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Thinking Outside the Box:
Using Alternative Food Networks to Alleviate Food Insecurity in New York City

A Thesis in Economics

by

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Abstract

Traditional solutions for food insecurity, such as food pantries, soup kitchens and SNAP benefits have helped make significant progress towards reducing and eliminating the problem, however there are still gaps left by these programs, especially in New York City. Oftentimes, low-income and minority communities are left with limited access to affordable, nutritious food choices, leaving them vulnerable to food insecurity. To alleviate this problem, alternative food sources, such as community gardens, community supported agriculture drop-offs (CSA drop-offs), food cooperatives and Greenmarkets can be used to provide affordable produce to these underserved communities and help fill in the gaps that are often left by traditional solutions. Individually, these alternative food sources cannot fulfill the needs of a food insecure community, so a network must be developed so that they can better support the communities they are located in. By creating alternative food networks (AFNs), several alternative food sources can be used to provide fresh food to the communities they serve year round. Geospatial data of New York City shows that alternative food sources tend to be clumped together, and are often found in lower-income and predominantly minority communities, so they are already in some of the communities that have the greatest need of their services. However, they are not found in all food-insecure communities, so their reach needs to be expanded so that they can have a greater impact on alleviating food insecurity. Federal and municipal policies are also in place that can support these alternative food sources, however, there are some important gaps. The One NYC plan, a master plan for making New York City more just, equitable and sustainable, omits alternative food sources as a way to not only

reduce food insecurity but also increase green spaces and develop healthier neighborhoods. Despite the overcrowding and limited access to land, vacant lots are disproportionately located in low-income communities, and they can be used as places to build alternative sources. To support this vision of turning vacant lots into a productive part of a community, there are resources available to help the communities that these lots are located in to help them reclaim the land. By utilizing already available resources, as well as including AFNs in city planning, significant steps can be taken to reduce food insecurity in New York City.

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Chapter 1: Alternative Food Networks and Food Insecurity in New York City

1.1 Introduction

Perhaps a result of the constant search for space, New York City residents have been able to convert seemingly miniscule spaces into gardens, overflowing with vegetation. These gardens not only serve as green spaces in a concrete landscape, but also as food sources and community gathering spaces. Tended to by those living around them, these gardens are not only important community hubs, but also a part of a much larger discussion on food insecurity in New York City. The reason I chose to take a deeper look at these gardens is from my personal experience working with Times Up! New York, an organization that encourages community involvement in the gardens located in the Lower East Side and Alphabet City. Through this experience, I was exposed to the diversity of gardens, as well as their many purposes within a community after organizing community work days and interacting with the volunteers in various gardens. After learning about community gardens and how important they are to communities, I wanted to learn more about the potential ways community gardens can be used as solutions to food insecurity in New York City.

Through this project, I have sought to develop a deeper understanding of the role that food-producing community gardens have as potential food sources in New York City. Throughout this process, I have also learned about the drawbacks of community gardens, and ways that other alternative food solutions can be used to fill in for those limitations. I chose to include alternative food sources beyond community gardens so that the alternative food sources used in this project are able to provide a reliable source of

food to lower-income communities year-round, rather than be limited by the growing season and time limitations of local gardeners. Other alternative food systems can be used in conjunction with community gardens to supplement them, creating what is known as alternative food network. Individually, community gardens provide some fresh produce to those willing to invest the time and resources in to their gardens, but alone cannot solve food insecurity in communities. By piecing together different activities: CSA drop-offs, food cooperatives, farmers markets and community gardens, one might be able to think about the effects and effectiveness of an "alternative food network", a collection of these alternative food sources that can be brought together to provide year-round, affordable, healthful food to New York City residents without regard to income or race. This is why it is important to examine alternative food sources as a network rather than singular sources, so the food supplied by alternative food networks can have a meaningful impact on food insecurity in New York City, rather than be viewed as a wealthy, "yuppie" activity that has grown in popularity in the last few years.

In order to better understand the communities that alternative food networks serve, I map their location against the demographic and socioeconomic profiles of New York City neighborhoods to examine geospatial relationships. The benefits and drawbacks of each of these alternative food sources will be examined, as well as how they can be brought together as a network. In chapter 3, I analyze the policies supporting or discouraging alternative food networks and present recommendations as to how to bolster and improve current policies. Ideas for new policies utilizing current resources and space will also be presented, as the goal of this project is to better understand the role

of alternative food networks as a solution to in food insecurity, as well as to offer suggestions as to how they can be expanded using the resources that are currently available.

New York City is one of the richest cities in the world. Despite the high concentration of income and wealth found in New York City, 19.6% of the population lives in poverty as of 2017 ("American Fact Finder, New York city, New York", 2010) and 14.9% of those living in the city have at least some level of food insecurity (Turk 2018). Food insecurity is the highest in Brooklyn, where 18.2% of the population experiences some level of food insecurity, and in the Bronx, where 16.1% of the population does (Turk 2018). Nationally, about 12.3% of households are food insecure (DePasquale et al. 2018). Despite having an above-average household income, New York City also has an above-average rate of food insecurity. Roughly 20% of the population receives SNAP benefits each month (Turk 2018). This concentration of wealth and resources, in New York City makes it clear that food insecurity is the result of a lack of access and poor distribution, not a lack of resources or wealth.

Clearly this problem is complex, involving many different actors across federal, state and city agencies, nonprofit organizations, businesses, and communities that each have their own ideas about how to solve this problem. Public schools focus on free lunch programs, food pantries focus on redistributing donated food, while others seek to make agriculture more sustainable and productive at the same time. This is a problem that requires many hands, and many different types of solutions, however, I believe one

important possibility is being left off the table despite its great potential: maintaining and expanding alternative food networks in New York City.

In this study, I define alternative food sources as Community Supported Agriculture drop-off points (CSAs), food cooperatives, food producing community gardens, and farmers markets that accept SNAP benefits. I concentrate on these because the hold the possibility of inclusivity, and targeted fulfilment of dietary needs. Alternative food networks are presented as a potential solution as they can be inclusive of all income levels and dietary needs. They also have intangible benefits such as increased feelings of satisfaction and feeling more connected with ones' community (Waliczek 206). In addition, alternative food networks are linked to higher food security through providing access to more affordable and fresh food (Forssell & Lankoski 2015). Those consumers and participants in alternative food networks are also making a conscious choice to participate, investing their time, financial resources or both into the success of the garden, farmers market, food cooperative or community supported agriculture organization.

1.2 Role of Alternative Food Networks

As of 2018, there are 3.1 million immigrants living in New York City; immigrants are almost 38% of the population and 45% of the workforce (Mostofi 2018). With this vast diversity, access to culturally appropriate food is important so that people can cook what is familiar and comfortable to them; if the food available is not culturally appropriate than it does not solve problems with food insecurity. The inclusion of culturally appropriate food has never been more important, as the immigrant population is the largest that it has ever been in New York City, and it is essential that they are able

to consume an appropriate diet (Mostofi 2018). Not all immigrants are citizens, as 10.9% of the population are Green Card holders or have a status other than undocumented or naturalized citizen, and 6.3% of the population is believed to be undocumented (Mostofi 2018). Those who are not citizens, even if they are green card holders or have proper documentation are not eligible for SNAP benefits (Mostofi 2018).

Another benefit to alternative food networks is the diversity in options provided, which can help improve accessibility across all income levels. Farmers markets that accept SNAP benefits can be more easily accessed by those at lower income levels, as those in poverty can afford to shop at the markets using their subsidies. In addition, it is common that the acceptance of SNAP benefits is paired with other programs that encourage and further subsidize spending SNAP benefits on fresh produce, food cooperatives allow for produce to be sold at prices lower than the grocery store (Depasquale, et al. 2018). Community gardens are widely accessible, as those living in the neighborhood are welcome to participate and once the garden is established, the costs are relatively low. Community supported agriculture programs are designed to be low cost to increase accessibility across income levels as well. The diversity in alternative food sources matches the diversity of the income spectrum, potentially allowing for all of those interested in joining an alternative food network to do so.

Increasingly so, the sustainability and environmental impact of the United States food system has come under question, as the environmental impact of monocropping, food transport and heavy chemical usage has brought into question what alternatives can be used to provide a more direct link between consumers and farmers. Alternative food

networks, or the different parts of the network are often pointed to as the solution to these problems as they not only bring food systems directly into the communities they are servicing but they also connect farmers directly to the community through food cooperatives, farmers markets, and CSAs. When farms are supported by alternative food networks, ecologically-friendly farming practices are more commonly used. Adding to the sustainability of alternative food sources, emissions from food transport are also reduced when the farm is a part of a CSA program (Forssell & Lankoski 2015). Community gardens are also being recognized as a part of healthy city planning; they bring green spaces into urban environments and have been found to thrive in neighborhoods in times of crisis, such as victory gardens in WWII. Since the 1970's, community gardens have been used to address blight issues and introduce sustainability programs into neighborhoods (Carlet, et al. 2017).

The non-food benefits of community gardens include lower ecological impact of the food system, greater feelings of personal life satisfaction, lower crime rates, all pointing to the potential for alternative food sources to become parts of a more equitable and sustainable food system. However, in order to discuss alternative food networks in more depth, a clear definition of what constitutes an alternative food network is essential (McCabe 2014). Alternative food sources can be defined based on the fulfillment of four characteristics. The first is alternative food sources eliminate distance between consumers and the farmers, or producers of the food. The second is by utilizing smaller farms that divert from large-scale agriculture practices by focusing on organic farming or utilizing some other holistic farming practice that is not used in larger, industrial farms.

Alternative food sources must also have a commitment from those involved (producers, consumers, etc.) to focus on the social, economic and environmental components of food production, and focus on the equitable distribution of those sustainably produced goods. Finally, the presence of a venue in which consumers can produce food is a characteristic of most alternative food sources (Jarosz 2). Oftentimes, purchasing the produce grown in community gardens is often not an option, as many gardens do not sell excess food grown ("GreenThumb", 2019). Community gardens are also incorporated into the network of alternative food sources through CSA drop-offs, as they are sometimes used as drop off points, promoting the interdependence of these alternative food sources, laying the foundation for a network to be built (Papaoikonomou & Ginieis 2016).

1.3 Defining Alternative Food Networks

Alternative food networks are presented as a potential solution to help reduce food insecurity in New York City, as preexisting programs, such as school lunches, food pantries and soup kitchens have struggled to meet the ever-expanding nutrition needs of many of those living in New York City. Many times, these programs target specific groups with higher than average rates of food insecurity, such as the LGBTQ+ community, senior citizens and children under 18. While they have been proven to be beneficial and essential to closing the meal gap, these programs have not been able to reach all food insecure members of the population, as in 2016, the most recent year for which data is available, there was a meal gap of 207.7 million meals, which means that 207.7 meals were missing for those who are food insecure per year (Turk 2018). In addition, 70.9% of those eligible for SNAP participated in it, so almost one third of those

eligible did not take advantage of the benefits available to them, which means that roughly 600,000 New Yorkers were eligible for these benefits and did not use them (Turk 2018).

Some alternative food sources are able to accept SNAP benefits, so those who are participating in the program can also participate in alternative food networks. Greenmarkets are one example of an alternative food network that can accept SNAP benefits, making them more accessible. Greenmarkets are a version of farmers markets that are run by the organization Grow NYC. They were founded in 1976 with a two-part mission: promoting regional agriculture by connecting consumers directly with the farmers who produce their food, and to provide access to healthy, local food for all New York City residents, regardless of their income ("Grow NYC", 2018). To help achieve this mission, there are now over 50 Greenmarkets, as well as 15 Youthmarkets, a program developed to introduce children and young adults to the Greenmarket program, as well as to educate them on the importance of consuming fresh produce. Greenmarkets also accept SNAP benefits, and offer incentive programs to encourage those who are eligible for SNAP to use their benefits to purchase fresh produce. Greenmarkets serve not only as a marketplace for consumers to purchase fresh produce but also as educational centers, as they run classes and workshops for community members to educate them on the importance of eating fresh produce as well as how to prepare produce that is being sold in the markets ("Greenmarket Farmers Market", 2018).

There are other farmers markets in New York City that accept SNAP benefits and are designed to service low-income communities. Greenmarkets will be the focus of the

project as they provide programming that is not found in a traditional farmers market, as educational workshops on how to prepare the produce being sold are often offered to consumers. In addition, all Greenmarkets accept SNAP benefits, and all but one of the markets are open year-round ("Greenmarket Farmers Market", 2018). Greenmarkets also offer incentives for consumers who receive SNAP benefits to spend their benefits at the market through the Health Bucks program. The Youthmarkets program is also a part of the Greenmarket program, and Youthmarkets aim to teach healthy eating habits to children at a younger age, with the hope that they will develop healthier eating habits throughout life ("Youthmarket Farm Stands", 2018).

Community gardens are also very accessible alternative food sources, as participants do not have to purchase the produce, but instead, must grow their produce themselves. Broadly, community gardens are "open spaces that are managed and operated by members of the local community in which food or flowers are cultivated" (Guitart et al. 2012). Community gardens are traditionally built in lower-income communities (Mees 2017) and have a long, controversial history in New York City as governmental support for the gardens has varied depending on the administration. Part of the reason that community gardens have been so controversial is the communities they serve are typically lower-income communities who do not have the same political power as the more affluent areas do (Schmelzkopf 1995). This has led to gardens acting as contested spaces throughout their history. However, as these lower-income areas began to become gentrified, gardens became even more important parts of neighborhoods, as they

acted as safe havens for those in the community, as well as a food source (Schmelzkopf 1995).

Food cooperatives can also be used to alleviate food insecurity in New York City, as they have historically been used by lower-income and minority communities to meet their food needs, with food cooperatives dating back to the 1930's. Food cooperatives are unique as they are owned and governed by those who participate in them, allowing them to have ownership as well as insure low that they have continued access to affordably priced fresh foods. They also present other intangible benefits beyond access to fresh and affordable produce, such as environmental stewardship, the ability to serve as a local food hub and a desirable work culture for those who work there (DePasquale, et al. 2018). Cooperatives are defined by the International Cooperative Alliance as "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically-controlled enterprise" (DePasquale et al. 2018). Consumer food cooperatives work the same as a grocery store, except they are consumer owned, and consumers establish equity in the business either through paying dues and/or completing work shifts (DePasquale et al. 2018).

Community Supported Agriculture allows for consumers to purchase a "share" in a farm before the planting season begins, providing the farmer with the capital needed for the planting season, and in return, each shareholder receives an already agreed upon delivery of goods produced by the farm; oftentimes it is produce, but the share can include honey, eggs, etc. depending on the nature of the farm and share purchased

(Brown & Miller 2008). This allows for consumers to have a direct relationship with the farmers, as well as a regular delivery of fresh produce, however, they are not offered a choice in what they receive, as the delivery reflects what is being grown at the farm (Brown & Miller 2008). Some CSAs allow for participants to use their SNAP benefits to pay membership fees, or have created a tiered pricing system to make them more accessible for all members of the community, regardless of income ("About Chelsea CSA", 2016).

1.4 Alternative Food Networks as a Reflection of Community Needs

Greenmarket programming is not limited to the traditional farmers markets that are a part of the program. Since 2007, GrowNYC has expanded the program to include the Youthmarket program, the Fresh Bodega Project and the Fresh Pantries project. The Youthmarket program works by targeting youth in the neighborhoods where Greenmarkets are located to teach young children about nutritious eating choices from a young age and introducing them to the farmers markets in their area. The Fresh Bodega project delivers fresh produce to 11 bodegas in Harlem and Bedford-Stuyvesant, areas that are some of the most severe food deserts in New York City. Finally, the Fresh Pantries project is a partnership with the New York City Coalition against Hunger through which fresh produce is donated to food pantries around New York City (Kornfeld 2014). The Greenmarket program impact is felt beyond New York City, as they seek to support local farming jobs and place requirements on the locality of the goods being sold at Greenmarkets, including the ingredients in any baked goods (Kornfeld 2014). Greenmarkets also work to be more sustainable, reducing the

environmental impact of the foods system by offering compost drop-off locations at the markets as well as textile recycling tents (Kornfeld 2014). The Greenmarket program has reached far beyond the role of a traditional farmers market as they not only provide affordably priced produce but help to improve the communities they are in through their educational and environmental programs (Kornfeld 2014).

