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Fighting Food Insecurity for NYC Children and Youth: Urban Agriculture and Food Justice

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Devin O'Mara

Abstract

The positive benefits of urban agriculture go beyond just providing fresh and healthy food to metropolitan areas. As the practice of urban farming has become increasingly more popular over the last decade or so, it has proven to develop community relations and aide with metropolitan and global issues such as poverty. Children and teens especially benefit from urban agriculture, specifically those that comes from underprivileged homes that may not have the resources to obtain fresh food every day. A shocking number of kids can go hungry every day due to lack of available food. Many children that live in metropolitan areas also live in food deserts which do not provide them with access to healthy food. This paper addresses the potential to use urban agriculture as a means of increasing food security and education for underprivileged kids within New York City. Chapter 1 explores the issue of food insecurity among children, citing information regarding the number of children without access to healthy, fresh food and other information concerning food security. Chapter 2 delves deeper into the history of urban agriculture in New York City and how it developed from one person's rooftop into a sustainability evolution. Chapter 3 looks at the potential outcomes of integrating urban agriculture into social justice for children on issues such as food security, education, and physical and mental health. Chapter 4 analyzes how incorporating urban agriculture into future sustainable infrastructure can benefit everyone, not just children. Drawing from information and analyses in the previous chapters, Chapter 5 provides recommendations on how to create greater access to urban agriculture for children.

Keywords: urban agriculture, food justice, sustainability, urban infrastructure, food security, poverty, education, children, New York

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Introduction

How many times a day do you question where your next meal is coming from? I am going to assume that most of us know that we will have access to safe and healthy food on a day to day basis. However, this is hardly the case for everyone on Earth. As the agriculture industry continues to place pressure on a number of social, economic, and ecological issues, there is growing concern about food insecurity and sections of the population that do not have the same benefits that many of us do when it comes to food. So many of us take for granted the fact that our access to food is a privilege and do not realize that it is a luxury not everyone can afford. I have been very fortunate in my life. Throughout my childhood, every morning I was lucky enough to have my mother prepare me a substantial and filling brown paper bag lunch. I am sure that many of my peers could say a similar thing. Yet, large portions of children are not afforded this opportunity for a number of reasons.

As concern regarding food insecurity continues to mount around the globe, one of the most affected groups are children and youth growing up in urban areas. That is not to say that all urban areas do not provide healthy food to their populations. Yet, sections of many cities have become food deserts which limit their residents' access to healthy and affordable food. Focusing specifically on New York City, this issue largely exists in parts of the Bronx as well as areas of Brooklyn. There is an important distinction to be made between the types of nutrition these children get and the types of foods they have access to. In some cases, these kids can easily go around the corner from their home and see a McDonald's, 7/11, or bodega where they can go grab a sandwich for sustenance. But the distinction lies in the fact that this is not the type of food that we want children eating on a daily basis. Especially while they are still growing, kids require nutritious food that will provide them with energy to help them get through their days and reach

their potentials. Additionally, urban agriculture would impact children and youth in more ways than just providing them with greater access to healthy foods. Implementing urban agriculture (UA) has the possibility to benefit the physical and mental health, education, recreation, and more of children. While this paper specifically focuses on the relationship between food insecurity and youth in urban areas, it also discusses how UA can lead toward to a better relationship between food and all people that live in cities.

In chapter 1 we will analyze the limits of food insecurity and who is affected by it. It will provide quantitative data regarding children without access to healthy food, where a lot of our food is going, and food availability in general. Chapters 2 through 4 will be taking a look at the past, present and future of urban agriculture and its impact on urban youth in addition to adults in urban areas that are threatened by food insecurity as well. Analyzing the history of urban agriculture, its effect on children, and how it can be implemented in new infrastructure will provide answers about the best way to address the issue of food insecurity among urban youth. Utilizing information, research, and data from the previous chapters, chapter 5 will focus on providing recommendations for incorporating the practices of UA into urban policy regarding, health, education, infrastructure, social justice, and more. While it is scary for many of us to think about not knowing when we are going to eat again, it is our nightmare while it is a reality for many others. Urban agricultural practices have the potential to mitigate this fear among underprivileged kids and start providing fresh and healthy food to more areas of the city.

Chapter 1. Food for Thought: How Many Kids Go Without It?

Carried out between 2001 and 2005, the Millennium Ecosystem Assessment sought to understand how changing and disrupting ecosystems and ecosystem services would impact the

well-being of humans. Ecosystems are made up of the living and nonliving elements of nature that form a functional community, with humans playing a large role in a number of important ecosystems. The conceptual framework of the Assessment acknowledges that humans are integral components of ecosystems and that ecosystem services provide a number of benefits for humans. Outlined in the document, human well-being is promoted by a number of constituencies with our environment that we require including the basic materials for a good life, maintaining good health, developing good social relationships, and recognizing the freedom of choice and action.¹ Ecosystem services help us to achieve and maintain these constituencies, while a number of our actions can in turn influence the degradation of these services, therefore leading to a decreased level of well-being.

There are four types of ecosystem services: provisioning, regulating, cultural, and supporting. Supporting services are the basis for most of these other services and include soil formation and nutrient cycling. Cultural services provide services that are educational, recreational, or spiritual in nature. Regulating services have some of the largest impact on human well-being and can come in the form of disasters such as floods and disease, but also provide help through processes like water purification. Finally, provisioning services also impact human well-being a lot and provide us with materials such as water, timber, and food. This is where the issue of food security and urban agriculture we are analyzing falls under.

