserts and their symptoms on the community.

The findings of this interview are summarized in the diagram below, and cover three main topics that were addressed to explain the aims of creating edible gardens. The main topics are briefly explained below their sub-headers.

Diagram 1: Ron Finley Project Interview main findings



#### Los Angeles Community Garden Council (LACGC)

The LACGC is an organization that oversees 42 community gardens in the Los Angeles county area. They offer: 1) Traditional community gardens where people rent a plot to grow their own fresh produce, 2) Educational gardens where they teach gardening, landscaping, nutrition and cooking, and 3) Urban farms where volunteers grow vegetables for local markets and people in need (LACGC).

Diana Campos, the Executive Assistant for LACGC agreed to be interviewed over e-mail. The issues addressed were more structural, since working within an organization that oversees community gardens provides insight into what common issues are with the projects. The main topics raised were the increasing difficulties with prices of water, no access to fresh food, unaffordable land plots, low access to teaching resources for gardening, and little surveillance of the garden areas that are affected by theft.

Thus, the findings demonstrate that the most common issues that present barriers to accessing fresh food from community gardens are the increasing price of water, unaffordable land plots, lack of proper training to be able to train others to grow food, and food theft. These are all issues that have been similarly addressed in literature (Alkon, A.H. & Norgaard, K.M., 2009; Barraclough, L.R., 2009; Eisenhauer, E., 2001), which demonstrates that these are structural problems that are commonly shared across initiatives. These issues of increasing prices of water and unaffordable land plots are structural because they are not able to be changed directly by the community. These are factors that are changing, influenced by yet other factors such as the increasing urban population and higher need for finite resources, such as land and water. Lack of proper training and theft are issues that affect the viability of community garden projects, they are influenced by the inability to obtain land, and therefore the inability to learn how to grow food. Theft however, could be due to the need for healthy food, but no legitimate way to access it, for example through purchasing it, therefore people may steal either the equipment to grow food, or the food itself in an attempt to obtain fruits and vegetables. At least half of the community gardens are in food desert areas, and with the increasing prices of basic resources, low income communities are more and more affected by difficult conditions of life.

The findings of this interview are summarized in the diagram below, and cover four main topics that were addressed as issues to creating and maintaining community gardens. All are briefly explained below their sub-headers.





# 8. Discussion

## 8.1 Findings

The general findings of this thesis validate the ones found in the existing literature. The structural factors that create the biggest obstacles to accessing healthy foods are the structural barriers such as lack of stores, lack of transportation, and lack of purchasing power that constrain the ability to access healthy foods (Alkon, A.H. & Norgaard, K.M., 2009; Andrea, M.A. et al., 2010; Apparicio, P, et al., 2007; Barthel, S. et al., 2013; Battersby, J., 2012; Eisenhauer, E., 2001; Guthman, J., 2008). The fact that the literature arrives at conclusions on similar factors suggests that the barriers to accessing healthy foods are largely the same in most

places investigated. The potential implications of this is that solutions to food deserts could be generalized to most places that suffer from the same structural problems if the context is similar enough.

# 8.2 Literature

A potential limitation in some of the literature on this topic has been addressed by Behjat, et al. (2017) as well as Apparicio, P., Cloutier, M., and Shearmur, R. (2007). Their works address the fact that most studies on food deserts only use one form of measurement, usually a ratio per area or per population. This is relatively simplistic to measure a phenomenon this complicated. A multitude of variables is needed in order to measure more aspects of the definition provided by Leete et al (2011) on the four central elements: 1) geographic unit of analysis, 2) disadvantaged people, 3) availability, and 4) accessibility of healthy and affordable foods. Because food deserts have so many interlinked factors, it is difficult to be able to investigate each facet of the problem, this is no doubt why so many studies provide a focused analysis of accessibility in simpler terms. However, most of them do address this as a limitation in their studies.

In all of the literature used for this paper, very few addressed food deserts and their implications on the individual level. Interviews or other research methods focusing on the community or individual level would be beneficial to understand how the lack of access affects people's daily lives, and to better understand how they cope. This kind of analysis would enable a more thorough understanding of all the dimensions that affect people living in food deserts, such as their housing situation, lack of mobility, low access to healthcare and unemployment.