Greenmarkets serve as an example of the benefits beyond providing affordably priced, healthful food to consumers. Community gardens provide both participants and the surrounding community with benefits beyond the food grown in them. The addition of community gardens also made the area more attractive to developers, raising property values and accelerating the rate of gentrification in these neighborhoods (Schmelzkopf 1995). Many times, community gardens are located in areas where gentrification is a concern, as community gardens in New York City are also known for Hispanic, primarily Puerto Rican gardens in areas that are lower-income with many vacant lots, making them enticing for developers. These gardens are found frequently in the Lower East Side of Manhattan, an area known as Loisaida, where there is a large concentration of Puerto Rican residents. This concentration of gardens dominated by one ethnic group reflects an important benefit of community gardens, their ability to adapt to the needs of the community that they serve. The casitas, as the Puerto Rican gardens are known as, provide a case study in adapting to the needs of a group as well as the social benefits that community gardens provide. Casita directly translates into little house, and as a house would, casitas serve as gathering places for members of the community where they gather

for social events and celebrations, as well as using the gardens to grow their own food (Tanaka & Kransy 2004).

Many Puerto Rican gardens literally have a casita in them, with small houses being built in the garden as both a gathering place and a shelter in from the rain, with 40% of Puerto Rican gardens having kitchens in their casitas as well (Tanaka & Kransy 2004). Oftentimes, areas surrounding the casita are left unplanted as well, and these areas are used as a place for social gatherings, such as barbeques and picnics, creating a space for social and community building events which cannot be created by traditional retail of food and other solutions to food insecurity, such as free and reduced school lunches or expanding SNAP programs (Tanaka & Kransy 2004). In community gardens where they are able to grow the foods they choose, Puerto Rican neighborhoods often have tomatillos, jalapeños and other foods that are often found in traditional Puerto Rican cooking and cannot be found in the larger grocery stores that are unable to cater to the specific needs of the communities they are in. In all Hispanic community gardens, peppers are commonly found, with the variety changing on the predominant ethnic group; Mexican gardens typically have hot peppers growing in them whereas other Latin American gardens typically have sweet peppers (Tanaka & Kransy 2004). Despite the prominence of of Hispanic community gardens, it is important to note that not all community gardens are dominated by one ethnic group.

Adding to the diversity of produce grown in gardens, oftentimes trees and plants are donated to the gardens from various organizations such as GreenThumb and the Council on the Environment of NYC (Tanaka & Kransy 2004). Donations of plants

reduces the cost of healthful produce even more, making community gardens an even more cost effective method of producing and providing fresh produce to areas that are food insecure or are food deserts. Community gardens serve as a way to insure that the appropriate food is available. According to the USDA, there are no food deserts in New York City, as there is no area greater than one mile where there is a grocery store. Despite this, food insecurity persists and the meal gap in New York City was 224.8 million meals in 2017 (Turk 2018). It is clear that although there is an abundance of food available in New York City, it remains inaccessible to many (Turk 2018). Community gardens, with their ability to adapt to the needs of the communities they are in, presents a solution to eliminating the inaccessibility of food.

Community gardens are also sustained by those who benefit from them, as the communities that build them invest time and resources into the garden, as they are not only a food source but a place to socialize with neighbors and members of the community (Glover, et al. 2005). With the building of casitas, Hispanic and Puerto Rican community gardens create permanent structures for community gatherings (Tanka & Kransy 403), but the benefits beyond growing food are seen in all community gardens. These benefits are acquired through time spent in the garden working, which is considered to be leisure time. Leisure time spent in gardens builds social ties and relationships, which contributes to social capital. Social capital is just as important as financial capital to the maintenance of gardens, so through leisure time spent in the gardens, those participating in the garden become more invested and therefore more willing to put resources towards the maintenance and advancement of the garden, resulting in the growth of the garden and

increased investment of the community, which further promotes the garden, creating a positive feedback loop (Glover, et al. 2005).

Community gardens require a significant time investment, as well as money to buy necessary supplies, a suitable space with soil that edible plants can be grown in and cooperation by several community actors to make them successful. There are other alternative food sources that do not require the same time commitment or level of community organizing but still provide produce at low costs. Food cooperatives do not have the same barriers for startup and maintenance, as consumers purchase their food directly from the producers and are not growing their own.

Food cooperatives have been used to provide low-cost produce to consumers, as they are sometimes able to undercut grocery stores by 50% or more depending on the product. For example, the now closed South Bronx Food Co-op sold a unit of kale for $22.30; the same amount at a traditional grocery store would cost $50 (DePasquale, et al. 2018). This food cooperative also has a work requirement as a part of membership, this helps to reduce payroll costs, as payroll is the single largest expenditure at any grocery store, which in turn reduces prices for consumers, making food cooperatives an affordable, economically inclusive alternative to grocery stores (DePasquale, et al. 2018).

In addition, food cooperatives place an emphasis on locally grown foods, with 21% of the produce being sold in food cooperatives considered to be local, versus only 1.8% in larger grocery stores. Food cooperatives are more likely to support regional food networks through this concentration on locally sourced food as well (DePasquale et al. 2018). This emphasis on local food reduces the environmental impact of the food system,

and many times food cooperatives take additional actions to promote sustainability as well. For example, the Park Slope Food Coop donates foods that are not sold to local food pantries. Food cooperatives donate an average of 24,100 pounds of food to food pantries each year, almost double the 12,500 pounds donated by conventional grocery stores (DePasquale et al. 2018). In addition, the Park Slope Food Coop also composts food that is not edible and recycles materials that were used to package food (DePasquale et al. 2018). The Park Slope Food Coop is the largest food cooperative in New York City with about 17,000 members (DePasquale et al. 2018) so these waste reduction actions have a large environmental impact.

The final alternative food source considered are CSAs, which have proven to have a broader geographic reach than food cooperatives. CSAs are indicated by CSA drop-off points, temporary locations where farmers give shareholders a previously agreed upon allocation of produce and other goods that are a part of the agreement. What shareholders receive depends on the size share of the share that they purchased in the farm, what type of share purchased and what goods are in season, so choice is limited to the share purchased and what is in season at the time of delivery. Despite this limited choice, in a study done of CSAs, it was found that 74% of consumers reported consuming a larger variety of produce and 58% reported increasing the quantity of produce they consumed (Brown & Miller 2008). CSA shareholders have stated that being a part of their CSA has led to them shopping less, eating a wider variety of vegetables and developing healthier eating habits (Brown & Miller 2008).

CSAs also help consumers save money on the costs of produce, as one CSA was found to save consumers 39% on their produce when compared to purchasing the same organic produce at the grocery store, and the value of the produce received through a CSA has been shown to be worth at least as much as the share, but up to 2.5 times as much as shareholders paid (Brown & Miller 2008). The overwhelming majority of CSA farms are organic (96%) (Brown & Miller 2008) and CSA shares are purchased from local farms (Brown & Miller 2008), so the environmental impact of CSA supported farms is less as transportation distance is less and organic farming methods eliminate pesticides from being used. Despite not offering the same social and community building interactions as other alternative food networks, CSAs are still considered to be an investment in the community and have been shown to improve eating choices made by consumers ("Fairshare CSA Coalition", 2019 and Brown & Miller 2008), so they should be considered an important part of developing alternative food networks to alleviate food insecurity and close the meal gap in New York City. One major barrier that CSAs face is the up-front cost of purchasing a share; while they may help consumers save money in the long-term, having to pay the upfront price to purchase a share may exclude low-income residents from participating. In order for CSAs to become a larger part of the solution to food insecurity, payment plans need to be developed in order to accommodate consumers who may not be able to afford the large, upfront costs.

There are several similarities that can be identified between alternative food sources. Community gardens and CSAs limit the choices of the consumers as with community gardens they are limited to what can be grown given the constraints of the

growing season, their abilities and space availability. While the popularity of community gardens has proven that these constraints do not prevent people from gardening, there is value in being able to choose from a variety of produce, as well as the ability to interact with the producers of food who may be able to introduce consumers to new produce that they may not be familiar with or offer advice on new methods of preparation (Larimore 2018). New York City has developed a program to help make farmers markets more accessible to low-income consumers, with the Greenmarket program, which was originally established in the 1970's but has since been developed and expanded to include almost 200 vendors who sell their produce in markets across all five boroughs of New York City. A key differentiator between Greenmarkets and typical farmers markets is that Greenmarkets accept SNAP benefits, so low-income consumers are targeted as the intended consumers, and programming has been developed surrounding these markets encouraging them to spend their SNAP benefits there instead of at large grocers (Kornfeld 2014). In 2016, over $1 million in SNAP benefits had been spent at Greenmarkets (Turk 2018).

Food cooperatives, farmers markets, community gardens and CSAs were identified as the constituents of alternative food networks because they share several characteristics that place them in a unique position to fulfill needs of communities. All of these alternatives are participant led, with those consumers responsible for making sure that the networks are maintained or have enough participants to sustain themselves. In both farmers markets and community gardens, participants have a direct say in what is being grown or sold there. In the case study of the North End and Southside farmers

markets in Washington DC, it was found that markets that change to reflect the needs of the community they serve and offer a sense of belonging to participants. The ethnographic study revealed that those eligible for SNAP benefits frequented the market where they felt the most comfortable, helping to ensure the future success of the market (Larimore 2018). Southside, the "yuppie" market, was also successful as it was frequently packed with customers and producers were able to earn money working at the market, but the customers did not match the demographics of the community it was located in, so it was not meeting the needs of the community that it was in (Larimore 2018). Through community gardens, participants have a direct impact on what is being produced as they are able to determine what is planted in their personal lots, or the board of the garden determines what is grown based on input from participants (Chitov 2006).

Food cooperatives and CSAs allow for the same consumer input in what is being provided, however, consumers do not have the same opportunity to make selections the same day based on their preferences. Food cooperatives and CSAs are still democratically run with participants engaging with the producer regularly, sometimes completing work requirements in order to be a part of the cooperative or CSA. Food cooperatives are owned and governed by those who participate in them, so participants in food cooperatives have an active voice in the direction of the cooperative (nfca.coop).

CSAs do not have the same governance structure as a food cooperatives. The governance of CSAs is a partnership between the consumers and the producers (the farmers); consumers do not have a direct say in what produce is delivered to them week to week, whereas consumers select what they want to purchase from food cooperatives

each week (“Fairshare CSA Coalition”, 2019). While other programs such as free and reduced lunches, food pantries and soup kitchens have helped to address food insecurity in New York City and have a broad reach, they are unable to adopt to consumer preferences. In addition, those programs are not able to offer consumers the same education as those who interact directly with the producers of their food are able to receive (Turk 2018). Despite their differing structures and governance, all alternative food sources share important commonalities which make them viable options to aid in the fight against food insecurity. The qualities that unite alternative food sources are they are participatory- consumers and producers who are involved with the alternative food networks are actively choosing to be a part of them. That participation often involves a time commitment, alternative food sources strive for ecological sustainability in some way, whether it be by selling food that is locally grown or adding green space to urban areas, all are democratically governed and all of them are community-driven and consumer-focused.

Despite having been proven beneficial to low-income communities, there are boundaries to communities utilizing alternative food networks. One of the obstacles that is commonly cited as a reason for a lack of participation in alternative food networks is participants not having the knowledge of how to prepare the food that they are growing in the markets. In an effort to combat that, Greenmarkets offer classes and workshops to community members where they can learn how to cook produce that is in season (“Greenmarket Farmers Market”, 2018). However, Greenmarkets are often not located in the communities they are targeting, and workshops are offered on schedules, so all

members who need help are not necessarily able to make the workshops, leaving an educational gap. In addition, information about alternative food networks and the requirements for participation can be difficult to find, as there are different organizations who help to manage all different forms of alternative food networks. Comprehensive maps are available through OASIS NYC, but individuals must take the initiative to view find the alternative food sources in their area and follow through to the website of the individual site. Different alternative food sources have websites with differing amounts of information, so although an alternative food source may have a website, it can still be difficult for community members to find the information they need to participate in the alternative food network ("Oasis NYC", 2018).

1.5 Economic Impact of Alternative Food Networks

The social benefits of alternative food networks outside of providing low-cost, healthy food to participants have been well-established, but it is important to note that alternative food networks also generate economic activity in the neighborhoods they are located in. Oftentimes, the economic impact of alternative food networks is not directly felt by the consumer, as alternative food networks provide little to no employment opportunities to residents of the community. Alternative food networks are almost always volunteer run, with farmers being paid for their labor and products through Greenmarkets, CSA drop-offs and food cooperatives ("Grow NYC", 2018). However, the farmers benefiting are not the members of the local community, so there are limited opportunities for local employment through alternative food networks. Despite this limitation, there are several other ways in which alternative food networks generate

economic activity in the communities they are located in. Beyond supporting local food networks and donating excess food to food pantries, the money put into food cooperatives also has more of an impact in the local community, as the economic multiplier from food cooperatives is 1.6 versus 1.36 for conventional grocery stores (DePasquale et al. 2018). The multiplier effect refers to the increase in spending that results from $1 being spent in the area. For example, a multiplier effect of 1.6 means that for every $1 spent, $1.60 of economic activity is created. This increased multiplier means that more money spent in the food cooperative is reinvested into the community, further supporting the mission of food justice and supporting the lower-income and minority communities where food cooperatives originally started (DePasquale et al. 2018).

CSA drop-offs have been proven to generate cost savings for consumers, with studies showing that produce purchased through CSAs retails for up to 2.5 times the value of the produce received. The value of the produce purchased at CSAs was further elevated when the importance of freshness in CSAs is considered; produce provided by CSAs is very fresh, as it is coming from local famers, so it is considered to be more valuable than produce purchased at the grocery store (Brown & Miller 2008). CSAs are also able to make themselves more accessible by offering tiered membership programs, as the Chelsea CSA does. The most inexpensive tier provides vegetables for a family of four for 24 weeks for the price of $860, which is about 3.3% of annual income for a family of four living at the poverty line (“About Chelsea CSA”, 2016 and “American Fact Finder, New York city, New York”, 2010). This low price offers more savings to low-income families, as well as encourages participation by charging a subsidized price

and allowing those who receive SNAP benefits to use them to pay as well. However, not all CSAs are able to offer this option to low-income consumers, limiting their ability to reach low-income consumers.

Farmers markets are viewed to be "keystones" of developing local food networks, once farmers markets are present in an area, it becomes easier to build other alternative food networks. Farmers markets also serve as an educational tool about alternative food networks and the benefit of eating local produce, and through the Greenmarkets program, Grow NYC often hosts educational workshops on how to prepare the produce being sold in the Greenmarkets (Brown & Miller 2008and "Greenmarket Farmers Market", 2018). Farmers markets help to generate economic activity in the community through the purchases made by consumers, but also indirectly as they serve as a stepping stone for the development of other alternative food networks in the same neighborhood (Brown & Miller 2008). Consumers can also use their SNAP benefits at the Greenmarkets, increasing accessibility for low-income consumers as well.

The economic impact of alternative food networks are also indirectly felt through environmental justice movements that seek to provide lower-income communities with affordable, healthy food but also well-paying, unionized jobs. This dual desire to alleviate food insecurity as well as provide economic opportunity is known as the "Good Food, Good Jobs" (GFGJ) (Myers & Sbicca 2015). This movement works to improve on alternative food networks, and does so by linking alternative food to a broader environmental justice movement, which includes providing community members with well-paying jobs.

The neighborhood of East New York in Brooklyn serves as interesting case study on the indirect impact that alternative food networks can play in community development. Community gardens thrive in the neighborhood, and East New York Farms! (ENYF!) is an organization that promotes urban farming and community gardens in the East New York area. The neighborhood was recognized to be a food desert, and Wal-Mart sought to build a store in the neighborhood, as they recognized the need for an affordably-priced grocer, and saw the opportunity for a potential store. However, the community, with the help of ENYF! rallied against allowing Wal-Mart to build a store in the community for low pay and anti-union actions. The grassroots campaign earned the support of government officials, and soon after, a unionized Shop Rite was built in place of Wal-Mart, so well-paying jobs were added to the community to help combat high unemployment. This fight for a better grocer was fueled by resident's understanding that food deserts are about more than having access to affordable produce but also environmental justice and providing economic opportunities to the communities that the food deserts are located in (Myers & Sbicca 2015). Although the replacement of Wal-Mart with Shop Rite was not the direct result of alternative food networks, the community organizations that support alternative food networks often work to support those communities in other issues of environmental justice, which helped to lead to the addition of better-paying jobs in the community to improve opportunities for the residents. This case study serves as another example of the benefits of alternative food networks beyond providing low-cost, local produce to communities, especially in struggling communities.