In order to understand the numerous benefits that urban agriculture can provide, it is important to understand how it becomes incorporated into the city's infrastructure and provides benefits for the people as well as the environment. Even though they do not occur naturally, urban areas and urban agriculture ecosystems provide the same services that naturally occurring

¹ Millennium Ecosystem Assessment. *Ecosystems and Human Well-being: Synthesis*. Washington, DC: Island Press, 2005, v.

ecosystems do. Proper implementation of UA should improve food security as well as foster successful ecosystem services. These systems then in turn support each other; ecosystem services promote the further production of healthy and nutritious food.² Urban agricultural ecosystems provide these same services. For example, the obvious answer for provisioning services is providing food to communities. As for regulating services, urban agriculture has shown the potential for aiding in both air purification and water runoff maintenance,³ among a number of other environmental benefits. The cultural services are also a little more obvious like the provisioning services. Places in the city where UA has been implemented can also serve as areas for recreation and education. As for supporting services, urban agriculture has the potential to increase animal habitat,⁴ and therefore biodiversity. Protecting biodiversity is a critical component of conserving the environment and is important for promoting a wide abundance of different plant and animal species. According to the main sustainability principles outlined by Taylor Miller and Scott Spoolman in *Living in the Environment*, in conjunction with a dependence on solar energy and promoting chemical cycling, a high degree of biodiversity can help an ecosystem from growing too large and allows them to be more adaptable to environmental change.⁵

A different report by the Millennium Ecosystem Assessment addressed many of the concerns we as a nation have had in regard to our future and food. Industrialized agriculture has been spreading across the globe, rapidly increasing the amounts of food that we produce. While food production has in fact been rising per capita globally over the years, high rates of

² Tittonell, Pablo. "Food Security and Ecosystem Services in a Changing World: It Is Time for Agroecology." *Agroecology for Food Security and Nutrition*, September 2014, 9.

³ Gómez-Baggethun, Erik, and David N. Barton. "Classifying and Valuing Ecosystem Services for Urban Planning." *Ecological Economics* 86 (October 30, 2013): 236.

⁴ Gómez-Baggethun and Barton, 237.

⁵ Miller, G. Tyler, and Scott Spoolman. *Living in the Environment: Principles, Connections, and Solutions*. Belmont, CA: Brooks/Cole, 2012.

distribution inequality still exist between people and in different countries around the world. Food production has been ramped up by 168% over the last 42 years, yet between 2000 and 2002, nearly 852 million people were considered undernourished. This number had risen by 37 million from the period between 1997 and 1999.⁶ The same report highlights that a balanced and nutritious diet consists of a variety of different foods that provide protein, fat, and other micronutrients and that poorer people usually have a more limited diet.

Furthermore, the report also makes note of the ways that we can change our food production systems in order for them to reach larger amounts of people and become more sustainable. While the following statement may seem confusing at first, in order to provide higher levels of food security and build a more sustainable food future, we must continue to increase our food production. However, in order to be successful in this endeavor, we must not continue to mindlessly ramp up food production, but rather develop ways to make our agricultural system more productive and effective. Additionally, local food production is essential for helping to provide food security for people in rapidly urbanizing environments. In these areas, international food trade alone is not enough to fulfill the needs of all the people living in these regions. Therefore, local efforts are necessary for fighting hunger and rising food prices, highlighting the growing utility of urban agriculture.⁷

The way that we have produced food and shaped our agricultural system has changed dramatically within the last century. Ever since humans have existed, we have been using and changing ecosystems in order to benefit ourselves. This is no different when it comes to food and we rely on a number of ecosystem services in order to provide, prepare, and consume our food.⁸

⁶ Wood, Stanley, and Simeon Ehui. "Food." In *Ecosystems and Human Well-Being*, 209–41. Washington, DC: Island Press, 2005, 211.

⁷ Wood and Ehui, 211.

⁸ Wood and Ehui, 212.

Through human ingenuity, we have been able to engineer our ecosystems so that they can satisfy our astronomical goals when it comes to food production. Within the last fifty years, we have managed to more than double the population of the planet, making there more mouths to feed than there ever have been before. Even though we have managed to transition from global famine into a cornucopia of food,⁹ there are still a startling number of people around the world that live in relative malnourishment.

Food insecurity is a global issue that doesn't just affect people in one city in one state. As previously stated, over 850 million people living on the planet are malnourished,¹⁰ with that number continuing to rise every day. However, this number has actually gone down from what it was in the past. In 1970, nearly 1 billion people around the world were living in hunger with the exact number being closer to 959 million. At the time, this was about a quarter of the world's population. There are a number of factors that account for these changes, some of which are more obvious than others. Countries in sub-Saharan Africa, Southern Asia, as well as many countries with a transitional economy are more prone to being food insecure. Of the 852 million people that are living hungry every day, 815 million of them live in developing nations. That accounts for over 95% of the undernourished population globally. Compared to industrialized countries, only 1.6% of children under five are considered malnourished.¹¹

The two most populated countries in the world, India and China, account for nearly 43% of hunger worldwide, demonstrating how our global agricultural infrastructure has been failing many of us.¹² Among children, hunger is often measured by the degree of stunting that is experienced. Interestingly enough, over the last few decades, stunting among children has

⁹ Wood and Ehui, "Food," 212.

¹⁰ Wood and Ehui, 212.

¹¹ Wood and Ehui, 212.

¹² Wood and Ehui, 233.

decreased. However, areas such as East, West, and Central Africa have all shown little to no improvement. Malnourishment in children has huge impacts on morbidity and mortality from infectious diseases around the globe. For children in developing nations, being underweight attributes to about 50% of the mortality risk from diseases prevalent in these areas, such as malaria, pneumonia, measles, and diarrhea.

When addressing the issue of food insecurity among underprivileged urban youth, it is important to begin to analyze data surrounding the issue as it is essential in understanding how many people are affected by this issue, and not just children. As author Jennifer Cockrall-King puts it, “As we move into an uncertain economic future, food security will continue to erode in many communities that are already struggling.”¹³ While at times, it can feel like we have endless bounties of food, many cities continue to not even be able to support their entire population. In fact, supermarkets in cities often only have enough food for a three-day period.¹⁴ Many can say they are familiar with stocking up on food prior to or following some kind of disaster (hurricane, blizzard, etc.) They may be unaware that if an urban area was not provided with a food restock within three days following a disaster, there would be none left. Food security is about more than just encouraging urban agriculture and the production of local food. While these are obviously important and central aspects of improving food security, the ultimate goal of providing food security is sourcing trustworthy, safe, diverse, and affordable food from both local and outside sources.¹⁵ Without methods such as urban agriculture, cities will continue to outsource their food, which has a number of negative impacts on people and the environment. For example, even

¹³ Cockrall-King, Jennifer. *Food and the City: Urban Agriculture and the New Food Revolution*. Amherst, NY: Prometheus Books, 2012, 20.