This research addresses the need for different techniques of investigation through the use of past literature, GIS mapping as well as interviews. These three methods of investigation enable an overview of the global context, the context in the United States, and then a more focused approach on the neighborhood level.

# 8.3 Geographic Information Systems

In this compilation of GIS data, there are a few factors that could be seen as limitations with its formatting. Quite a few of these datasets are from 2010 only and were not updated thereafter

with data from 2015 or even more recent information. Urban environments can change rather rapidly, and in the current year 2018 there might be a considerable amount of information that no longer reflects the reality of those environments. This could be a potential drawback in this form of research, as large data sets can be very valuable for comparison over time, but they take a substantial amount of preparation and analysis, usually meaning that they are somewhat outdated once published.

The categories of classification are also not consistent between subsets of information. This may be an inherent problem with using data from different counties, states and regions as they might classify their information differently and will therefore cause gaps in information valuable for comparison. The map also does not allow for the overlapping of different variables to see the relationship between them, which could have been beneficial in better understanding how factors influence each other, for example, the intersection of low income and no car.

Geographical Information Systems are a valuable tool to visualize and compare data from different official sources. The Food Environment Atlas still provides a compilation of information not before seen on a mapping tool of this scale. This permits centralized organization of data that is accessible and comprehensible. This allows persons using this tool to quickly identify the most problematic factors that influence lifestyle, as well as the consequences on health, all based on spatial overview of these indicators. However, this tool is more descriptive than analytical, therefore may best be used to identify problematic areas, which can then be investigated at a more specific level of analysis.

# 9. Conclusion

The aim of this thesis was to address the main research question: To what extent can food deserts be considered as an outcome of structural violence? This generated four sub-questions: 1) What are the characteristics of food deserts? 2) Which factors explain the presence of food deserts? 3) What are the consequences of food deserts? And 4) what are the responses to food deserts?

Food deserts are areas spanning one mile in diameter in an urban area, or ten miles in rural areas, in which residents are unable to access affordable healthy foods, and/or food stores such

as supermarkets or grocery stores. Food deserts usually form in urban areas characterized by poverty and high rates of morbidity.

Factors that explain the occurrence of food deserts are the increasing size of food retail stores because they are not able to create big stores in crowded inner-city areas, lack of transportation means, low purchasing power, retail redlining practices, land zoning and fragmentation, and the shrinking and exodus of the middle class. These factors contribute to the creation of food deserts because they result in areas devoid of food stores and create structural barriers to accessing healthier lifestyles.

The consequences of food deserts are increasing rates of morbidity in areas affected by low access to healthy food, as seen through higher rates of obesity, diabetes and heart disease. These factors are generally agreed upon by the literature, in addition to no evidence being found to argue otherwise.

Some communities affected by food deserts demonstrate resistance to their deprived environment by changing their urban food environments through the creation of edible gardens. These gardens are used to supplement poverty wages, continue indigenous and holistic care practices (especially important because a large portion of residents do not have health insurance), create safe spaces for children to play, and create more urban green spaces which are in drastic short supply. They also mobilize people to increase self-reliance by making them more independent, and build stronger communities creating common goals to resist structural barriers and restore their neighborhoods.

Having addressed all of the factors above by researching existing literature, using GIS mapping and conducting interviews, it can be concluded that food deserts may be considered an outcome of structural violence. These communities are affected by structural barriers that result in deprived neighborhoods. Food deserts can therefore be seen as a result of structural violence. This violence is perpetrated by/under an institution or higher power, that structurally disadvantages individuals by preventing them from meeting their basic needs. The actors that contribute to the creation of food deserts are numerous, and difficult to hold accountable because they are often very large institutions/organizations or sectors, such as the housing sector and retail organizations. In addition, there may be no *intention* to create deprived areas, but yet, food deserts are a result of their actions. Healthy and nutritious food is considered a basic human right. However, these communities do not have enough resources, such as adequate income and access to transportation, to be able to fulfill these needs. These structural barriers are representative of the structural violence that is enacted onto these communities: they do not have equal access to the ability to have healthy lifestyles. The consequences of these barriers are seen through the higher rates of morbidity in these areas. Vulnerable communities, such as those impacted by low income, are being harmed by structural factors that they are not able to directly change. However, those who suffer from the impacts of structural violence are not passive victims, they are able to demonstrate their agency by creating urban gardens that provide them access to the healthy foods they lack, as well as foster community building, self-reliance and increase their knowledge of healthy foods.