1.6 Meat and Non-produce items

Meat and other products such as eggs, cheese and honey are also available through alternative food networks, but they are not as commonly available as produce. Community gardens sometimes produce honey, but meat and other products cannot be produced in them due to zoning regulations and health concerns ("Grow NYC's Garden Program", 2018). Certain CSAs over meat, eggs, cheeses, honey and other related products as a part of the farm share, but not all CSAs are able to do so, and oftentimes these items cannot be delivered as often as the produce can, and are only available for an additional cost ("Local Roots NYC", 2019).

Methodology:

The constituents of an alternative food network privilege inclusion. One thing I wanted to see was how inclusive are these alternatives? Meaning, what communities are being served by these activities, and conversely what communities are not being served? Are there race and income divisions that are important to note? To that end, I have created a database using multiple sources. This database contains geographic locations of community gardens, food coops, CSA pick-up locations, and farmers markets accepting SNAP. Locations of CSA drop-offs were collected from the Solidarity Economy Research Project, a collaboration between professors and students at Drew University and Hunter College (Safri, 2019). The locations of food-growing community gardens were provided by Green Thumb, a division of the New York City parks department, which describes itself as "The largest community gardening program in the nation" ("GreenThumb", 2019); the organization provides support to the over 550 community

gardens that are located in New York City ("GreenThumb", 2019). Data for farmers markets that accept SNAP benefits was provided by GrowNYC, a non-profit organization that works to improve quality of life for those living in New York City through environmental programs, including the Greenmarket program. The Greenmarket program was developed to provide local farms with the opportunity to sell directly to consumers, and to help ensure that regardless of income, those living in New York City have access to affordable produce. Greenmarkets are farmers markets that accept SNAP benefits, so regardless of income level, all consumers can afford fresh, locally grown produce ("Greenmarket Farmers Market", 2018). The locations of New York City food cooperatives were provided by the Solidarity Economy Research Project.

I then map these entities using ArcGIS software. This geospatial data was used to see income and race divisions throughout neighborhoods and to determine the relationship, if any, between the locations alternative food networks, the racial composition of the area and income levels. For example, some studies have suggested that food-growing community gardens are mostly grown by those in middle to lower income areas (Chitov 2006), so mapping community gardens will prove or disprove that these spatial patterns also exist in New York City. The recognition of these patterns will also help to guide policies to address food insecurities through the usage of alternative food networks.

The results of my empirical work, examining the geospatial relationships between demographics and locations of alternative food networks are discussed in the following chapter, providing a visualization of this explanation to further emphasize the

importance. Chapter 3 is a discussion about current policies that exist in New York City that can support, expand, or constrain alternative food networks. It also discusses recommendations on policies that can be developed to support the use of alternative food networks in alleviating food insecurity, drawing on the findings from the geospatial analysis.

Chapter 2: Geographic Relationships Amongst Alternative Food Sources

2.1 Income and Food Insecurity

The best way to understand where food insecurity exists and where alternative food sources are located is through visualization with geospatial data. According to the United States census, the median household has 2.65 individuals living in it ("American Fact Finder, New York city, New York", 2010). For analysis purposes, this will be rounded to three individuals. The income distribution is divided based on poverty levels for a family of three, which represents the median household size when rounded. The federal poverty line for a family of three living in New York City in 2018 is $20, 780 (otda.ny.gov). This is used as the first income break, so all census tracts where the median household income is at the poverty line or below are the same color. The next income break used is 130% of the poverty line, this is the income level that an individual or family can qualify for the SNAPs program without any earned income, so their income comes from Social Security, disability benefits, etc. but nobody in the family is earning a wage to support themselves. The next income break is at the 150% of the poverty level for a family of three at $31,176. This is the income level that a family or individual can qualify for SNAPs with an earned income, so family members are earning money and making a wage, but are still eligible for SNAP. This is the highest income level eligible for SNAP (otda.ny.gov). The final break in income is at $41,560, which is 100% above the poverty level for a family of three. The limit is the highest median income for a census tract in New York City, $131,838. The location of alternative food sources will be mapped while displaying the median household incomes by census tract.

Based on family income levels, there are other nutritional programs in to help alleviate food insecurity in New York City. These programs include child feeding centers, free school lunches, soup kitchens and food pantries. The school lunch and child feeding centers are national programs, with funding and backing coming from the federal government, whereas food banks and soup kitchens are often run by private organizations. Soup kitchens and food banks are considered to be emergency food programs, as they are designed to help participants meet immediate nutritional needs, but do not have the same sustainability as the alternative food networks examined in this paper. Emergency food programs are included to show where food insecurity is perceived to be by the government and non-profit organizations, and location of populations who need the most immediate access to affordable, nutritious food. The following maps will show that those areas are not always the lowest income tracts. Many alternative food sources are located in these areas, but there are also areas where there are little or no alternative food sources, despite the low median income of residents. This makes it clear that these emergency food shelters serve a different purpose than alternative food sources, as they are not located in the same areas. These emergency food sources seem to serve more of an immediate need, while alternative food sources work towards long-term food security for those who they service.

As of 2017, 53.9% of these emergency food programs in New York City were run by religious organizations (Berg 2017). In addition, many of these emergency food programs were designed to target specific populations, with 77.7% targeting seniors and the elderly, 70% targeting the homeless and 63.2% targeting the LGBTQ community.

Other commonly targeted populations were those with specific medical needs (chronic illnesses, terminal illness, etc.) and adolescents (Berg 2017). While the populations targeted have some of the highest levels of food insecurity, large portions of the food insecure population do not fall into those categories. These emergency food providers are not able to meet the demand, as there have been increases of at least 5% for each year between 2014 and 2017, and 37.9% said they were unable to meet current demand. Only 52.5% of the emergency food providers were confident that they were able to meet the demand, with the reminder unsure if they were meeting the needs of the communities they are serving (Berg 2017). There was great variance in emergency food programs being able to say they were able to meet demand, with 48.78% of agencies in the Bronx stating that they were unable to meet demand, and 46% of agencies in Brooklyn reporting being unable to meet demand. These were the only two boroughs were the majority of agencies were unable to meet demand (Berg 2017), and these two boroughs have lowest median incomes across New York City (nyc.gov). It is clear that while these emergency food programs are meeting a demand, they do not have sufficient resources to fulfill that demand.

Food pantries and soup kitchens are spread out across New York City, as seen in the map below, as they are not only located in areas where the median household income is low but also in areas where there are high concentrations of the homeless, such as lower and Midtown Manhattan (Fessenden 2016). The map below shows where food pantries and soup kitchens are located based on median household income.

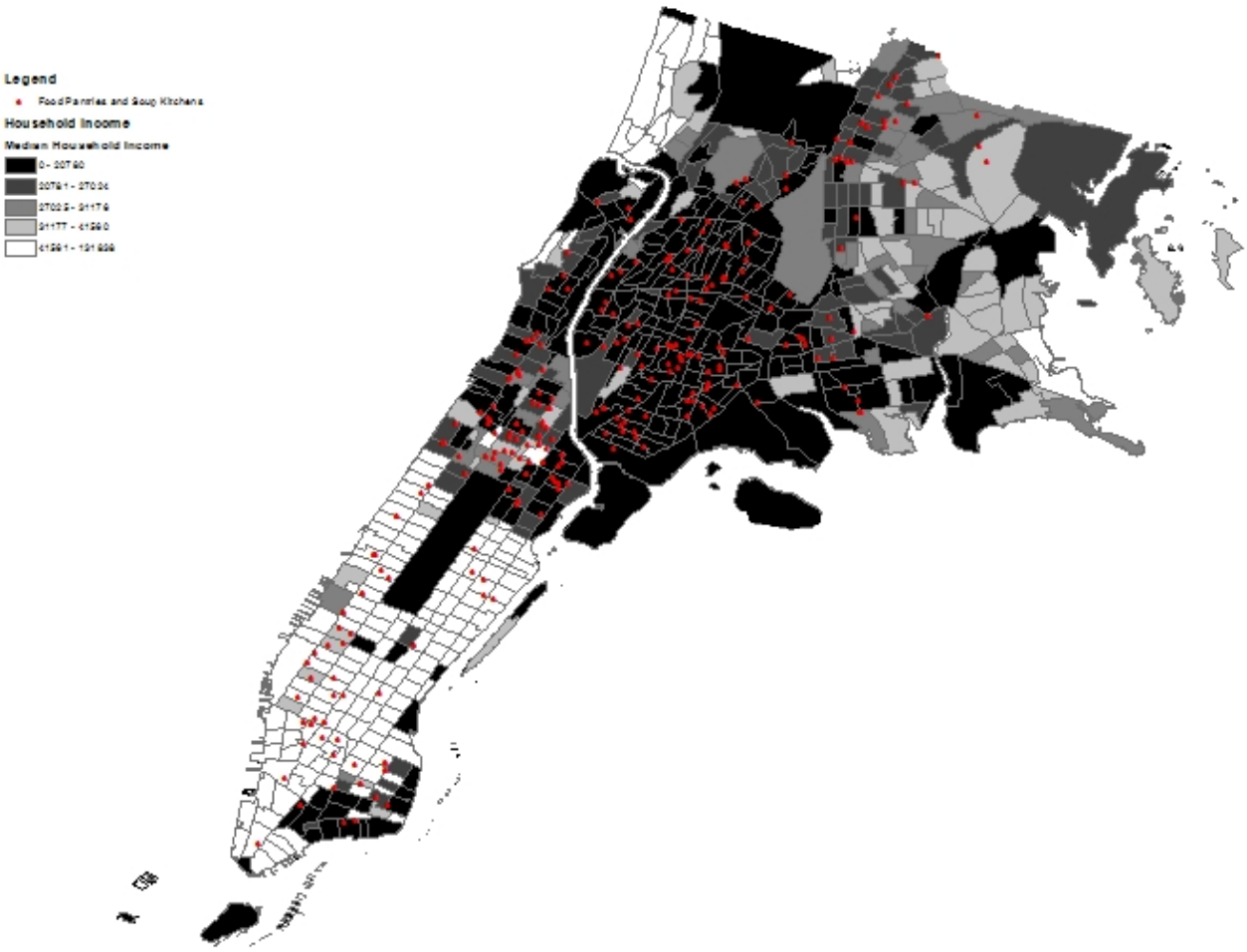

Figure 2.1a: All food pantries and soup kitchens registered with the city of New York mapped in comparison with median household income (Manhattan and the Bronx).

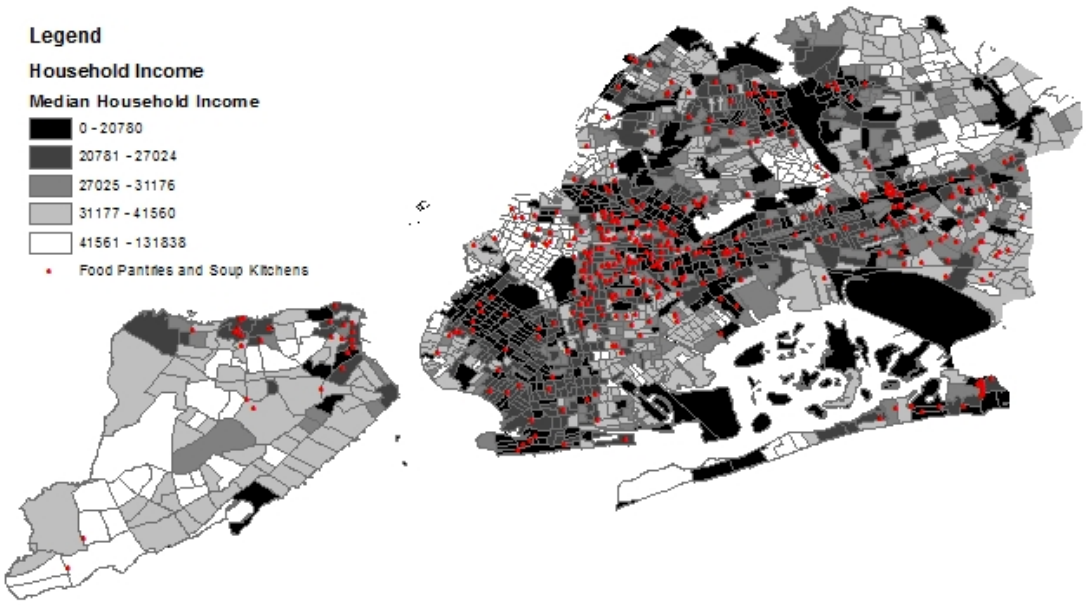

Figure 2.1b: All food pantries and soup kitchens registered with the city of New York mapped in comparison with median household income (Queens, Brooklyn and Staten Island).

As is clear from the map, soup kitchens and food pantries tend to be clustered together, and clustered in areas that are very low income or high in activity, as seen by the cluster in lower Manhattan. In that region, the median income is more than 100% higher than poverty level for a family of three, however, the high concentration of homeless in the area creates higher demand for soup kitchens and food pantries (Fessenden 2016). Most of the homeless are found in Manhattan, concentrated in Midtown and lower Manhattan, there is the increase in food pantries and soup kitchens despite median incomes being higher than average. The relationship between where homeless populations are concentrated and the increased concentration of both food

pantries and soup kitchens makes it clear that these emergency food programs are more concerned with feeding those who do not have the resources to prepare food for themselves than those living in permanent housing who do not have access to fresh produce and other healthful food options.

Outside of Manhattan, food pantries and soup kitchens are also concentrated in lower-income neighborhoods. These neighborhoods typically have a median income of $31,176 or less, 150% of the poverty level and the highest level of income which qualifies for the SNAPs program (odta.ny.gov). The role of soup kitchens and food pantries in feeding lower income communities is clear as they can provide temporary assistance and provide food for those in need. However, it is also clear that they cannot be used as the main solution to food insecurity, as they have not been able to keep up with demand and do not offer many of the same intangible benefits that alternative food networks do, such as building relationships with farmers and food producers, increasing a sense of community and exposure to different kinds of produce and preparation methods.

New York City's Department of Education also runs the largest school lunch program in the country (Turk 2018), with all children enrolled in New York City public schools eligible for free lunch, a policy that was announced in 2017 (schoolfoodnyc.org). This means that 950,000 meals are served daily in New York City public schools; all schools offer free lunch and 412 of the 1,500 school buildings also offer breakfast to their students as well as of the 2017-2018 school year (Turk 2018). To satisfy the demand for children's lunches outside of the school year, the summer meal program offers meals at 1,300 locations across New York City, serving 7.3 million meals (Turk 2018). While

these programs have clearly been successful in reaching millions of children and helping to close the meal gap, eligibility to participate ends once the child leaves New York City public schools or turns 18, whichever is later, as they are no longer eligible (Turk 2018). This reinforces the need for community gardens, food coops, farmers markets that accept SNAP benefits and CSA drop-offs as alternative food networks to help reduce food insecurity and close the meal gap in New York City.

The following table shows the number of alternative food sources in New York City, broken down by type of alternative food source.

Type of Alternative Food Source	**Number of locations**
Community garden (food growing)	296
Community garden (non-food growing)	283
CSA drop-off	80
Food cooperative	16
Greenmarket	36 (26 unique locations)

Table 2.1: The number of alternative food sources in New York City, broken down by type.

2.2 Income and Alternative Food Networks

The following maps show the geospatial relationships between median household income and alternative food networks. Demographic data was taken from United States Census Fact Finder. Locations of community gardens and Greenmarkets were provided by Grow NYC. Locations of food cooperatives were provided by the Solidarity Economy Research Project, through Prof. Safri. Information on both developed and non-developed lots were was taken from the City of New York Facilities database.

Figure 2.2a: All alternative food sources (food cooperatives, CSA drop-off points, food growing and non-food growing community gardens and Greenmarkets that accept SNAP benefits) mapped in comparison with median household income (Manhattan and the Bronx).

Figure 2.2b: All alternative food sources (food cooperatives, CSA drop-off points, food growing and non-food growing community gardens and Greenmarkets that accept SNAP benefits) mapped in comparison with median household income (Queens, Brooklyn and Staten Island).