¹⁴ Cockrall-King, 31.

¹⁵ Ladner, Peter. *The Urban Food Revolution: Changing the way we Feed Cities*. Gabriola Island, B.C.: New Society Publishers, 2011, 104.

though Iowa is a top agricultural producer in the country, they still import 90% of their food.¹⁶

The fact that this is occurring has so many negative implications for food security and climate change. One of the aims of developing UA is seeking to end the long distances travelled by food, which both deter harm to the environment as well as support local businesses and urban agriculture.

In order to improve our food production systems, we need to be able to understand them in relatively easy terms. In what may or may not be a shock to some, just about half of crop production goes to food that we consume. Of the cultivated food crops, 53% goes to actually feeding us, while 21% is used for animal feed and the remaining 26% is categorized as seed, waste, or used for other industrial processing.¹⁷ While there are an estimated 10 to 15 thousand edible crops, there are only about 7,000 in use in current agriculture. Meanwhile, only about 30 crops provide us with 90% of the foods that meet our caloric requirements and of those 30 crops, wheat, rice, and corn provide about half of the calories that are consumed globally.¹⁸ Meat production remains relatively higher in industrialized countries rather than developing ones. Very similarly to food crops, of the estimated 15 thousand species of mammals and birds that exist, only up to 40 different species have been used for food production. Of that number of species, fewer than 14 make up 90% of global livestock production.¹⁹ That does not even include non-mammal species that can be eaten, including animals such as snake and alligator, both of which I have tried at various points, highlighting the fact that there are alternative options out there.

¹⁶ Ladner, *Urban Food Revolution*, 104.

¹⁷ Wood and Ehui, "Food," 213.

¹⁸ Wood and Ehui, 213.

¹⁹ Wood and Ehui, 214.

When it comes to access to food in New York City, many people are left without food every day. It is estimated that among residents, tourists, and commuters, NYC consumes around 19 billion pounds of food every single day. It is estimated that annually the city consumes around 40.76 billion pounds of fruits and vegetables.²⁰ However, in the city alone, there are three million people in low-income neighborhoods that lack access to healthy and nutritious food.²¹ A number of New York City neighborhoods are consistent with factors that would make the implementation of urban agriculture in them beneficial. They include the Lower East Side and East and Central Harlem in Manhattan, East New York, Brownsville, Crown Heights, Bedford-Stuyvesant, and Bushwick in Brooklyn, and Morrisania, Claremont Village, East Tremont, and Belmont in the Bronx.²²

Food insecurity in New York is also associated with a number of specific demographics, which are often all too common in other urban areas as well. Black and Hispanic households are more likely to be food insecure than white households. Additionally, food insecure households are likely to be making less than \$40,000 a year and are often situated in low-income neighborhoods. Food insecure households are also more likely to have people with little education, often not getting beyond some college.²³ They are households with small children and/or with a single parent.²⁴ This data highlight the fact that food insecurity is an issue of intersectionality and must be addressed as one. It also emphasizes the fact that many food

²⁰ Goodman, Wylie, and Jennifer Minner. "Will the Urban Agricultural Revolution Be Vertical and Soilless? A Case Study of Controlled Environment Agriculture in New York City." *Land Use Policy* 83 (2019): 160–73, 167.

²¹ Cockrall-King, *Food and the City*, 212.

²² Ackerman, Kubi, et al. "Sustainable Food Systems for Future Cities: The Potential of Urban Agriculture." *The Economic and Social Review* 45, no. 2 (Summer 2014): 189-206, EconLit, 196.

²³ Nackers, Lisa M., and Bradley M. Appelhans. "Food Insecurity Is Linked to a Food Environment Promoting Obesity in Households With Children." *Journal of Nutrition Education and Behavior* 45, no. 6 (2013): 780–84, 782.

²⁴ Hobbs, Savannah, and Christian King. "The Unequal Impact of Food Insecurity on Cognitive and Behavioral Outcomes Among 5-Year-Old Urban Children." *Journal of Nutrition Education and Behavior* 50, no. 7 (2018): 687–94, 687.

insecure households are home to young children, placing them as a central component of this issue.

On a national scale, 13% of United States households struggle with food insecurity²⁵ and 33 million people go hungry on a daily basis in the USA alone.²⁶ Of those households, 4.5% are subject to very low food security.²⁷ Across households in the United States, between 20% and 30% with children experience some form of food insecurity.²⁸ A study completed in 2004 found that 19% of children were living in food insecure households.²⁹ In 2016 alone, 41.2 million Americans lived in food-insecure households, including 12.9 million children.³⁰ In fact, food insecurity is even more prevalent in homes with children under 6 years than it is with children under 18 years old,³¹ meaning that kids on the younger side of the spectrum are experiencing high rates of food insecurity than older ones. Different data acquired from the Current Population Survey provides a holistic knowledge of how food insecurity affects kids of all different age ranges. Among all food insecure households with children, 26% contain a teenager between the ages of 13 and 15, 17% contain a child between the ages of 5 and 8, and 12% have a child less than 4 years old.³² This evidence suggests that in households with children of multiple age ranges, the older ones are more susceptible to the dangers of food insecurity.³³ In situations such as this, families often prioritize providing the younger children with food rather than older ones.

²⁵ Cockrall-King, *Food and the City*, 214.

²⁶ Dzedzic, Nancy, and Lynn M. Zott, eds. *Urban Agriculture*. Greenhaven Press, 2012. 30.