Food deserts are an important problem that many communities face, and it is therefore important to better understand the structural factors that impact their creation, as well as how people are impacted by them. Hopefully through a better understanding of these factors, more recommendations can be made to restore deprived areas.

# 9.1 Recommendations

Further research could focus more on an in-depth analysis of the neighborhood experiences of living in a food desert. This would enable a more in-depth understanding of the ways in which individuals experience living in a food desert. More specifically, it should investigate how the strain of being in a food desert may impact an individual's family, and others close to them, while also examining the ways they attempt to mitigate the effects of living in a food desert.

An important factor that needs to be addressed is the need for nearby affordable healthy stores that low-income communities are able to access. By addressing the lack of stores, communities in food deserts may be able address their health issues as well as create stronger community ties. The government could do so by creating policies that repair or address the fact that zoning practices and the fragmentation of land result in areas deprived of healthy foods. From a business perspective, increased incentives for food retailers to locate in urban areas are needed to restore the balance in accessibility to healthy food.

In addition to this, providing communities in food deserts with more plots of land on which to grow their own food is important. The many benefits of having green urban spaces are important to take into consideration, especially for urban planners, as they have a positive effect on other factors such as health, crime deterrence and community building (Alkon, A.H. & Norgaard, K.M., 2009; Barraclough, L.R., 2009; Eisenhauer, E., 2001). These needs could be addressed at the county level, where local administration can manage neighborhood needs and provide tools for residents to participate in the transformation of their community.

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# **11.** Appendices

# **11.1** Appendix 1: GIS variable definitions from the Economic Research Service

# 11.1.1 Population, low access to store, 2015

*Definition:* Number of people in a county living more than 1 mile from a supermarket or large grocery store if in an urban area, or more than 10 miles from a supermarket or large grocery store if in a rural area.

Available years: 2015

# Level of geography: County

*Data sources:* Data are from the 2017 report, Low-Income and Low-Supermarket-Access Census Tracts, 2010-2015 and the 2012 report, Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data. In each of these reports, a directory of supermarkets and large grocery stores authorized to accept SNAP benefits was merged with Trade Dimensions' TDLinx directory of stores within the United States, including Alaska and Hawaii, for the years 2010 and 2015. Stores met the definition of a supermarket or large grocery store if they reported at least \$2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These population data were aerially allocated down to 1/2-kilometer-square grids across the United States. For each 1/2-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's Urban Area definition.

### 11.1.2 Low income & low access to store, 2015

*Definition:* Number of people in a county with low income and living more than 1 mile from a supermarket or large grocery store if in an urban area, or more than 10 miles from a supermarket or large grocery store if in a rural area.

Available years: 2015

# Level of geography: County

*Data sources:* Data are from the 2017 report, Low-Income and Low-Supermarket-Access Census Tracts, 2010-2015 and the 2012 report, Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data. In each of these reports, a directory of supermarkets and large grocery stores authorized to accept SNAP benefits was merged with Trade Dimensions' TDLinx directory of stores within the United States, including Alaska and Hawaii, for the years 2010 and 2015. Stores met the definition of a supermarket or large grocery store if they reported at least \$2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-

usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing, while data on income in 2010 are drawn at the block group-level from the 2006-10 American Community Survey, and data on income in 2015 are drawn from the 2010-14 American Community Survey. These population data were aerially allocated down to 1/2-kilometer-square grids across the United States. For each 1/2-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's Urban Area definition. Low-income is defined as annual family income of less than or equal to 200 percent of the Federal poverty threshold based on family size.

# 11.1.3 Grocery stores, 2014

Definition: The number of supermarkets and grocery stores in the county.