The patterns of the location of alternative food networks and income are clear from the maps. Both food growing and non-food growing gardens are visibly concentrated in lower income neighborhoods, especially in the outer boroughs. Community gardens are the most common alternative food network, as there are over 500 gardens throughout New York City, close to 300 of them are food-growing. Due to their sheer number, gardens are present across all boroughs including Staten Island, which has

the lowest occurrence of alternative food sources. These gardens tend to be clumped together, as they are notable concentrations in the Lower East Side, Harlem and the South Bronx, some of the poorest neighborhoods in all of New York City. Community gardens are not limited to these lower-income areas, as they are also found in very wealthy neighborhoods. However, wealthy neighborhoods also have a higher concentration of non-food growing, or ornamental community gardens than lower income areas. Non-food growing community gardens are also beneficial, as they increase green space and are a part of healthy city planning, but they do not provide food to those who garden there, so they cannot be used as a solution to food insecurity unless they are converted to being food growing gardens. However, community gardens do suffer from seasonality, as the growing season in New York City is relatively short. A solution to this seasonality is year-round market places, such as Greenmarkets.

Greenmarkets are farmers markets operated by Grow NYC that target lower-income consumers, as they accept SNAP and EBT benefits. In addition, Greenmarkets offer other incentives such as Health Bucks, which encourages those using their federally subsidized food benefits to purchase fresh produce from vendors. Grow NYC is the largest operator of farmers markets in New York City, as they operate 51 different Greenmarkets across all five boroughs. In 2016, consumers spent over $1 million in SNAP benefits buying fresh fruit and produce at these markets (Turk 2018). Greenmarkets are concentrated in upper income neighborhoods, however they are targeted at lower-income consumers, as they accept EBT and SNAP benefits as payment methods. As seen on the map, all Greenmarkets except for one are open year round, so

this contrasts with the seasonality of community gardens. Greenmarkets are also found in all boroughs of New York City besides the Bronx, so despite being concentrated in higher income areas, they are spread throughout the city, so they can be accessed more easily by those reliant on public transportation. Despite targeting low-income consumers and those who are food insecure, there are no Greenmarkets in the Bronx, which has the lowest median income of any borough of New York City by almost $20,000 (nyc.gov).

Supplementing Greenmarkets are food cooperatives, as they also offer lower-priced produce to consumers and promote direct relationships between food producers and consumers. However, similarly to Greenmarkets, there are very few food cooperatives in New York City, making them the least common of the alternative food networks being examined. Across the city, there are a few found in Brooklyn and Queens, with two in Manhattan and one in the Bronx. Staten Island does not have any food cooperatives, but this is not uncommon as they have the fewest alternative food sources out of any borough. The food cooperatives that are present are typically located in wealthy or low income neighborhoods, so they are being used by participants of varying incomes; price may place a constraint on who can participate, as they are not found in the lowest income areas, but they are found in areas where residents are eligible for SNAP benefits. This means that food cooperatives are accessible but not as accessible to those in the lowest income bracket. This distribution is also seen with CSA drop-off points throughout New York City.

CSA drop-off points are concentrated in both high income and lower income areas, but are located primarily in Manhattan and Brooklyn; their reach does not extend

much further, as they are often found clustered together. There are only two CSA drop-offs in Staten Island, and there is only one in the outer reaches of Queens. Although they are not located in the most geographically diverse areas of New York City, they are located in areas of diverse income ranges, from the highest to the lowest median income. This implies that CSA drop-offs are being used by consumers with a range of incomes, so they provide a low-cost option for providing fresh produce directly to consumers.

Alternative food networks are spread out across the city and are present in neighborhoods that span the income range, however, it is clear that different income levels have different preferences for which alternative food networks they patronize. The locations of alternative food networks not only depends on income levels, but there are racial patterns to the location of alternative food networks as well.

Income Level ($)	**Census Tract Count**	**Food Growing Community Garden**	**Non-food Growing Community Garden**	**Greenmarket**	**CSA Drop-off Point**	**Food Cooperative**
0-20,780	584	163	110	3	9	1
20,781-27,024	520	110	87	3	16	6
27,025-31,176	265	34	26	0	11	0
31,177-41550	465	24	23	5	15	5
41,551-131,838	331	46	38	26	28	4

Table 2.2: the number of alternative food sources per census tract broken down by income level.

Income Level ($)	Census Tract Count	Number of Alternative Food Sources	% of Census Tracts with at least 1 Alternative Food Source
0-20,780	584	286	48.97%
20,781-27,024	520	222	42.69%
27,025-31,176	265	61	23.02%
31,177-41550	465	72	15.48%
41,551-131,838	331	142	42.90%

Table 2.3: the rate of occurrence of alternative food sources in census tracts broken down by income level.

Tables 2.2 and 2.3 show the relationship between income levels and the number of alternative food networks per census tracts. The relationship between income and alternative food sources becomes even more clear, as the census tracts become wealthier, there are fewer alternative food networks. The exception to this relationship is the wealthiest tracts where there are higher rates of occurrence of alternative food sources. In these upper-income tracts, there is a variety of alternative food sources. However Greenmarkets are heavily concentrated in upper-income communities, which are not the communities they were designed to serve. So although almost 50% of the lowest-income census tracts have alternative food networks located in them, there is not as much diversity in alternative food networks available to consumers living in those tracts.

Community gardens, both food growing and non-food growing were found mostly in the lowest-income food track. Once community gardens are established, they

have the lowest costs associated with producing food, so it makes sense in areas where income is the lowest, the lowest cost alternative food source is the most popular. Despite showing that the lowest income areas have the most alternative food sources, the tables also show that alternative food sources are not always where they need to be, as there are not as much variety in the alternative food sources available to the lowest income consumers. This offers areas for potential growth, as future policies can target bringing more alternative food sources to low income areas.

2.3 Race & Ethnicity and Alternative Food Networks

The maps below show the relationship between the concentration of Asian residents and the presence of alternative food networks.

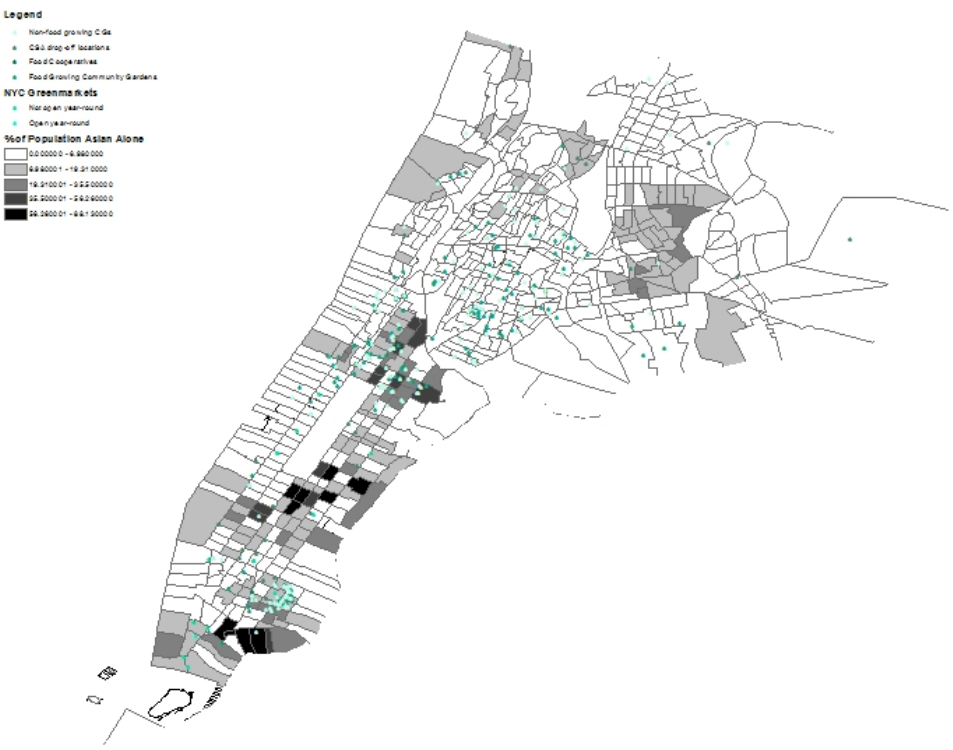

Figure 2.3a: All alternative food sources (food cooperatives, CSA drop-off points, food growing and non-food growing community gardens and Greenmarkets that accept SNAP benefits) mapped in comparison with the percentage of Asian residents per census tract (Manhattan and the Bronx).

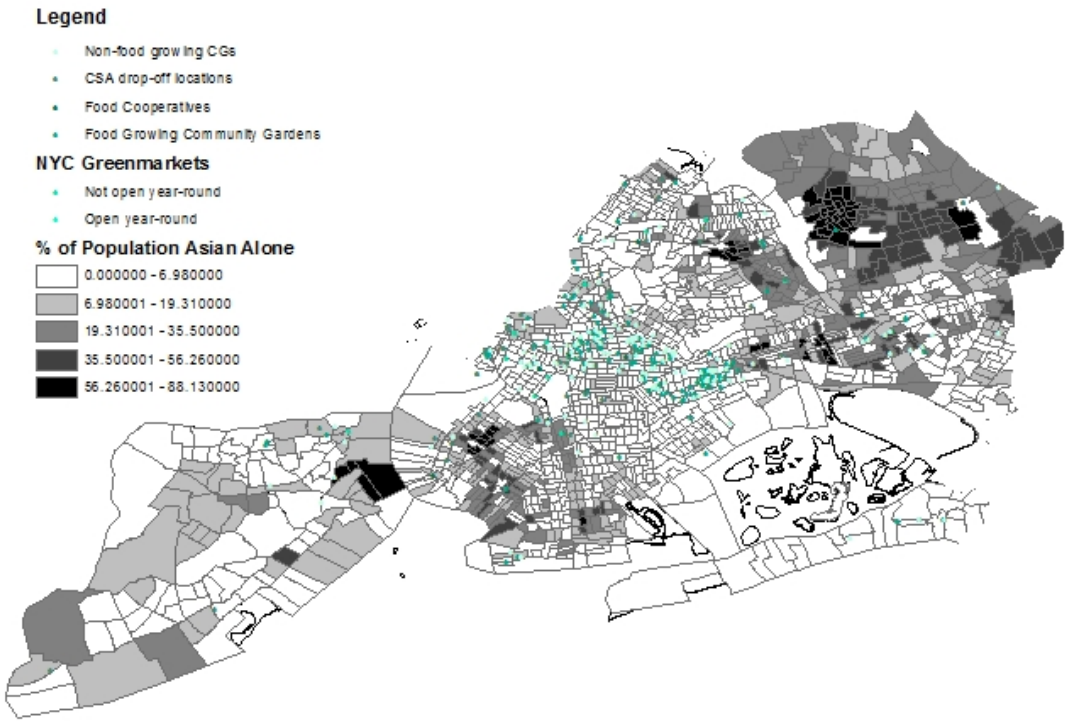

Figure 2.3b: All alternative food sources (food cooperatives, CSA drop-off points, food growing and non-food growing community gardens and Greenmarkets that accept SNAP benefits) mapped in comparison with the percentage of Asian residents per census tract (Queens, Brooklyn and Staten Island).

There is a notable absence of alternative food networks in areas that are predominantly Asian, as in the areas of the highest concentration in western Queens, there are only a few alternative food networks present, there are several CSA drop-off points, approximately ten community gardens, both food growing and non-food growing and two Greenmarkets. In the area with the more concentrated Asian population in Queens, there are two community gardens and one CSA drop-off point. For such a large area, this is an unusually low concentration, especially as community gardens are

typically found in clusters across New York City, regardless of where they are located. For example, in an area in Queens just outside of the predominantly Asian neighborhood, there is a cluster of community gardens. Even CSA drop-off points are typically clustered together, however that pattern is not seen in predominantly Asian areas.

There may be alternative food networks or other mediums of exchange in these areas that are not registered with the government of the city of New York, which would help to explain the absence of alternative food networks in these predominantly Asian neighborhoods. In addition, the areas which are predominantly Asian are mostly in Brooklyn and Queens, and are further from Manhattan, making them less convenient to access from the rest of the tri-state area, meaning that it simply may be less convenient for farmers to sell their goods there in Greenmarkets, food cooperatives and through CSA drop-offs. However, if this is the case, there should be a higher concentration of community gardens, especially food-growing community gardens in this area. This is not the case, as there are very few food-growing community gardens in areas where 20% or more of the population identify as Asian. CSA drop-offs seem to be the most popular alternative food network, however there is still a relatively low concentration of CSA drop-offs in Asian neighborhoods. This suggests that those living in these communities may not want to invest the same amount of time in to producing their own food, as required by community gardens or selecting their own produce, as required by food cooperatives and Greenmarkets. Participants in a CSA drop-off are given the food that is in season at that time, so although there are exchanges for participants to swap, there is still relatively little choice in what the participants are receiving, especially when

compared to community gardens, where participants choose which food to grow and food cooperatives and Greenmarkets, where participants are allowed to shop around and only purchase the food they are interested in.

The lack of alternative food sources may also indicate a different preference; the alternative food sources that are currently available to New York City residents may not be satisfying the needs of Asian communities, so they do not participate in them. This presents a larger problem, as to how those networks can be adopted to better meet the preferences and needs of this community, as alternative food sources are currently underutilized in predominantly Asian communities.

Patterns in racial preferences for alternative food networks persist when examining the locations of alternative food networks in Black communities. This is seen in the figure below.

Figure 2.4a: All alternative food sources (food cooperatives, CSA drop-off points, food growing and non-food growing community gardens and Greenmarkets that accept SNAP benefits) mapped in comparison with the percentage of Black residents per census tract (Manhattan and the Bronx).

Figure 2.4b: All alternative food sources (food cooperatives, CSA drop-off points, food growing and non-food growing community gardens and Greenmarkets that accept SNAP benefits) mapped in comparison with the percentage of Black residents per census tract (Queens, Brooklyn and Staten Island).

In predominantly Black communities, community gardens are the most popular alternative food networks. Most pockets of community gardens, both food growing and non-food growing are located in areas where 47% or more of the residents identify as Black. Almost all of the community gardens, both food growing, and non-food growing in New York City are in neighborhoods where 25% or more of the population identify as Black, suggesting strong cultural ties to community gardens. Community gardens allow residents to grow produce that matches their specific cultural needs, as also seen in Hispanic gardens across New York City (Saldivar-Tanaka and Kransy 2004). There is

also a high concentration of non-food growing community gardens, and while these are not a food source, they play an important role in the communities they are found in. Non-food growing community gardens are also known as ethnic or cultural gardens, and their sole purpose is to serve as a gathering place for those in the community. They can have as few as five members, or over twenty, but a unifying factor is typically a homogenous ethnic background, which is how these gardens get their name (Chitov 2006). Along with food growing community gardens, these gardens are very popular in areas with mostly Black residents, suggesting that they are significant culturally in these communities, and so the the non-food benefits of community gardens (lower crime rates, higher life satisfaction, health benefits, environmental education) are just as important to these gardeners (Guitart et al. 2012). These benefits also cannot be achieved through traditional food retailers, as community gardens offer the opportunity for underutilized spaces to be integrated back into the community and provide these social benefits (Guitart et al. 2012).

In those same areas, CSA drop-offs are popular as there are several spread out through many predominantly Black neighborhoods. However, there were very few Greenmarkets in these areas, and even fewer food cooperatives. Alternative food networks were not popular in all predominantly Black areas, as there are two neighborhoods where 71% or more of residents identify as Black, but there are very few alternative food networks. One of these areas is in the northernmost area of the Bronx, and there are five non-food growing community gardens and one CSA drop-off located in the area, but nothing else. This may be related to the earlier pattern seen areas with high proportions of Asian residents; these areas may be inaccessible so any alternative food

networks that are present are insular; community gardens do not require food producers to make regular trips to these further locations, which may explain some of why certain alternative food networks are not present in these areas, it may not be a product of race or income but convenience for food producers instead.

Similar patterns are seen in the relationship between areas with high concentrations of Hispanic residents and alternative food networks, as seen in the figure below.