²⁷ Drucker, Erin R, Angela D Liese, Erica Sercy, Bethany A Bell, Carrie Draper, Nancy L Fleischer, Kate Flory, and Sonya J Jones. "Food Insecurity, Childhood Hunger and Caregiver Life Experiences among Households with Children in South Carolina, USA." *Public Health Nutrition* 22, no. 14 (May 17, 2019): 2581–90. 2581.

²⁸ Ladner, *The Urban Food Revolution*, 162.

²⁹ Wunderlich, Gooloo S., National Research Council (U.S.), and Janet L. Norwood. *Food Insecurity and Hunger in the United States: An Assessment of the Measure*. Washington, DC: National Academies Press, 2006. 61.

³⁰ Hobbs and King, "Unequal impact of food insecurity," 687.

³¹ Ladner, *The Urban Food Revolution*, 162.

³² Heflin, Colleen, Sharon Kukla-Acevedo, and Rajeev Darolia. "Adolescent Food Insecurity and Risky Behaviors and Mental Health during the Transition to Adulthood." *Children and Youth Services Review* 105 (July 10, 2019): 104416. 1.

³³ Heflin, Kukla-Acevedo and Darolia, 1.

This fact conflicts with the previously stated one regarding younger children experiencing a higher level of food insecurity. I highlight all of these facts in order to provide a larger picture of the issue at hand and to point out that our knowledge of food insecurity is often lacking.

Before proceeding further, we must define the different types of food insecurity in the country and around the globe. A broad conceptual definition of food insecurity was established by the Life Sciences Research Office in 1989.³⁴ Food insecurity is experienced in households where there is concern about future food availability and access, there is insufficient access to the foods needed to sustain a healthy lifestyle, and/or the need to use socially unacceptable methods to procure food.³⁵ While they are often linked, hunger and food insecurity are distinct concepts. All households that are food insecure are not necessarily experiencing hunger. Hunger refers to a physiological condition that one may experience as a result of food insecurity. Hunger is more typically associated with households experiencing very low food security, which is categorized when households reduce food intake or disrupt their eating patterns³⁶ due to low access to food. Low food security households often report a reduction in the availability of quality or variety of foods, but not a reduction in food intake. Very low food security households report disrupted eating patterns and having to reduce their food intake.³⁷

One misconception regarding food insecurity for families in low-income neighborhoods is that poverty causes all of the issues. According to Arun Shrivastava, who is quoted in *Urban Agriculture*, “such notions serve powerful economic and political interests that perpetuate hunger, malnutrition, diseases, illiteracy, ignorance, urban slums and filth and rural poverty

³⁴ Wunderlich and Norwood, *Food Insecurity and Hunger*, 43.

³⁵ Wunderlich and Norwood, 44.

³⁶ Drucker et al., “Food Insecurity, Childhood Hunger,” 2581.

³⁷ “Definitions of Food Security.” USDA ERS, September 4, 2019. <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/definitions-of-food-security.aspx>.

globally.”³⁸ In fact, there are a number of other barriers that families in low-income neighborhoods have to deal with in regard to obtaining food. So, the issue is not solely a question of living in poverty and factors such as inadequate transportation, convenience of quality supermarkets and farmers markets (similar to being in a food desert), and local crime all contribute to the issue of food insecurity for families living in low income neighborhoods.³⁹ While it is true that poverty is not the source of food insecurity, increasing food security can actually mitigate a lot of the other issues that are attached to poverty. For example, hungry people are not as prone to violence as those who are. I believe we have all heard the phrase “hangry” before. Increasing food security could therefore have the potential to decrease crime rates. Also, healthy and fed people heal faster and are less susceptible to using illegal drugs,⁴⁰ which could greatly improve the health of some low-income neighborhoods. The issues of food insecurity and food deserts can really be seen when looking at different areas of the city. A food desert is an area within an urban setting that has trouble getting its citizen’s adequate access to healthy and nutritious food, either due to lack of supermarkets or infrastructure such as transportation. To illustrate this concept, in East Harlem there are about half as many supermarkets as there are on the Upper East Side.⁴¹

Price of foods was the number one factor that was mentioned when families discussed their limitations in obtaining food. Families living in food insecure neighborhoods are more likely to purchase energy-dense food, such as sugary packaged foods, rather than nutrient-dense foods, such as fruits and vegetables, because they are considerably less expensive.⁴² They report

³⁸ Dziedzic and Zott, *Urban Agriculture*, 42.

³⁹ Ladner, *Urban Food Revolution*, 212.

⁴⁰ Ladner, 214.

⁴¹ Ladner, 218.

⁴² Nackers and Appelhans, “Food Environment Promoting Obesity,” 780.

consuming more sugary beverages such as soda and consuming less fruits and vegetables. Easy to prepare foods and foods with a long shelf life are also desirable among families living with food insecurity. This could potentially be because parents or caregivers have to spend long hours working or commuting and need something fast and easy to feed their kids.

One of the larger issues surrounding food insecurity for children is lack of knowledge on how food affects their health and wellbeing. One of the most important aspects of improving food security for children is for them to increase their food literacy. Schools often fail to help develop a child's relationship with nature, which could potentially explain these food literacy issues.⁴³ It has become known that one of the reasons that kids lack proper food and nutrition is because they don't know much about it. Teaching children about nutrition, cooking, and gardening gets them excited about food and can increase the physical and mental health of these kids. The environments that children live in also play an important role in shaping their food choices. Children are more likely to reach for foods that are accessible.⁴⁴ They go for foods that they can easily see and are right in front of them. In urban areas that are also food deserts, they see fast food restaurants around them and bodegas filled with unhealthy snacks. They don't frequently see farmers markets and clean grocery stores teeming with fresh fruits and vegetables.

Chapter 2. Urban Agricultural History in America and NYC

The phenomenon of the urban agriculture movement has been booming all over the globe in the last decades and it is not solely confined to developed nations. In poorer countries, as urbanization expands and more and more people move into cities, they bring their practices for

⁴³ Cockrall-King, *Food and the City*, 245.