# Available years: 2014

# Level of geography: County

*Data sources:* Store data are from the U.S. Census Bureau, County Business Patterns. Grocery stores (defined by North American Industry Classification System (NAICS) code 445110) include establishments generally known as supermarkets and smaller grocery stores primarily engaged in retailing a general line of food, such as canned and frozen foods; fresh fruits and vegetables; and fresh and prepared meats, fish, and poultry. Included in this industry are delicatessen-type establishments primarily engaged in retailing a general line of food. Convenience stores, with or without gasoline sales, are excluded. Large general merchandise stores that also retail food, such as supercenters and warehouse club stores, are excluded.

### **11.1.4** Poverty rate, 2015

*Definition:* Percent of the county population living in families with income below the poverty threshold; poverty status thresholds vary by family size, number of children, and age of householder. If a family pre-tax money income is less than the dollar value of their threshold, then that family and every individual in it are considered to be poor. For people not living in families, poverty status is determined by comparing the individual income to his or her poverty threshold.

Available years: 2015

*Level of geography:* County

*Data sources:* USDA Economic Research Service, Atlas of Rural and Small-Town America, using data from the U.S. Census Bureau, Small Area Income and Poverty Estimates.

### 11.1.5 Households, no car & low access to store, 2010

*Definition:* Number of housing units in a county without a car and more than 1 mile from a supermarket or large grocery store.

Available years: 2010

*Level of geography:* County

Data sources: Data are from the 2017 report, Low-Income and Low-Supermarket-Access Census Tracts, 2010-2015 and the 2012 report, Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data. In each of these reports, a directory of supermarkets and large grocery stores authorized to accept SNAP benefits was merged with Trade Dimensions' TDLinx directory of stores within the United States, including Alaska and Hawaii, for the years 2010 and 2015. Stores met the definition of a supermarket or large grocery store if they reported at least \$2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GISusable format by geocoding the street address into store-point locations. Data on 2010 households are drawn at the block group-level from the 2006-10 American Community Survey, and data on 2015 households are drawn at the block group-level from the 2010-14 American Community Survey. These data were first allocated to blocks and then aerially allocated down to 1/2-kilometersquare grids across the United States. For each 1/2-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Vehicle access was measured based on an American Community Survey question that asks respondents whether the household has access to a car, truck or van, of 1-ton capacity or less.

# 11.1.6 Adult diabetes rate, 2013

*Definition:* Estimates of the age-adjusted percentage of persons age 20 and older with diabetes (gestational diabetes excluded).

### Available years: 2013

# Level of geography: County

*Data sources:* 2008 estimates are from the Centers for Disease Control and Prevention (CDC). CDC used data from the Behavioral Risk Factor Surveillance System (BRFSS) for 2008, 2009, and2010 and from the U.S. Census Bureau. See Behavioral Risk Factor Surveillance System (BRFSS)for a description of themethodology.2013estimates are from CDC Division of Diabetes Translation website.

### 11.1.7 Adult obesity rate, 2013

*Definition:* Estimates of the age-adjusted percentage of persons age 20 and older who are obese, where obesity is a Body Mass Index (BMI) greater than or equal to 30 kilograms per meters squared.

Available years: 2013

### Level of geography: County

*Data sources:* 2008 estimates are from the Centers for Disease Control and Prevention (CDC). CDC used data from the Behavioral Risk Factor Surveillance System (BRFSS) for 2008, 2009, and2010 and from the U.S. Census Bureau. See Behavioral Risk Factor Surveillance System (BRFSS)for a description of themethodology.2013estimates are from CDC Division of Diabetes Translation website.

# **11.2 Appendix 2: Interview questions**

- 1. What is your full name, and position within this project?
- 2. What does this role entail?
- 3. What are the main issues in the community that community gardens try to address?
- 4. Is there an issue of low accessibility to healthy foods in the areas that have communal gardens? Can they be described as food deserts? If so, how do the gardens have an impact on this problem, or the people in difficulty
- 5. What are the main efforts the project does that contribute to this?
- 6. What is your experience with community gardens? Have you also had experience with your own garden (specifically in order to grow food)?
- 7. What are the goals of the community garden?
- 8. Are there any issues that create barriers in the growth of this project?