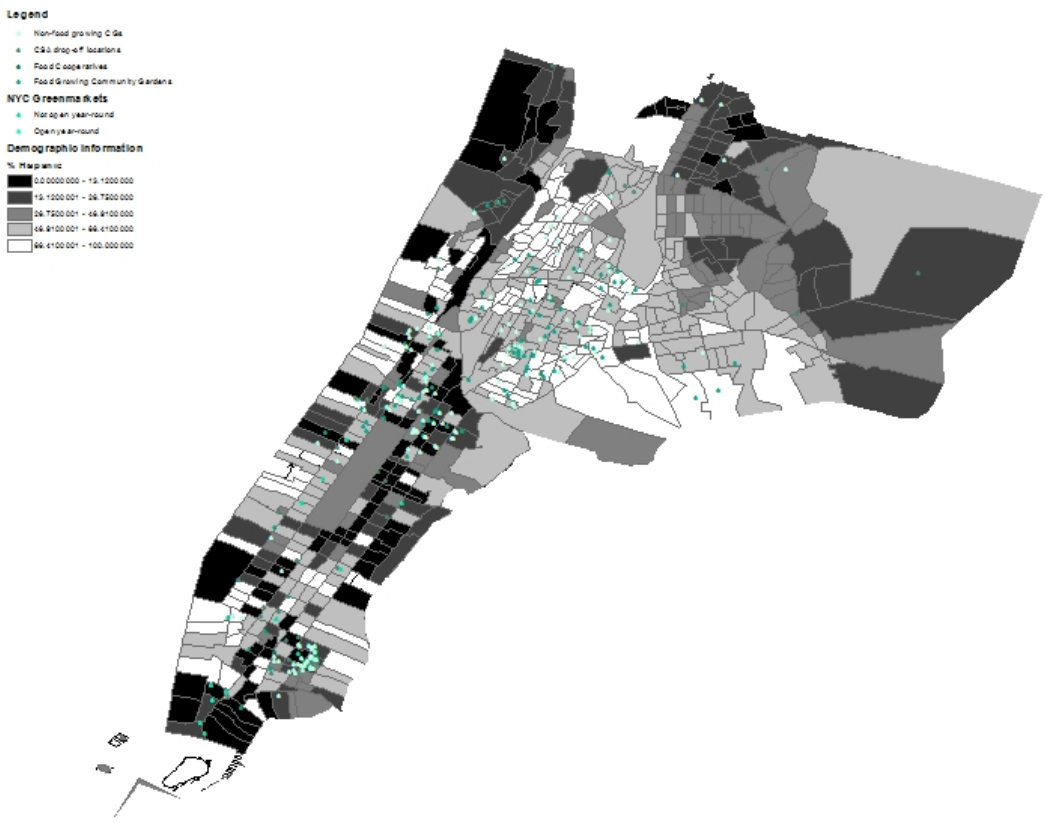

Figure 2.5a: All alternative food sources (food cooperatives, CSA drop-off points, food growing and non-food growing community gardens and Greenmarkets that accept SNAP benefits) mapped in comparison with the percentage of Hispanic residents per census tract (Manhattan and the Bronx).

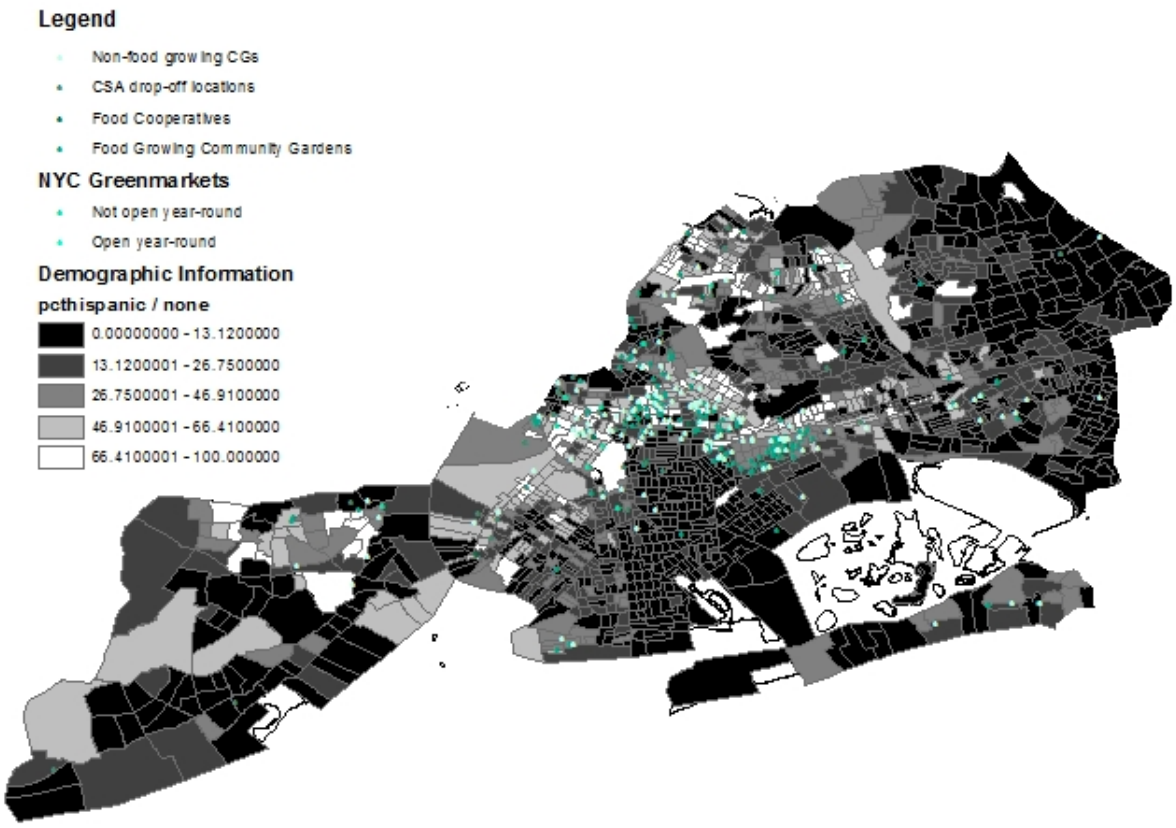

Figure 2.5b: All alternative food sources (food cooperatives, CSA drop-off points, food growing and non-food growing community gardens and Greenmarkets that accept SNAP benefits) mapped in comparison with the percentage of Hispanic residents per census tract (Queens, Brooklyn and Staten Island).

Areas with high concentrations of Hispanic residents tend to have high concentrations of both food growing and non-food growing community gardens, as Hispanic community gardens in New York City are heavily studied in academic literature, as they are not only a place where culturally important foods such as tomatillos, purslane and okra are grown (Saldivar-Tanaka and Kransy 2004) but home to casitas, gathering places for the community where social events are often held (Chitov 2006). These casitas are no longer multipurpose structures built by Hispanic communities

built in community gardens but also representations of cultural identity, as they have grown in popularity and become more recognizable as community gardens have developed throughout New York City (Chitov 2006). It is clear that these community gardens not only serve as a valuable food source for Hispanic communities, as there are many food-growing community gardens in Hispanic neighborhoods, but also as important gathering places.

Other alternative food networks have varying levels of popularity in predominantly Hispanic areas, as there are areas with significant Hispanic populations in all five boroughs, partially as a function of geography, there are many different alternative food networks in different areas with high Hispanic populations. Greenmarkets are common in areas that are predominantly Hispanic, however, not all Greenmarkets are found in or near heavily Hispanic areas. Food cooperatives are also relatively popular in Hispanic areas, as many of them are located in areas or close to areas with mostly Hispanic residents. The concentration of Greenmarkets and food cooperatives in Hispanic areas suggest that these alternative food sources are providing appropriate food to these demographic groups.

In addition, the concentration of Greenmarkets suggests that Hispanic recipients of SNAP benefits feel comfortable using their benefits at Greenmarkets and these food producers not only grow produce that the consumers want, but they are able to provide educational resources on preparation methods and nutrition in a way that encourages them to continue to shop at the Greenmarket. This method of education is crucial to the success of Greenmarkets, since if the food available to consumers is not familiar, or they

feel as if they are being talked down to, consumers will not continue to patronize that market (Larimore 2018). In order for Greenmarkets to be successful in this area, important cultural boundaries must have been overcome, as they have been able to stay in business and entice consumers to spend their SNAP and EBT benefits at the markets. This is ability to overcome cultural boundaries is important to expanding alternative food networks throughout New York City; programming in Greenmarkets has been successful so understanding what makes them appealing across cultural boundaries is important .

The final group's relationship to alternative food networks to be examined is those who identify as White, as seen in the map below.

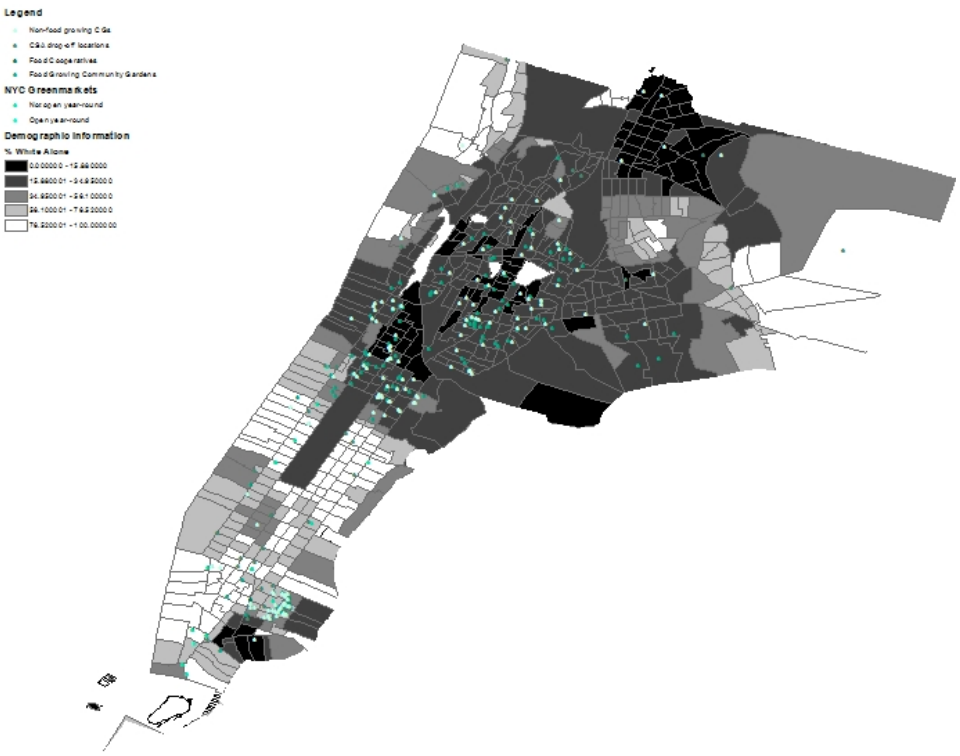

Figure 2.6a: All alternative food sources (food cooperatives, CSA drop-off points, food growing and non-food growing community gardens and Greenmarkets that accept SNAP benefits) mapped in comparison with the percentage of White residents per census tract (Manhattan and the Bronx).

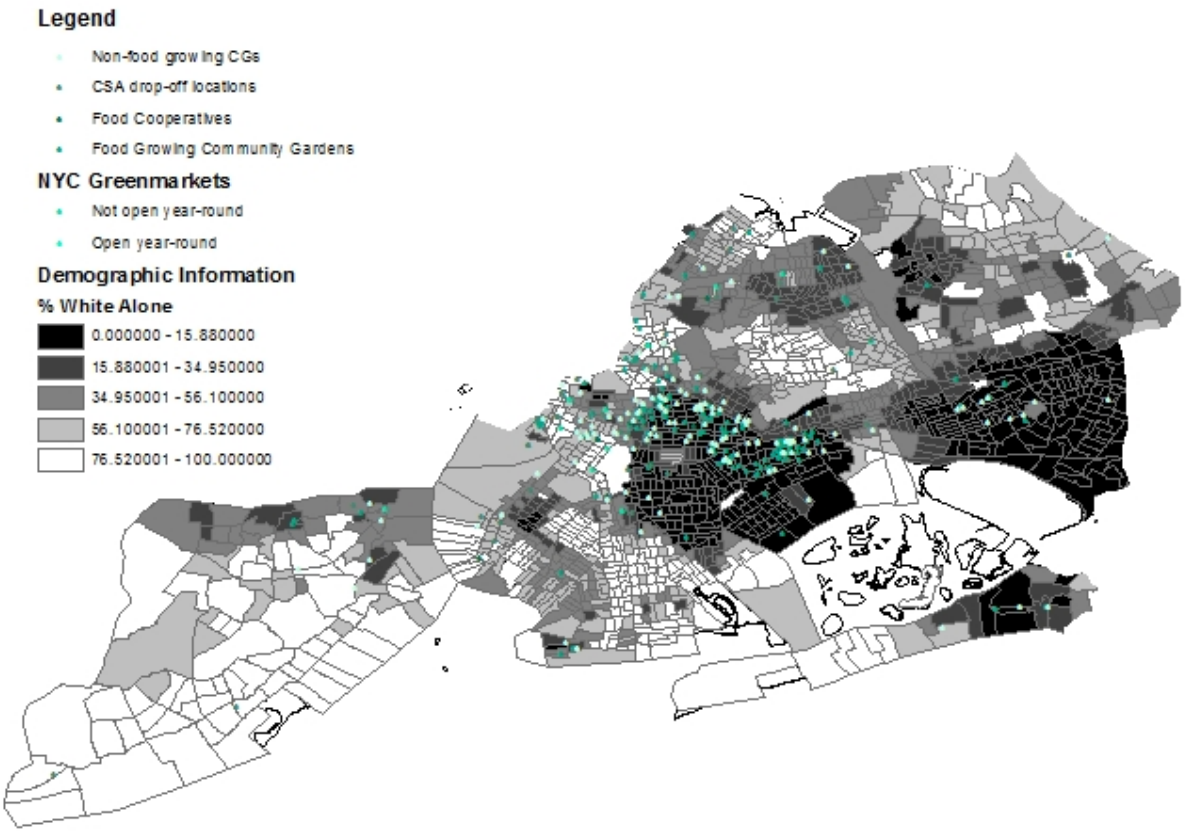

Figure 6.2: All alternative food sources (food cooperatives, CSA drop-off points, food growing and non-food growing community gardens and Greenmarkets that accept SNAP benefits) mapped in comparison with the percentage of White residents per census tract (Queens, Brooklyn and Staten Island).

As clear from the map, community gardens are not popular in areas that are predominantly white, as most of them are found in areas that are 35% White or less. However, CSA drop-offs, Greenmarket and food cooperatives are all popular throughout predominantly White neighborhoods. Almost all Greenmarkets are located in areas that are at least 55% White, with most of them located in areas that are 75% White or more. Greenmarkets do not have a wide geographic reach in New York City, which may explain part of the reason they are found in predominantly White areas. The same pattern

exists with food cooperatives, this suggests that White consumers prefer to have choice in their produce, as CSA drop-offs are common but not as popular in white neighborhoods. Greenmarkets and food cooperatives are most popular alternative food network in areas with a high proportion of White residents. This pattern, combined with the lack of community gardens in predominantly White areas indicates that these consumers would also rather purchase than grow their own food. Some of this may be due to space constraints; there are high concentrations of White residents in Manhattan, which is the most densely populated borough of New York City (jjay.cuny.edu), so there may not be as many lots available for community gardens in this area.

Staten Island is also predominantly White, and has the lowest concentration of alternative food networks in New York City. Staten Island is the least densely populated borough of New York City and is largely considered to be suburban, so residents have larger lot sizes (jjay.cuny.edu). Residents may be able to grow their own private gardens for food production as they have more space, so there may be less demand for community gardens, which would explain why there are only six community gardens in Staten Island; three food growing and three non-food growing.

2.4 Findings

There is a clear relationship between both income levels and the presence of alternative food sources, as well as racial/ethnic preferences for alternative food sources. Alternative food sources were present in areas of all income levels, so they are present in some of the communities that need access to fresh produce the most. Community gardens were most commonly found in these areas, as they do not require the consumer to

purchase the product, either with SNAP and EBT benefits or a different form of earned income. However, Greenmarkets did not seem to reach the intended demographic, as they were often found in areas higher income levels, and yet they were meant to target SNAP and EBT recipients. Despite this, across most income levels there was choice in alternative food sources, which indicates that price was often not exclusionary to certain groups, as food cooperatives, CSA drop-offs and Greenmarkets were all located in or near low-income areas, as well as upper income areas, providing choice across the income spectrum.