⁴⁴ Nackers and Appelhans, "Food Environment Promoting Obesity," 783.

achieving sustenance with them, thereby bringing agriculture and farming into the cities.⁴⁵ While participating in farm work was once stigmatized, educated youth are looking back to urban agriculture as a means of securing a safer future in countries such as Kenya. There is a growing appreciation for practicing rural work in urbanizing areas.⁴⁶ It was not until the development of modern food technology, such as refrigerated rail boxcars and interstate trucking, that food systems began to become less localized and the modern food system was established in the nation.

Over the last few decades, cities all around the country have been experiencing an increased interest in UA and the benefits that it can provide to the people living in urban areas. There are a few features that may make a city more likely to experience a shift towards local food production. One feature is the availability of unused land that many cities have at their disposal. This may not seem like the case in New York, as the city has very little land left available to develop, but as suburbanization occurred around the country, people and jobs moved out of cities and new land was developed, leaving plenty of areas in the city vacant or underdeveloped. In cities where this is the case, many saw the opportunity to develop the land for farming and allowed cities to put vacant land to good use, deepen their aesthetics, provide food and jobs for underprivileged communities, and challenged the huge impact of the modern industrialized agriculture system.⁴⁷ These cities are often facing economic hardships and supporting urban agriculture allows for increased affordable access to food as well as opportunities for jobs and revaluing land. For example, many metropolitan areas in the Rust Belt

⁴⁵ Glasser, Ruth. "The Farm in the City in the Recent Past: Thoughts on a More Inclusive Urban Historiography." *Journal of Urban History* 44, no. 3 (2017): 501–18. 502.

⁴⁶ Mwaura, Grace Muthoni. "Just Farming? Neoliberal Subjectivities and Agricultural Livelihoods among Educated Youth in Kenya." *Development & Change* 48, no. 6 (November 2017): 1310–35. doi:10.1111/dech.12342. 1328.

⁴⁷ Glasser, "The Farm in the City," 502.

have seen some of the highest interest in developing urban farming due to problems such as a declining economic climate, falling land values, and high job loss.⁴⁸

While there often is a lot of support for developing urban agriculture in cities, there can be backlash and cities have often not been quick to adopt the practice. As cities became more industrialized and urbanization spread, there was direct opposition to agriculture. During the late twentieth century, during the Progressive Era, there were increased national concerns about public health and sanitation. Tighter restrictions were passed on producing your own food as well as keeping animals for food.⁴⁹ There was a belief in cities that were very industrialized, especially cities in the Rust Belt, that a city should look and function in a certain manner. In places where industry was or is such an important aspect of the culture, many felt that re-greening efforts were trying to change the identity of that city. As more green initiatives begin to pop up, people often begin to feel that their cities are reverting and going back to their native natural states. There is often a perception in these cities and in cities around the globe that urban agriculture is limited, temporary, and old fashioned.⁵⁰

New York City has long had a rich history with urban farming, and it has existed ever since the first people arrived on the land. In fact, during the late 19th century, Queens and Brooklyn served as two of the nation's most predominant agricultural counties.⁵¹ These first gardeners were not farming in the same environment that we currently live in, but urban and community supported agriculture has played a large role in NYC's relationship with food and the environment ever since the first gardens were established. The first inhabitants of New York City

⁴⁸ Pawlowski, Tatiana Z. "From Food Deserts to Just Deserts: Expanding Urban Agriculture in U.S. Cities Through Sustainable Policy." *Journal of Affordable Housing* 26, no. 3 (2018): 535.

⁴⁹ Glasser, "The Farm in the City," 505.

⁵⁰ Glasser, 505.

⁵¹ Ackerman et al., "Food Systems for Future Cities," 202.

usually kept livestock and gardens to provide for their sustenance. When commercial food production was introduced in the mid 19th century areas such as Chelsea were used to herd and raise livestock in the city to provide for citizens and fewer people continued to raise their own live animals.⁵² Throughout many years during the 19th century, the squatter populations of Manhattan were important agricultural producers and provided much of the city's food. Until 1898, the only area of New York City that was heavily urbanized were the parts of Manhattan below Canal Street, in what is now the Financial District.⁵³ However, it was during this year that the boroughs of NYC were consolidated and the first subway line was opened, leading to an increased interest in real estate development in Manhattan. While this gave the government the opportunity to develop policy concerning the protection of farmland in the city, they were more focused on real estate development. Community supported agriculture really began to take off at the tail end of the 19th century and started to flourish and expand all throughout the 20th century. It has often been noted that an economic downswing or crisis can spark interest in urban agriculture, and there are three distinct periods in history that author Lindsay Campbell outlines in her book *City of Forests, City of Farms*, where New York began to experience resurgences in community agriculture.⁵⁴ The first two significant periods were during the Depression and World War II, respectively. In the outer boroughs of Queens and Brooklyn, community supported agriculture thrived during these periods due to the renewed emphasis on stabilization and neighborhood self-help and the existence of amenities such as victory gardens, which aided

⁵² Reynolds, Kristin, and Nevin Cohen. *Beyond the Kale: Urban Agriculture and Social Justice Activism in New York City*. Geographies of Justice and Social Transformation. Athens, Georgia: University of Georgia Press, 2016. 22-3.

⁵³ Angotti, T. "Urban Agriculture: Long-Term Strategy or Impossible Dream?" *Public Health* 129, no. 4 (2015): 337.