The only time that alternative food networks seemed to be nearly absent were in areas with high concentrations of Asian residents, however it is possible that there are alternative food sources in place that are not reported to or monitored by the city of New York or any of their partner organizations who help to manage alternative food sources. Hispanic and Black communities commonly participated in alternative food networks, with both of them favoring community gardens as the most common alternative food network. The opposite was seen in White neighborhoods, where alternative food sources that offered more choice and required less time commitment from the consumer proved to be the most popular. Some of these patterns may have been dictated by geography, as areas that were further from Manhattan typically had fewer alternative food sources present, regardless of the demographics of the area, which may indicate that food producers are less willing to travel to those areas to sell their products either through Greenmarkets, food cooperatives or CSA drop-off points. Despite these outliers, it is

clear that different groups have different preferences for how they prefer to get their food, and almost all groups participate in a variety of alternative food sources.

Despite there being racial preferences for different alternative food sources, it is clear that alternative food sources are used across many different racial and socioeconomic demographics, as they present a solution to food insecurity that is very responsive to community needs and preferences. The ability for alternative food sources to adapt to reflect the needs of the communities they are located in makes them popular amongst several racial groups as well as across all income levels. Although community gardens and other alternative sources started with the "hippies" and are often viewed as a "yuppie" activity, it is clear that they have the potential to serve a much broader community and they are beginning to expand to fulfill that potential and serve more diverse communities.

2.5 Explanations for Anomalies

From the maps, patterns as to how the demographic composition of a neighborhood encourages the development of alternative food networks or not. As seen in Figure 2, the median household income has an influence on what types of alternative food sources exist, as lower income communities are shown to have different preferences from upper income communities, but alternative food sources exist in communities across income levels.

The two exceptions to this are Staten Island and Queens, where there are larger lot sizes available to families, and communities tend to be more homogenous, both with regards to income and race. Staten Island and Queens have the highest proportion of

single family homes in New York City based on new housing permits (Roberts 2018). They also have the lowest proportion of multi-family housing permits, with the largest housing unit permits issued in Staten Island for two-family units. Queens had about one-third of new housing permits for units for more than three families, indicating that apartment buildings are not popular in those areas (Roberts 2018). This means that residents of those buildings typically have more space, and if there is any yard or space in the lot beyond the building, it is the property of the residents to use. Having access to this space allows for the building of private gardens, reducing the demand for community gardens and other alternative food options in this area, as private citizens are able to grow their own on their own property.

Larger lot sizes as well as a higher concentration of single and two-family homes also contributes to lower population density in these areas. This low population density may also contribute to the lack of popularity of alternative food networks, as areas with higher density, especially Manhattan, have much higher concentrations of alternative food sources. It is clear that in order to develop and be successful, alternative food sources require higher population densities to support them. All alternative food sources are community-based, and require members to actively choose to participate, oftentimes requiring participants to give time or money or both. If there are not enough people supporting the alternative food source, then it cannot continue to exist. With lower population densities, the number of people needed to support an alternative food source may not live in the area, making them unsuccessful in Staten Island and Queens. The racial composition of these areas may be further contributing to the lack of alternative

food sources found in Staten Island and Queens. While all boroughs of New York City have neighborhoods that are dominated by certain races or cultures, in Staten Island and Queens, there are several large areas that are racially homogenous. The majority of the neighborhoods in Staten Island are at least 50% White, with many of them 75% White or more. In Queens, there are several large areas that are predominantly White or Asian, and it is especially in those Asian neighborhoods that there are minimal, if any, alternative food sources present.

Figures 3, 4, 5 and 6 make it clear that race is an important factor in the presence of alternative food sources, this may be a result of cultural preferences as well. In racially diverse neighborhoods, there are more alternative food sources, so a network may be formed between the sources, rather than having each one operate as a completely separate and independent entity. The interactions that are required to participate in alternative food networks also promote diversity, as participants from different racial and socioeconomic backgrounds are brought together to work for the common good. The concentration of alternative food networks in economically and racially diverse neighborhoods adds to the intangible benefits of these networks.

As seen in figures 2, 3, 4, 5 and 6, alternative food sources tend to be clustered near each other, and different types of alternative food sources are often present in the same area. This demonstrates that neighborhoods that value alternative food sources also place value on having a choice in their food source; rather than having traditional grocers and one source of alternative food such as a Greenmarket, the residents of that neighborhood value having a choice in alternative food sources, so community gardens,

CSA drop-offs and/or a food cooperative is often found nearby. One reason for the clustering of different alternative food sources could be related to the heterogeneous racial composition of the neighborhood; different cultural preferences can play a role in preferences for which alternative food source is preferred. The prioritization of having choice in food source, as well as the diverse composition of these neighborhoods contribute to the concentration of alternative food sources in racially diverse neighborhoods.

2.6 From Alternative Food Sources to Alternative Food Networks

Although they are often found close together, alternative food sources do not necessarily work together to form networks, as different alternative food sources have different needs for space, governance, funding and connections to outside food providers. However, it is also clear that alternative food sources tend to be clustered together, so cooperation between them is geographically convenient. Developing a network and increasing cooperation between alternative food sources can help increase membership and participation, make consumers more aware of the food choices that are available to them. In addition, this can help expand alternative food sources in the areas that need them the most. As seen in figure 2, Greenmarkets that accept SNAP benefits are often not located in low-income areas, which is the target communities. If a network is developed between alternative food sources, then the network may be able to assist with the process of bringing Greenmarkets to those neighborhoods as well as educating those already participating in pre-existing alternative food sources about Greenmarkets to insure that there are enough patrons needed for success.

Building a network between seemingly independent alternative food sources may seem impossible, or at the very least unrealistic considering the number of individual alternative food sources; there are over 500 food-growing and non-food growing community gardens. However, there are several non-profits that help to organize and manage these alternative food sources, so instead of connecting individual gardens with food cooperatives, the organizations should instead focus on working together and coordinating their efforts. Grow NYC describes themselves as "The sustainability resource for New Yorkers" and are responsible for helping to build and support community gardens, often working with GreenThumb, the New York City Parks community garden program. Grow NYC also manages the Greenmarkets, providing maps of the Greenmarket locations and operating hours through their website. In addition, Grow NYC hosts workshops on healthy cooking and runs various initiatives on healthy eating through their Greenmarket program ("Greenmarket Farmers Market", 2018).

GreenThumb is an organization run through New York City Parks, the organization manages about 500 community gardens, keeping track of food producing gardens that fall under the jurisdiction of New York City Parks. The organization also holds workshops in the gardens they manage, as well as provide resources to help potential gardens open their own garden. GreenThumb also maps the locations of community gardens across New York City, providing links to individual garden websites so that those interested have the information needed to get involved with the gardens in their area ("GreenThumb", 2019). Farming Concrete pairs with both GreenThumb and Grow NYC to help track food production in community gardens, as they have developed

a toolkit to help community gardens keep track of the amount of produce being produced by their gardens. Farming Concrete keeps track of community garden data globally, not just from New York City, and is working to develop reports based on the self-reported data that gardeners have entered into their website (farmingconcrete.org).

A part of the mission of Solidarity NYC is to make information about food cooperatives and CSA drop-offs more easily available, and accessible, and so to accomplish that goal, they provide public maps of food cooperatives and CSA drop-offs, as well as the individual websites of these organizations, so that those interested in participating in these can easily access the information needed to participate. Solidarity NYC is important to making sure that all residents of New York City have the information needed to participate in the solidarity economy, and by providing maps and information, they make food cooperatives as well as CSAs accessible to everybody, encouraging participation (solidaritynyc.org). OASIS is an organization that provides community maps of New York City, so their publicly available maps include all alternative food networks, as well as information on public transportation, landscape imagery, parks and open spaces amongst others ("Oasis NYC", 2018). While OASIS is not directly involved with the development or management of alternative food networks, it does provide information important information on them to the public to help make them more accessible.

Chapter 3: Moving Forward with Alternative Food Networks

As seen from the geospatial data, alternative food sources are numerous throughout New York City, and often, they are located in the areas that need the services they provide. However, they are not located in all neighborhoods that experience food insecurity, and as income levels rise, alternative food sources decline in popularity. The one exception to this trend is seen in the wealthiest areas, when the prevalence of alternative food sources (particularly Greenmarkets) increases. In the areas where the number of alternative food sources available declines, the income levels are still relatively low, as the median household income is low enough that a family would qualify for SNAP benefits with an earned income. While the median income for these areas does not fall below the poverty line, there is still federal assistance available at that level, indicating that those living in the area are still susceptible to food insecurity.

In order to better address this problem, alternative food sources can be brought together to better meet the needs of the community. Independently, alternative food sources cannot be used to alleviate food insecurity on their own. However, they can work in conjunction with each other to form an alternative food network, which is created by alternative food sources working together to provide food year-round by offering several different alternative food sources which complement each other to fulfill the nutritional needs of the area. Alternative food sources are important to alleviating food insecurity as many times SNAP benefit recipients can be hesitant to accept and utilize their benefits for a myriad of reasons.

3.1 Boundaries to Accepting SNAP

Part of the reason that SNAP benefits may be underutilized is due to the cultural and educational boundaries, as in a study done of two farmers markets in Washington DC, it was found that those receiving SNAP benefits want to shop in a place that is comfortable to them and they can interact with the food producer in an informal way. When a direct comparison was made, farmers market that felt the need to educate consumers on healthy eating habits and used highly specific, niche words to describe the food such as "monorganic" or "soy free" was found to intimidate and isolate low-income consumers, typically recipients of SNAP benefits (Larimore 2018). Minority and low-income persons have also reported feeling uncomfortable and out of place in some alternative food sources when foods that they are unfamiliar with the products being sold or view them as inaccessible, with one participant describing the food being sold at one trendy market as "birdseed" (Larimore 2018).

In the comparative study of two farmers markets, one was deemed to be a "yuppie" market (Southside Market in Washington DC), where the majority of consumers are White, middle class and have a college education. This demographic has caused it to be dubbed the "yuppie" market due to the consumers who frequent it, which has made those who do not fit that demographic uncomfortable shopping there (Larimore 2018). Those who were lower income, SNAP recipients were perceived by producers to have relatively low pre-existing knowledge about alternative food networks and healthful eating, placing them into the "Unaware" consumer category. The producers selling in the "yuppie" market believed it was their responsibility not only to provide consumers with

organic, locally grown food but also to educate them about the benefits of alternative food networks as well as healthful eating choices, especially targeting “Unaware” consumers for education on healthful eating. This environment has the opposite impact then intended, making those consumers feel uncomfortable in the marketplace. Adding to their discomfort, many times these producers were also not as sensitive to requests for discounts, making lower income consumers feel out of place in the market and like the products being sold are inaccessible to them (Larimore 2018).

In a different farmers market located in the same city but in a low-income food desert, a different environment was created, as the producers selling at the market viewed their role to provide their products as well as educate consumers, but unlike at the “yuppie” market, consumers assume a basic level of understanding of alternative food networks as well as nutritious eating, and instead seek to build on that knowledge as well as highlight new or different products (North Side Market) (Larimore 2018). This market also sought to make itself more accessible to those who were on SNAP benefits by developing a credit system that allows for those who are waiting to receive their benefits to purchase goods and complete the payment at a later time. In addition, when there was an increase in Hispanic/Latino consumers in the market, to reflect the changing demographics, the owners of the market learned Spanish phrases and began stocking foods such as avocados, tomatillos and mangoes as well as selling nuts and fruits used in traditional dishes around Christmas (Larimore 2018). These changes to accommodate consumers, along with the equitable treatment of those receiving SNAP benefits led to this market being more popular with those eligible for SNAP, so it served as a valuable

resource in bringing affordable produce into an area recognized as a low-income food desert. Those who chose to shop in this market stated that one of their main motivations was the community that was associated with the market and wanting to support the providers of produce. Those participating in this market are not only benefitting from being able to purchase locally grown produce with the advice of the growers using their SNAP benefits, but they are also able to benefit from the community developed from the market and steps taken to ensure that they feel like a part of that community (Larimore 2018). Having farmers markets that accept SNAP have proven to be important, however, Larimore demonstrates that it is equally important that those farmers markets to be racially and culturally aware to best serve consumers who need access to affordable, healthy food.

The study completed by Larimore on farmers markets made it clear that a sense of community is important in the development of alternative food sources that will be used by those who are food insecure. It also demonstrated the importance of having alternative food sources in areas that are close to those who need them so that they are easily accessible (Larimore 2018), especially considering that 45% of households in New York City own cars ("New Yorkers and Their Cars", 2018), making accessibility particularly important when discussing the placement of alternative food sources. Car ownership rates are the lowest in Manhattan, with only 22% of households owning one car. The reliance on public transportation becomes even more apparent, with only 27% of commuters across New York City commuting via van, car or truck ("New Yorkers and Their Cars", 2018). Considering the lack of private transportation, it is important that consumers live

close to their food source so that it is easily accessible. Community gardens present a solution to that problem, as they are built on vacant lots in neighborhoods and gardened by those who live nearby, they are relatively conveniently located to those who are using them, reducing the accessibility problem which created many of the food deserts in New York City.

Other patterns and boundaries that prevent those eligible from accepting SNAP benefits have also been examined, as cultural stigma is not the only reason that eligible participants may not take advantage of the benefits they are eligible for. SNAP is often perceived to be a government handout or a sign that one cannot support themselves, so those eligible are hesitant to use them for fear of being perceived as a freeloader (Larimore 2018).

Utilizing SNAP benefits is important to households that are food insecure, as accepting SNAP benefits has been found to reduce the likelihood of that household being food insecure by 7.1% (Swann 2017). Although not all households that are eligible for SNAP utilize them, utilizing SNAP benefits has been proven to help alleviate food insecurity, which is the primary goal of the SNAP program. Alternative food sources can serve as a method to bridge that gap between consumers and accessing affordable produce.

Alternative food sources, particularly community gardens and other urban agriculture programs are heavily dependent on public policies supporting them for a myriad of reasons. Alternative food sources require funding, laws that support their use of the space, permits and public support if accepting SNAPs and EBT payments. Due to

the institutional support required, it is important that alternative food sources are included in New York City's institutional plan, so that the full benefits of alternative food sources can be utilized as well.

3.2 OneNYC Report

OneNYC is an initiative started by the city of New York in 2015, as government officials developed a plan to make the city more equitable, sustainable, just and safer. This undertaking is divided into four different "visions" focused on supporting a growing New York City, making New York City more just and equitable, improving sustainability and strengthening infrastructure. The purpose of this plan is to improve living standards for everyone living in New York City, and in the 2018 report, it boasts that the air and water of New York City have never been cleaner, crime has fallen and neighborhoods are more "environmentally just" (Bloomberg 2018). The report has a focus on reducing inequality, with one a focus being placed on providing healthy foods to low income neighborhoods as a way to reduce food insecurity.

The section titled "Healthy Neighborhoods, Active Living" is focused on healthy food access in low-income communities that are considered to be underserved, and in some cases food deserts. These communities are the ones that have relatively high concentrations of alternative food networks, as seen in Figure 2. In the section describing initiatives being taken to improve food access in these areas, alternative food networks are not mentioned as a possible solution. The report briefly discusses farmers markets as a potential food source and the Health Bucks Program. Health Bucks are $2 coupons that consumers can use to purchase fruits and vegetables at all New York City farmers

markets, so their reach expands beyond Greenmarkets. Health Bucks are earned when consumers spend $5 on produce at a participating farmers market. This program is designed to provide positive reinforcement by rewarding consumers for making healthy shopping choices (Bloomberg 2018).

The other initiative that is a part of the section on creating a more sustainable and equitable food system is the discussion of Shop Healthy NYC, a program that has given 131 bodegas and supermarkets in Brooklyn, Harlem and the Bronx commendations for promoting healthy foods in the stores. This program targets consumers where they are already shopping to encourage them to make healthy eating choices; rather than forcing consumers to develop new habits, this program aims to help consumers adjust their habits so that they can make better eating choices where they already shop (Bloomberg 2018). The other improvement to fresh produce access that is discussed in the report is the remodeling of a food distribution center located in the Bronx River Corridor to improve functionality and access. GrowNYC is involved with the project to help ensure more reliable food access to members of the community that the distribution center serves (Bloomberg 2018).

The projects being undertaken as a part of One NYC are very important, as food insecurity remains a prominent issue in New York City. However, alternative food networks can play a more prominent role in the One NYC vision, especially when dealing with food insecurity. Alternative food networks align with the goals of One NYC, as they help to combat food insecurity and other environmental justice issues, such as building green spaces in low-income neighborhoods. As One NYC aims to make New

York City a healthier, more equitable city, alternative food networks help not only promote healthy eating but also align with the goal of creating a more equitable and just city. As alternative food networks are accessible to all and democratically run, boundaries to members joining are limited to time constraints and geographic location, not income. Including alternative food networks in the One NYC report aligns with the goals of the project, as the section on food security emphasizes farmers markets as well as the creation of a food system that is more healthful and equitable for everybody living in New York City.