⁵⁴ Campbell, Lindsay K. 2017. *City of Forests, City of Farms: Sustainability Planning for New York City's Nature*. Ithaca: Cornell University Press. 114.

in reducing stress on local food supplies.⁵⁵ It also served to combat the increased industrialization and urbanization the city was undergoing.⁵⁶

While keeping livestock inside the city was eventually phased out due to environmental and public health concerns, community gardening plots continued to persist.⁵⁷ Following World War II and the success of projects such as victory gardens, there was a dip in interest in urban agriculture in the city.⁵⁸ The second half of the 20th century was when UA in New York City really began to take off and when the final period according to Campbell occurred. Beginning towards the end of the 1970's, there was a growing social movement that supported community gardening. This movement was born out of the financial crisis that was representative of the 1970s.⁵⁹ This renewed interest in urban agriculture was supposed to tackle a wide range of political, economic, and social issues in the city at the time.⁶⁰ There is an important distinction to be made between the forms of gardening that communities engaged with during this period. The social movements of the 1970s focused much more on community gardens, which do not necessarily equate to agriculture, but rather are community managed open spaces which serve as locations for a number of services such as recreation, gathering, and cultural celebrations in addition to agriculture and food production.⁶¹ However, the methods that urban farmers employ today were also first experimented with by community gardeners during the 1970s. Another significant component of the community garden movement during the 70s was the formation of GreenThumb. Originally founded to help combat the fiscal crisis, GreenThumb was the first instance of municipal support for the gardening movement and still exists today as part of the

⁵⁵ Campbell, *City of Forests*, 114.

⁵⁶ Reynolds and Cohen, *Beyond the Kale*, 24.

⁵⁷ Reynolds and Cohen, 24.

⁵⁸ Reynolds and Cohen, 26.

⁵⁹ Campbell, 114.

⁶⁰ Reynolds and Cohen, 26.

⁶¹ Campbell, 113.

Department of Parks and Recreation.⁶² It is the nation's largest community gardening network and protects and provides for green spaces all over the city.

Following the 1970s, urban agriculture in New York began to take shape of how it is today. Another significant event in the history of urban agriculture in the city, which could be argued as another distinct period in addition to Campbell's list, was the aptly named garden crisis which occurred during the Giuliani administration of the 1990s. Starting in 1998, the government of New York City began targeting developed community gardens as possible locations for new housing developments. Giuliani was even able to transfer the jurisdiction surrounding the gardens from the Department of Parks and Recreation to Housing Preservation and Development. These actions outraged gardeners and led to widespread protests by them and their allies. The actions taken by protesters attracted media attention from within the city, other states, and even other countries. The media storm was fantastic in the eyes of the farmers, as media attention surrounding urban agriculture helps to add fuel to the fire.⁶³

Now, urban agriculture exists in New York City in a way that it has never been seen before. During the mid-aughts of the 21st century was when urban agriculture began to develop into the network that exist today. Currently, UA exists on building rooftops and walls, vacant lots, within community parks and many more locations. New technological developments such as aquaponics, green houses, and urban beekeeping have allowed urban agricultural practices to become more widespread around the city. Much more attention is being given to urban agriculture in the city as well thanks to increased media coverage, endorsement from celebrities and celebrity chefs, and new sources of funding that have allowed for the expansion of these

⁶² Campbell, *City of Forests*, 114.

⁶³ Campbell, 113.

city-wide systems.⁶⁴ This new wave of urban farming can be attributed to an event, that I would argue is in fact another very distinct period in the history of urban agriculture in the city, that follows the same pattern that other events have. More attention began to be given to urban agriculture in the city following the 2008 recession, an economic crisis. The city turned towards urban agriculture following the recession for a number of reasons including newfound interest in DIY and locavore movements, recently unemployed citizens looking for work and inexpensive methods of producing food, and decreased pressure for the city to develop in vacant lots.⁶⁵ Additionally, the development of new technology and the belief that urban agriculture is both a sustainable and economically viable method of producing food aided in the increased move towards implementing these types of farms.⁶⁶ Now, the economy of the city is much better and able to support many different forms of urban agriculture.

As it exists now, New York remains a leader in the urban agriculture movement around the United States. In fact, it has been said that the city is home to the largest UA network in the entire country. Unlike Giuliani, whose administration actively tried to limit the spread of urban agriculture in the city, the two most recent mayors of the city, Michael Bloomberg and Bill de Blasio, have both made an effort to tie the urban agriculture movement into their policies. During their tenures as mayor, both Mayor Bloomberg and Mayor de Blasio have proposed widespread initiatives focused on sustainability in the city. They seek to address a wide number of issues such as supporting sustainable building development, limiting carbon emissions, preserving green space, and addressing the obesity and health crisis in the city,⁶⁷ all which can be done through the wider implementation of urban agriculture.

⁶⁴ Campbell, *City of Forests*, 120.

⁶⁵ Campbell, 121.

⁶⁶ Pawlowski, "Food Deserts to Just Deserts," 535.

⁶⁷ Pawlowski, 545.

New York's latest sustainability plans have all included urban agriculture and have supported the promotion and development of it throughout the city. In 2007, just a year before the economic downturn that would be hitting the city soon, Bloomberg developed PlaNYC, a strategic plan to handle the city's growing population, aging infrastructure, and climate change through environmental and economic goals that would promote a greener and healthier quality of life for all New Yorkers.⁶⁸ The plan focused on providing a number of broad solutions that would offer answers to problems in the sectors of land, air, water, energy, and transportation which would strengthen the urban environment as well as serve as a model for what a 21st century city should look like.⁶⁹ After he took office in 2014, de Blasio put sustainability at the forefront of his campaign and mission as mayor. In 2015, he announced the OneNYC plan, an update of Bloomberg's original PlaNYC, which would address the areas of growth, equity, sustainability, and resiliency. OneNYC sought to redevelop the objectives of the original plan after New York was hit hard by both the economic crisis of 2008 as well as Hurricane Sandy in 2012. Both of these plans featured cleaner air and water, waste reduction, efficient energy use and increased sustainability as prominent goals. OneNYC also focused heavily on de Blasio's platform of poverty reduction.⁷⁰ Many of these goals can be achieved as benefits through the implementation of urban agriculture.

There will always be discussion about the various pros and cons of urban agricultural development in cities. One of the current questions surrounding these practices is how the newer generation of farmers will interact and learn from the older generation of urban gardeners. In the past, many of the communities that turned to UA were comprised of low-income people of color

⁶⁸ Pawlowski, "Food Deserts to Just Deserts," 546.

⁶⁹ Bloomberg, Michael R. "PlaNYC: A Greener, Greater New York." *PlaNYC: A Greener, Greater New York*. The City of New York, 2007. 10-11.

⁷⁰ Pawlowski, 546.

that used urban agriculture as means of stabilizing and providing food for their neighborhoods that had suffered through years of crime, violence, and mistreatment from the city government. The new wave of New Yorkers interested in UA are primarily composed of educated and affluent white young adults, many of whom are involved for entrepreneurial or business ventures.⁷¹ As voiced by the older generation of farmers, these “hipsters” have been derided for their views on the urban agricultural movement and for not interacting appropriately and respectfully with people who have been doing this for decades. One of the biggest problems associated with UA is reconciling the fact that for those in upper class urban settings, supporting urban agriculture is often for trendy locavore movement reasons, while for those living in lower class areas or in food deserts, urban agriculture is often a necessary component of obtaining food. Unfortunately, much of the current media coverage on UA focuses on this new generation of younger farmers. Yet, many are still appreciative of the attention, as it gets the word out about urban agriculture and the work that farmers are doing.

Among all participants in urban agriculture, there is a shared sense of dissatisfaction with current industrial agricultural trends and a desire for alternative methods of community organizing. However, as the new generation of urban farmers comes into the movement, mixing well with the old generation will be essential for the continued growth and success of the movement. There is real concern about the division of labor and labor exploitation, especially considering that farm workers around the globe are some of the lowest paid workers.⁷² Still, in its current state many workers on community gardens are women of color, typically black or Latina, who are not nearly as visible as the white figureheads that operate the business side of urban agriculture. This unfortunately, leads people into associating the urban agriculture movement

⁷¹ Campbell, *City of Forests*, 122.

⁷² Angotti, “Long-Term Strategy or Impossible Dream?” 339.

with younger white leaders. In fact, immigrants coming to this country face some of the toughest conditions in the agriculture industry, leading many young black and Latinos to turn away from this type of work. As UA requires a lot of manual labor, these immigrants believe that forcing themselves into this type of work would be a step backwards in their social and economic progress, instead choosing to turn their attention to other job opportunities. Addressing concerns about how divisions between race, class, and age will affect the community will be some of the biggest challenges to tackle in implementing more widespread and sustainable adoption of urban agriculture in the city. Understanding UA and farming as being beneficial for the community rather than the individual will help to strengthen the impact of the local food movement. As mentioned above, one of the biggest threats to urban agriculture in the city came during the Giuliani administration of the 1990s. In his attempt to sell much of the land used for farming to housing developers, coalitions of farmers from a variety of economic and ethnic backgrounds formed in order to combat this push. While they were successful in saving many of the gardens that were part of community land trusts, there was division among the different demographic of farmers mentioned, which weakened the unity of protestors and inhibited potential growth for the movement. Additionally, pressure from movements such as gentrification threatened the survival of gardens in different communities, including the Lower East Side. As the local food and urban agriculture movement draws in more people, the aforementioned educated, affluent, white, workers threaten communities that have been participating in these ventures for years. For example, “gardens that were once bastions for the preservation of Puerto Rican culture [have become] sculpted retreats for gentrifies.”⁷³

⁷³ Angotti, “Long-Term Strategy or Impossible Dream?” 339-40.

Chapter 3. Other Benefits of Urban Agriculture for Children and Youth

When environmental movements began increasing in popularity during the 1960s, emphasis was placed on seeking justice for minority groups based on race or class, that were unequally burdened by environmental conditions such as unhealthy air, unsafe drinking water, and lack of access to healthy foods in their communities. Towards the end of the century, during the 1990s, food security became a major concern in policy making and a new movement emerged in support of changing our food systems through alternative food initiatives. These initiatives included urban agriculture projects and farmers markets which supported local economies and emphasized sustainable production practices as well as social justice. According to authors Sarah Grace Davenport and Joanna Mishtal, “Alternative food projects, urban agriculture in particular, often operate under the rubric of food justice, a framework which links food insecurity and food systems to racial, economic, and political inequality”⁷⁴ which highlights UA’s potential as a tool for food justice activism. Unfortunately, the concept of “sustainability” as it relates to urban agriculture has largely been understood as an a-political movement with no regard for the political, historical, and social context of the communities that need it most. This interpretation can ignore or even reinforce social, racial, or economic inequality, so it is imperative that “justice” remains a central component of the urban agriculture movement and not just “sustainability.”

As the urban agriculture movement has expanded in recent years, the various benefits that come from incorporating UA into urban areas have been able to reach increasingly more numbers of people. As mentioned in previous chapters, urban agriculture has the potential to

⁷⁴ Davenport, Sarah Grace, and Joanna Mishtal. “Whose Sustainability? An Analysis of a Community Farming Programs Food Justice and Environmental Sustainability Agenda.” *Culture, Agriculture, Food and Environment* 41, no. 1 (February 14, 2019): <https://doi.org/10.1111/cuag.12227>. 56.

improve the health and wellbeing of children by reducing hunger and improving their nutrition, as well as improving the environmental conditions of the areas they live in.⁷⁵ These are also components of the fight for justice in the local food movement. While no city currently relies on urban agriculture and other local food producers as the primary food suppliers, the positive impact that the expansion of UA has had on food security in many cities is well noted. In order for more people to continue to benefit from urban agriculture, it is important that children and food justice remain a primary focus of the movement. In fact, in accordance with the opinions of an unidentified state agent, youth programs are of paramount importance for the continued success of urban agriculture projects.⁷⁶ The neoliberalization of our agro-food system has created a number of socio-economic problems including hunger, public health issues, and environmental issues that current urban agriculture projects seek to address⁷⁷ by pushing for justice and change, rather than just sustainability.