In addition, the focus of the Healthy Neighborhoods part of the One NYC focuses on developing neighborhoods that are conducive to exercise to promote healthy lifestyles. Community gardens provide green spaces, and as seen in Figure 2, community gardens are typically found in low-income neighborhoods, so the areas being targeted by the Healthy Neighborhoods. By utilizing alternative food networks, One NYC will be able to reach their goals more efficiently by utilizing community gardens and the already existing programming that is associated with that garden to fulfill the dual goals of the Healthy Neighborhoods program. Alternative food networks fit into the vision of creating a healthier New York City, as they not only increase access to fresh produce in communities, but they also encourage participants to spend time outside, as oftentimes they are located outdoors. For example, community gardens create green spaces and serve as a community gathering place, helping to develop stronger community bonds as well as healthier eating and living habits.

The Shop Healthy NYC program can also help to alleviate food insecurity throughout low-income neighborhoods as well. The program uses preexisting infrastructure, by rewarding already existing bodegas and supermarkets, but it is limited to the three areas that it focuses on (Bloomberg 2018). Food insecurity is a problem in all five boroughs in New York City, so the programs geographic reach should be expanded to all neighborhoods where food insecurity is a prominent issue. Although rewarding bodegas and grocery stores does not have the same positive social benefits as alternative food networks have been known to have, it is a step in alleviating food insecurity, and has been deemed successful by the city of New York.

In order to develop a thriving alternative food network, certain requirements must be met to support the network. These requirements mean that local policies can insure the success of a new alternative food source. Different alternative food sources require different policies to support them, so each source and the policies that they require will be examined.

3.3 Community Gardens

Zoning laws are essential for the success of community gardens, as if the zoning laws do not permit for the garden to be grown, then the project does not have the potential to progress and provide the needed services to the consumers. As pointed out by Pawlowski in *From Food Deserts to Just Deserts: Expanding Urban Agriculture in U.S. Cities Through Sustainable Policy*, zoning laws first became commonplace in 1926 following the Supreme Court Case Village of Euclid, Ohio v. Ambler Realty Co. 47. Modern zoning laws are used to regulate the healthy, safety and wellbeing of citizens,

which means that they are often used to control population and population growth, dictate how land can be used, regulate commercial and residential development as well as divide municipalities into districts, grouping similar activities together, such as a residential district, industrial district, etc. (Pawlowski 2018).

Although these zoning laws are designed to help and improve citizen safety and well-being, their strict regulation can be an impediment to the construction of urban agriculture. Zoning restricts land usage, which limits efficient usage of land, which means that depending on where the land is located within the city, its usage as an urban agriculture site may be prohibited despite its' potential for other uses (Pawlowski 2018). In addition, with the newfound popularity of urban agriculture, zoning language surrounding it can be vague. While laws may not explicitly ban urban agriculture in a certain area, they may not be encouraged either, which can lead to proposals for new projects to be stopped due to technicalities or vagueness in zoning laws (Pawlowski 2018). This lack of clarity and support further contributes to the inefficient usage of land under zoning laws which can sometimes serve as an impediment to urban agriculture projects. Beyond explicit land usage limiting where community gardens can be built, laws stating the requirements for land size and where structures can be built can also serve as deterrents for potential projects. Municipalities may require lots to be a certain size if urban agriculture projects are going to be built on them, which can limit the number of lots that can be used for the project, reducing the chances that the project will receive the necessary permits and be completed on time (Pawlowski 2018).

This lack of clarity on zoning is clear in New York City, as land use areas are divided into three categories: residence, commercial and manufacturing (nyc.gov). While food cooperatives, Greenmarkets and even CSA drop-offs can be considered to be commercial and zoned as such, community gardens often have no commercial component, and cannot be considered manufacturing, leaving them in an unclear area as to how they should be zoned. To help alleviate this problem, New York City has zoning for agriculture, which allows for agriculture (community gardens, personal gardens, rooftop gardens and greenhouses, etc.) to be grown in residential areas (nyc.gov). Agriculture is also allowed in the majority of commercially-zoned districts, as well as manufacturing districts, as they are categorized to be a part of Use Group 17C. The only areas where agriculture is never permitted is in areas zoned to be a part of amusement parks (nyc.gov). This allows for gardens to be planted throughout the city, making it easier for community gardens to be planted where they are needed the most. However, once persistent concern about community gardens, especially in New York City with rising property values is the availability of space. With availability of space being a concern for community gardens, vacant lots present an opportunity to not only begin a new community garden, but also improve the quality of the neighborhood through the addition of more green space and open areas. The map below shows vacant lot locations throughout the five boroughs of New York City as well as the median household income for households within each census tract.

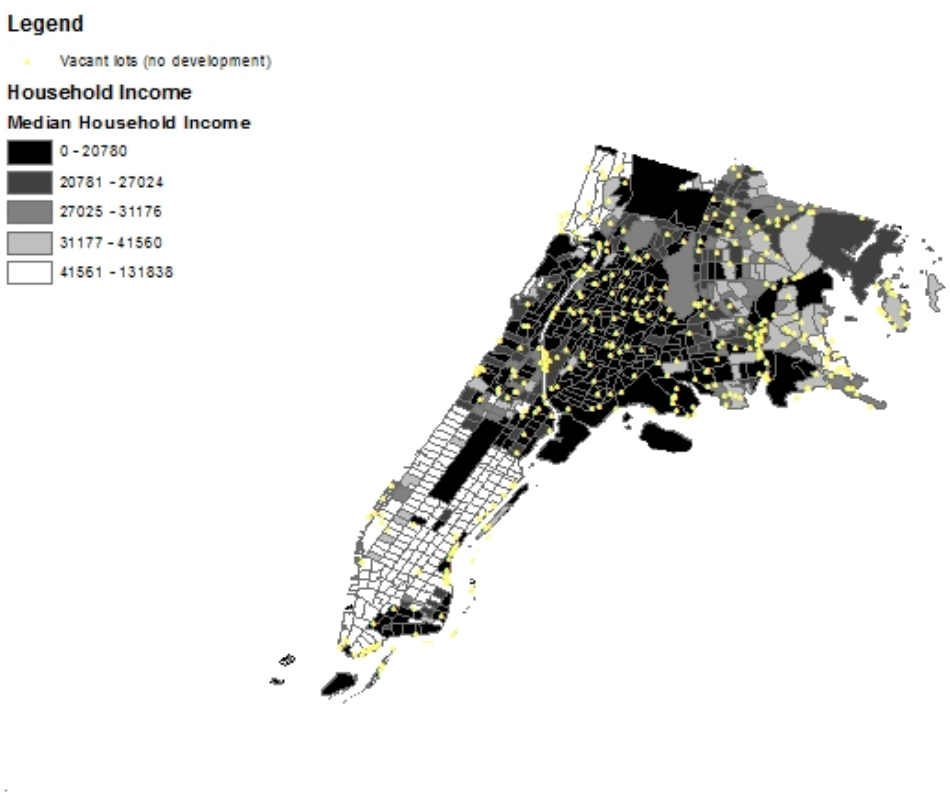

Figure 3.1a: this map shows vacant lots with no development throughout New York City. Information on vacant lots were taken from the New York City Facilities database and information on median household income was taken from the US Census database (Manhattan and the Bronx).

Figure 7.2: this map shows vacant lots with no development throughout New York City. Information on vacant lots were taken from the New York City Facilities database and information on median household income was taken from the US Census database (Queens, Brooklyn and Staten Island).

As clearly demonstrated in the map, there is a disproportionate concentration of vacant lots in lower income neighborhoods. There is also an abundance of vacant lots without any development on them throughout New York City, meaning that there is the potential for many gardens to be grown in those areas. All vacant lots cannot be made into community gardens due to zoning laws, soil quality, condition of the lot and community interest amongst other factors, but it is clear that the space is available in New York City to build community gardens, especially in the lower income neighborhoods

where the need for the gardens is the greatest. If only a small proportion of these lots are eligible to be turned into community gardens, that will still result in an increase in alternative food sources and an increase in availability of healthful foods in low-income neighborhoods that do not have the access they need.

3.4 Bodegas and Other Sources of Food

The study by Segal directly compared Harlem with the neighboring Upper East Side neighborhood, which is a middle to upper income neighborhood that is predominately white. For the purposes of this study, food deserts are considered to be census tracts that do not have grocery stores present in them (Segal 2010). There are over 300 census tracts in Manhattan alone, and the typical tracts in Harlem encompass roughly eight blocks, with some being larger, dependent on population density (nyc.gov). While census tracts are a small area, they encompass roughly the same number of people, so the demand for food should be roughly the same in each tract, creating an equal need for grocery stores in each tract. This means that grocery stores should be roughly evenly distributed throughout census tracts to mirror the similar populations in each census tract. While the range of people living in census tracts can vary from 1,200 to 8,000, the average size is 4,000 people per tract (United States Census Bureau", 2019). Given the uniformity population sizes within census tracts, then the number of grocery stores, bodegas and fast food restaurants as well as their distribution throughout the neighborhoods should be roughly equivalent in the Upper East Side and the neighborhoods of Harlem examined.

Segal's survey discovered that these conclusions do not hold true. It was found that both neighborhoods had bodegas, fast food restaurants and grocery stores present in them, but what differentiated the neighborhoods was the prominence and distribution of these establishments. When comparing lower income (East and Central Harlem) and upper income neighborhoods (the Upper East Side), bodegas and fast food restaurants were more concentrated in lower income neighborhoods. In the Upper East Side, grocery stores were more commonly found, resulting in fresh produce and more healthful options being readily available to consumers (Segal 2010). While bodegas and fast food restaurants supply food, they are often present in areas considered to be food deserts, as they do not provide fresh produce or other healthful options. Bodegas are known for their selection of filling, high-fat, high-sugar foods that can be produced and sold cheaply. Heavy advertising of these foods is also a characteristic of bodegas as well, so not only is the food more readily available to consumers than other, healthful options, but they are encouraged to eat it through advertising campaigns. Despite having food available to those living there, East and Central Harlem are considered to be food deserts because of the food options available to consumers (Segal 2010).

These food deserts in Harlem do not fit the conventional USDA definition for a food desert, as in urban areas for an area to be considered a food desert, no grocery stores may be present within one mile, and as a result of the dense population and size of New York City, there are no areas that are further than one mile from a grocery store in the five boroughs (usda.gov). Many of these areas do not contain vacant lots needed to start gardens, or significant social or financial barriers exist to opening gardens on vacant lots

that may be available. In addition, in New York City, the growing season is relatively short, so gardens cannot be relied upon as a reliable source of food year-round. An alternative to community gardens that does not require the same time and space commitments are Greenmarkets, farmers markets that accept SNAP and EBT benefits.

3.5 Greenmarkets

Greenmarkets provide locally grown produce, which is sometimes even organic, but it does not require the same time commitment from those in the community to grow the food, and one set of farmers can attend markets in several different locations in one week. This allows for them to reach a broader geographic scope of people than just one garden would. However, produce sold at farmers markets is not free to consumers. Greenmarkets seek to bridge this gap by offering several different incentives to low-income consumers. These markets accept SNAP and EBT benefits, so low-income consumers are able to use their federal subsidies to purchase fresh fruits and vegetables. In addition, Greenmarkets offer Health Bucks, a program designed to encourage SNAP and EBT recipients to purchase fresh produce. For every $5 spent on produce using SNAP and EBT benefits, consumers receive an additional $2 credit which can only be spent on produce. This encourages healthy eating choices, as consumers are rewarded for spending money on fresh produce ("Greenmarket Farmers Market", 2018).

3.3 Community Gardens and Greenmarkets

Despite fulfilling different needs of the community, Greenmarkets and community gardens already work together in order to fulfill the needs of the communities they are located in. Both Greenmarkets and community gardens are run by the same

organization, Grow NYC, which allows for a more strategic allocation of resources, as Greenmarkets can be placed in areas that are underserved by community gardens and vice versa. This helps meet the needs of more communities as well. As seen from the maps and table, Greenmarkets and community gardens are not located in the same areas, as Greenmarkets are concentrated in wealthier areas and community gardens are frequently found in lower-income areas, they are working together to provide more communities with an alternative food source.

In addition to combining resources to cover a broader geographic range, Greenmarkets and community gardens also work together in their educational programming. One of the reasons that Greenmarkets are successful as an alternative food source is the educational workshops they offer to consumers to educate them on how to prepare the produce being sold. Produce grown in community gardens and Greenmarkets can oftentimes be similar, as they are being grown in the same climate, although produce grown in a community garden is grown in a much smaller space and not by a professional. The preparation techniques that are a part of the Greenmarket educational workshops can also be used to prepare the food being grown in community gardens, increasing participation in both.

3.7 Food Cooperatives and Vacant Lots

Food cooperatives offer an alternative to both farmers markets and community gardens, as many of the growing season restrictions do not apply to cooperatives, as they can act as a food source year round. Just over 20% of the food sold in cooperatives is local (Depasquale, et al. 2018), so while they do support local famers,

the food supply is not seasonally dependent. Food cooperatives have other limitations associated with them, as discussed earlier, but policies can be developed to help support opening more cooperatives in New York City, as there are currently only sixteen active food cooperatives (Depasquale, et al. 2018).

Despite their mission to further food justice and promote economic development in the communities where they are located, food cooperatives have struggled to expand throughout New York City, as there are currently only eight food cooperatives concentrated in Brooklyn and Manhattan (DePasquale et al. 2018). The Park Slope Food Coop has tried to help remediate lack of popularity by offering mentorship and technical assistance to other food cooperatives in New York City, but this has not always been successful, as despite their help, the South Bronx Food Coop was forced to close in 2010 because of low membership (DePasquale et. al 2018). When successful, food cooperatives have been effective in providing low-cost produce to traditionally underserved communities, however they have struggled to gain a following in New York City, so they are not reaching their full potential as a way to reduce food insecurity (DePasquale et al. 2018).

One of the main barriers to opening cooperatives of any type, especially food cooperatives, is access to financing. Traditional financial institutions, such as commercial banks, require a personal guarantee from the recipient of the loan, but the structure of cooperatives being community owned prevents that from happening, so they are unable to obtain the funding necessary to place a deposit on a retail space, preventing the coop from in the first place (Depasquale, et al. 2018). Access to resources and trained

professionals is another area where cooperatives typically struggle, as the state of New York does have a distinction that allows for cooperatives to be established as cooperatives rather than forcing them to choose another type of business as with some other states, but new cooperatives still need access to trained lawyers and accountants who are familiar with the unique needs presented by a cooperative and will be able to help them (Depasquale, et al. 2018). One suggestion to help alleviate this problem would be to create incubators to help develop ideas for new cooperatives and then have trained professionals work with those incubators to help bring the visions to fruition (Depasquale, et al. 2018). While direct policy intervention may not be the best way to create the pathways between cooperatives and experts, the city of New York can also create a resources database for potential cooperatives to increase access to the information as well as help to begin to build incubators throughout the city. While this solution does place much of the initiative on those who are working to begin the cooperative, it does allow for a streamlining of what can at times be scattered or difficult to access information.

A critical area that cooperatives struggle with, especially cooperatives that sell food, is access to affordable land in or near the target neighborhood. Food cooperatives are designed to sell fresh produce at prices lower than the grocery store, so as a result, that means that they cannot afford to pay higher rent prices without raising their prices, going against their purpose. Policies can alleviate this issue, if they are put into place to sell the land to coops at discounted prices, or to put in a price ceiling so that they can continue to afford to rent that space in the future (Depasquale, et al. 2018). This issue

pairs with the other obstacle that challenges food cooperatives specifically; education of the community. As discussed with the barriers to Greenmarkets, the food cooperatives must be frequented by those they are designed to help in order to be successful in their mission. This requires that the public surrounding the neighborhood be educated on the food cooperatives purpose, as well as how to shop there using their federal assistance programs. In the past, cooperatives have served middle-income, white consumers, which is not the intended demographic when trying to alleviate the impact of food deserts, so it is important that the food cooperatives are addressing the needs of the community they are intended to serve to prevent this from happening. Policies also need to be put into place regarding the governance of food cooperatives to regulate them and insure that they continue to work for the needs of the community (Depasquale, et al. 2018).

Currently, there are only 16 food cooperatives currently operating in New York City. In addition to funding, one barrier that is faced by potential food cooperatives, especially in New York City is the access to space. Being able to building the neighborhoods that they are trying to serve is an important obstacle that they must overcome. However, as the map below shows vacant lots with development on them are concentrated in lower-income neighborhoods, the same neighborhoods who need the coops to provide fresh, affordable food to them the most. Taking advantage of the existing structures on these lots to reduce construction costs as well as reduce the number of abandoned buildings in the neighborhoods will help lower funding obstacles to opening a food cooperative as well as improve the neighborhoods that they are building in.

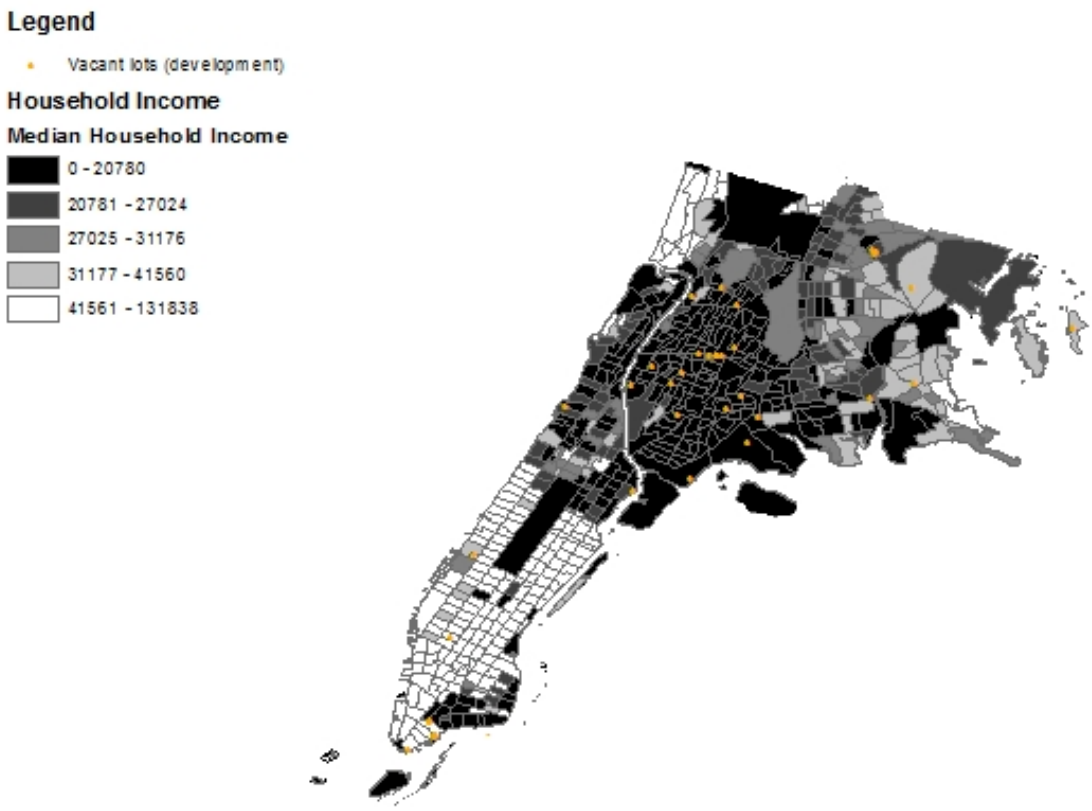

Figure 8.1: This map shows vacant lots with development on them throughout New York City. Information on vacant lots were taken from the New York City Facilities database and information on median household income was taken from the US Census database (Manhattan and the Bronx).

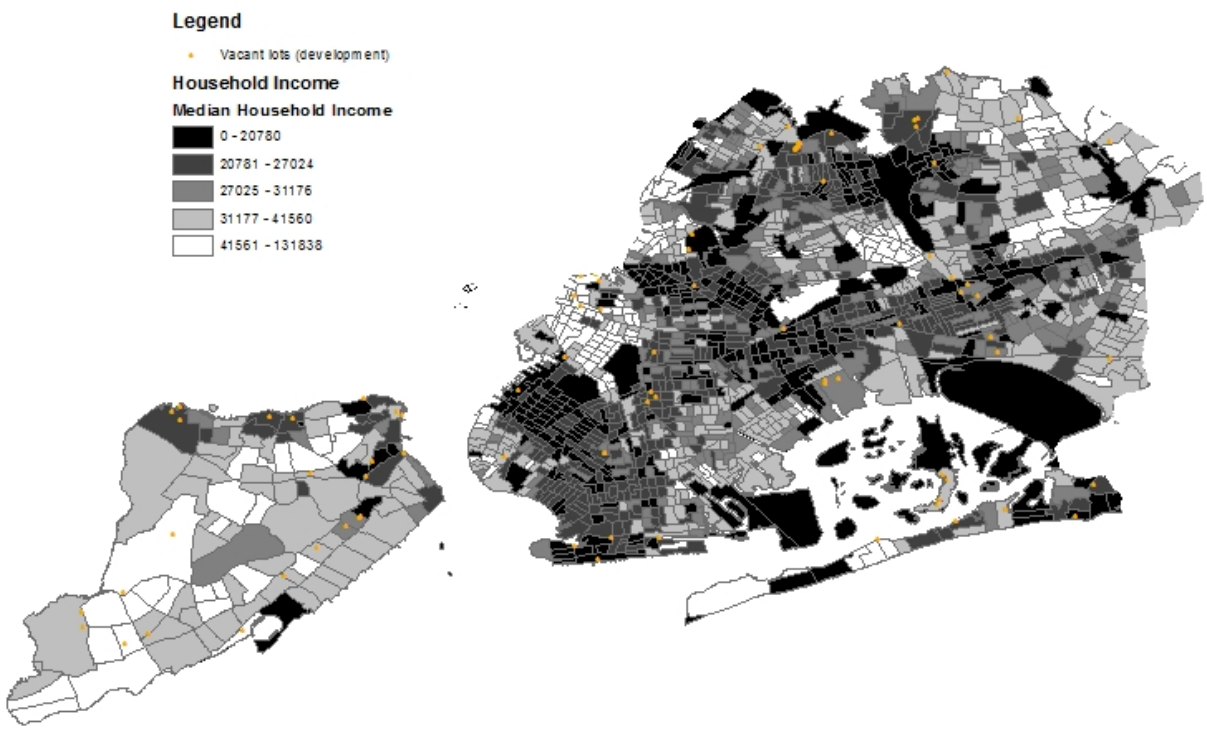

Figure 8.2: This map shows vacant lots with development on them throughout New York City. Information on vacant lots were taken from the New York City Facilities database and information on median household income was taken from the US Census database (Queens, Brooklyn and Staten Island).

Although there are not as many vacant lots with development on them as there are vacant lots with no development, the lots that have development are still concentrated in lower-income neighborhoods, especially in the Bronx and the outer boroughs. While not all of these lots have the right development on them or the potential to become food coops, there concentration of them in lower-income neighborhoods and vacant status provides an alternative to purchasing lots that have already been built on and being forced to demolish what is already there, so they provide a potential cost- saving option. As discussed, one of the main challenges of using alternative food networks to deal with

food deserts is access for people living in food deserts, so building in the areas of highest food insecurity makes it more convenient and increases the likelihood that they will utilize the resources, as it is more convenient for them.

In order for food cooperatives to work, and continue to work as a viable option for alleviating food deserts, it is important that the city laws and regulations are routinely updated to insure that they continue to meet the needs of the cooperatives and the communities they serve. Updates that need to be made may include limiting the voting power of equity holders so that community members have more of a say in the governance of the food cooperatives. Policies regarding paths to ownership and who elects the governing board are also important, as this can help insure that the cooperative stays in the hands of the community members and it can continue to fulfill its intended purpose (Depasquale, et al. 2018).

One organization that has been helping to turn over vacant lots to the communities surrounding them is 569 Acres. 596 Acres is a non-profit that has created a map of all vacant lots in New York City, and information about the ownership of that lot. The goal of the organization is to organize communities to take control of those lots so that they can use them for positive purposes within their community ("596 Acres", 2016). The organization seeks to change perceptions of vacant lots, and instead of seeing them as spaces that have a negative impact on the community instead view them as spaces of opportunity. 596 Acres has also created the NYC Real Estate Investment Cooperative, which helps New York City residents to pool their resources to purchase pieces of land in their neighborhood. 596 Acres provides the information and access to resources needed

to purchase vacant lots, whereas the NYC Real Estate Investment Cooperative helps community members make the purchases.

596 Acres was founded in June of 2011, after the founder, Paula Z. Segal created a map of vacant public land in Brooklyn, and distributed the map to residents of the neighborhood to alert them that there was vacant public land in New York City. The name 596 Acres comes from the calculation that there was 596 acres of publicly owned vacant land in Brooklyn at the time. The movement has since expanded and grown from there, and as of October 2016, the organization had been able to facilitate 36 new community spaces being created in formerly vacant lots. These lots total over 7 acres of green space, and 30 have been made permanent, either by being leased to public authorities or by transferring ownership to the Parks Department. The website states that other spaces have been saved following their guidelines as well, as those who work for the organization have seen 596 Acres signs on fences in vacant lots in New York City ("596 Acres", 2016). In addition to saving spaces, 596 Acres has made more information on vacant lots and land use publicly available. They have also completed a residency on the legacy of urban renewal in New York City, so education plays an important part in the mission of the organization as well. However, despite their success in turning over lots to the public, as of June 2017, 596 Acres no longer has staff, but their online resources continue to be available to the public ("596 Acres", 2016).

596 Acres offers resources to those who seek to reclaim vacant lots by keeping a public database of all vacant lots in New York City, as well as ownership information. If the ownership information is not listed on the map, they also have directions for potential

organizers to access information for both publicly and privately owned lots. The website also lists organizations that have supported 596 Acres in the past, as well as outside sources of funding, such as non-profits, who provide grants that can help reduce or eliminate the costs of building a garden or community space on these lots ("596 Acres", 2016). 596 Acres also manages the Living Lots map, which shows where all vacant lots that they know about, as well as the status (privately owned, people have access, etc.) to help streamline the process of taking over a lot. Many times, the lots are turned into community gardens, both food growing and non-food growing, however, the website refers to all areas as "community projects" so that the purposes of the space are not constrained to just gardens (livinglots.org). The organization 596 Acres is not able to offer any legal advice or guidance, and as they are defunct, their support services are limited, but they provide the resources and information needed for community members to organize to gain ownership of the vacant lots in their area.

3.8 Suggestions

Policies to encourage the participation in alternative food sources have found varying levels of success both in New York City and across the United States. In an examination of legacy cities, or cities that have lost more than 25% of the population since the industrial boom, the usage of land banks, community land trusts and private partnerships have been credited with helping to convert vacant lots to places for community gardens and other community agriculture to take place (Carlet, et al. 2017). By placing eligible land in a trust or some other legally binding structure, this ensures that the land will be used to support the communities surrounding it. In addition,

ownership is granted to the community, or to the partner, making some party responsible for what was once a vacant lot with no caretaker (Carlet, et al. 2017). Although the lot may not immediately be put into use as a community agriculture site, there is at least ownership and responsibility placed on the lot so that it can be cared for and zoned correctly. Right now, policies like this are being used in legacy cities, where the sharp decline in population has left buildings and lots vacant, so there is plentiful land for those interested in starting community agriculture systems. This makes the process of claiming and setting aside land easier as the cities try and restore themselves following their decline (Carlet, et al. 2017).

The same idea is hypothetically possible in New York City, however, a unique set of challenges is presented as legacy cities are dealing with a very different set of problems in their food deserts than New York. Legacy cities have declining population densities and higher than average rates of poverty as many of the jobs that employed their workforce in their industrial peak left as manufacturing declined, which allowed for the open spaces that have enabled the community agriculture revolution across the Rust Belt (Carlet, et al. 2017). However, the population of New York City has continued to grow since 1980 ("American Fact Finder, New York city, New York", 2010) reflecting the opposite trend of the cities examined in the study. Vacant lots are not as readily available as in these cities, so acquisition can at times be more difficult than in the case studies, and ownership laws differ from city to city. In New York City, there are vacant lots that are both city and privately owned, and Living Lots NYC encourages those interested in starting community gardens to contact the owners of those lots to purchase the land.

Living Lots NYC also provides information on funding and grants that are available for these projects to encourage communities to work together to purchase the vacant lots in their neighborhoods so that they can build on them (livinglotsnyc.org).

In both situations, cities need a way to feed populations in areas where traditional big-box grocers are not fulfilling the needs of the community. The legacy cities are seeking to use these programs as a way to retain a dwindling population by beautifying areas to improve neighborhoods and try attract prospective residents (Carlet, et al. 2017). On the other hand, New York City is not actively trying to gentrify its' neighborhoods but instead to find alternative food sources as a way to feed historically underserved populations. Typically, these populations are not close to transit centers and have higher rates of poverty and a higher proportion of residents receiving support from federal welfare programs, including, but not limited to the SNAP program (Wang & Qiu 64). Developing the land that is in their neighborhoods creates a more easily accessible food source for these populations, outside of the bodegas and fast food restaurants that typically flourish in these areas (Segal 2010). Although Segal's survey on the concentration of bodegas and fast food restaurants focused on East and Central Harlem, the findings can be applied to other neighborhoods with similar problems and similar demographics (Segal 2010).

Other potential ways beyond including alternative food networks in the One NYC to further utilize them to alleviate food insecurity is to develop more programming through alternative food networks, such as the workshops done with Greenmarkets. Greenmarkets workshops teach consumers how to cook produce that is in-season and

being sold at the markets. This works well because consumers do not have to go out of their way to attend the workshops, as they are where they are already shopping for food. In addition, these workshops use produce that is in season, so after learning how to properly prepare the produce, consumers can purchase the produce and cook it independently ("Greenmarket Farmers Market", 2018). Expanding these workshops into community gardens and food cooperatives can help bridge the educational gap between consumers and producers. In addition, these workshops do not need to target specific income levels or demographic groups, as these alternative food networks are accessed by all income and demographic groups. Through bringing workshops to where consumers are already shopping, fresh, seasonal produce can be made more accessible to all consumers.

Chapter 4: Conclusion

Despite being one of the wealthiest cities in the world, New York City still struggles with food insecurity and being able to feed lower-income residents. Steps have been taken to try and bridge the gap, such as offering free meals in all New York City public schools, opening food pantries and soup kitchens across the city, especially in the neighborhoods and areas that need it the most and coordinating outreach programs to educate those who are eligible for SNAP benefits about the program to try and raise participation rates (Turk 2018). While these efforts have helped connect New York City residents with the resources available to them and have made significant strides towards closing the meal gap, 14.9% of New York City's residents are considered to be food insecure, so a change needs to be made in order to help residents gain access to fresh, affordable, healthful produce (Turk 2018). Alternative food networks present a viable option, as they either help participants grow their own food or connect them with local food producers, encouraging ownership and active participation in the food-growing process but also giving consumers choice in where they get their produce from. Alternative food sources also provide intangible benefits to the communities they are located in, and these benefits cannot be replicated through grocery stores or other methods that are being used to alleviate food insecurity.

While it is clear that programs in New York City have been helpful in alleviating food insecurity, the meal gap remains, and there are still people who are not being reached by these traditional programs. Alternative food sources offer a solution to that problem, and can be used to supplement existing programs. Alternative food sources in

New York City are thriving, and are often found in racially and socioeconomically diverse neighborhoods, providing food to low-income individuals and families, as well as promoting interactions between community members that increase participant's feelings of satisfaction with their lives, as well feeling more connected with their community (Waliczek 206). The benefits of alternative food networks are clear, and their potential to solve a pressing problem is also clear, but they need to be made into a priority by New York City, as they are not mentioned in the OneNYC plan to make New York City more sustainable and equitable (de Blasio 2018). The infrastructure for these networks has already been developed to expand on these networks, with vacant lots concentrated in low-income neighborhoods that are in need of alternative food sources, such as community gardens and Greenmarkets. In addition, there are several well-established organizations that have been successfully managing and expanding these networks, who have the resources in place to expand their offerings. Alternative food networks are poised to be a larger part of the solution to food insecurity in New York City, they just need to be made a priority so that their full potential can be realized.

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