In order for youth to make healthy food choices they must first develop proper food habits. The eating habits that kids develop during adolescence are the ones that they will continue to use throughout adulthood. A number of factors contribute to the overall diet of a child. The children and youth that we are examining in this paper often live in food deserts or cannot afford healthy meals on a daily basis. The specific culture they were raised in can also greatly affect the diet of children, particularly if they are part of a minority or immigrant population. Additionally, the media and advertisements have a large impact on the decisions that kids make about what to eat. Especially in urban settings, it has become increasingly more

⁷⁵ *Urban Agriculture: Food, Jobs and Sustainable Cities*. New York, NY: United Nations Development Programme, 1996. 160.

⁷⁶ Weissman, E. "Entrepreneurial Endeavors: (Re)Producing Neoliberalization through Urban Agriculture Youth Programming in Brooklyn, New York." *Environmental Education Research* 21, no. 3 (2015): 351–64. 352.

⁷⁷ Weissman, 362.

difficult for children to make healthy food choices while navigating the current urban food landscape.⁷⁸ Through the development of urban agriculture programs, we can hope to instill children with healthier and smarter food habits.

Children largely develop their eating habits from the lessons that their parents teach them. Outside the household, youth develop their food knowledge from classes in schools. When being taught about issues like nutrition and weight, it becomes obvious that youth have little knowledge of how to care for their health. For example, many young kids who are overweight do not even realize that they are not at a healthy weight.⁷⁹ They do not associate being overweight with being a bad thing or have a desire to change their lifestyles in order to be at a healthier weight. They believe that they are at the weight they are due to potential biological or environmental factors, rather than making poor lifestyle choices. Many overweight children do not realize that being at a normal weight is about a commitment to living a healthy lifestyle and making healthy choices.

It is important that children and adolescents have access to healthy food in order to have the option to make healthy decisions. As children mature and have less influence from their parents, they start to develop independent eating habits. One study revealed that even with open access to food, teens still make unhealthy food choices. Snacking was the most common feature among teens, with 84% of teens who snack with their friends saying they chose foods that were high in fat and sugar.⁸⁰ This is a concerning statistic considering that for youth living in urban areas and food deserts, these sugary fatty snacks are often all they have access to. Additionally,

⁷⁸ Raj, S., S. Raja, and B.-A. Dukes. "Beneficial but Constrained: Role of Urban Agriculture Programs in Supporting Healthy Eating Among Youth." *Journal of Hunger and Environmental Nutrition* 12, no. 3 (2017): 407.

⁷⁹ Sylvestsky, Allison C., Monique Hennink, Dawn Comeau, Jean A. Welsh, Trisha Hardy, Linda Matzigkeit, Deanne W. Swan, Stephanie M. Walsh, and Miriam B. Vos. "Youth Understanding of Healthy Eating and Obesity: A Focus Group Study." *Journal of Obesity* 2013 (2013): 4.

⁸⁰ Mckeown, Amy, and Roy Nelson. "Independent Decision Making of Adolescents Regarding Food Choice." *International Journal of Consumer Studies* 42, no. 5 (2018): 475.

while at school 56% of teens are more likely to eat the same foods with high levels of fat and sugar. However, just providing healthy foods will not make children eat them. That is why it is imperative that kids increase their knowledge of food and nutrition in order to make healthy choices.

Living in a food insecure household can have a huge impact on the transition from childhood to adulthood for kids. During adolescence, kids begin to have a desire for more autonomy, distance themselves from parents and beginning to associate with peers more.⁸¹ Due to these activities, even in the best of settings, teens begin to become more involved in so called antisocial and risky behaviors. Being food insecure can have a negative impact on these developments by creating short term family dysfunctionality and impacting the cognitive abilities and mental health of teens. Food insecurity is known to contribute to a number of behavioral problems for youth. In schools, these problems can manifest in issues such as cheating, lying, stealing, fighting, and bullying. These early adolescent problems may continue to persist if left unchecked and may evolve into larger issues with authority down the line. For teens, food insecurity can lead to problems with sexual risk taking, drug/alcohol use, and increased mental health problems. Evidence suggests that adolescents and children that experience hunger are more than 2.3 times as likely to experience mental health issues and suffer from depression and suicidal ideation. Many of these issues unfortunately, perpetuate a vicious cycle for children living in food insecurity and poverty. Students that suffer from mental health problems are more likely to suffer school attendance issues, interference with high school completion, and lack of motivation for secondary educational matriculation and attainment⁸² leaving them impoverished and without means of progressing in life.

⁸¹ Heflin, Kukla-Acevedo, and Darolia, "Adolescent Food Insecurity and Risky Behaviors," 2.

⁸² Heflin, Kukla-Acevedo, and Darolia, 3.

Urban green spaces do more for children than increasing their food security and providing them with healthy and delicious food. They serve as locations for recreation and education, which are examples of cultural ecosystem services. Educating kids about health and nutrition and increasing their food literacy are primary functions of urban green spaces. Increasing food literacy has been shown to have a positive effect on the health of children and has been an effective approach in fighting childhood obesity and other childhood related health issues. Learning empowers kids to understand the role food has in their lives and how they themselves play a larger role in a greater food system. Food literacy is defined as, “the ability of an individual to understand food in a way that they develop a positive relationship with it, including food skills and practices within a complex food system.”⁸³ Increased food literacy in adolescents has shown to contribute to a preference for healthy foods including fruits and vegetables, decreasing portion sizes especially with fast food, and turning away from pre-packaged snack foods.⁸⁴ Research shows that increasing food literacy has a positive impact on the development of healthy dietary habits, which we know is important. Additionally, poor food literacy can lead to a lack of skills such as cooking, which can serve as barriers to developing healthy eating habits. Determining how to properly incorporate food literacy curriculum into schools has always posed a challenge. However, spaces devoted to urban agriculture are the perfect places to educate children about food and to increase their knowledge of nutrition.

A study conducted regarding the agricultural awareness of children found that most have little or no knowledge about agricultural practices, with that rate being lowest among urban

⁸³ Ronto, Rimante, Lauren Ball, Donna Pendergast, and Neil Harris. “Adolescents Perspectives on Food Literacy and Its Impact on Their Dietary Behaviours.” *Appetite* 107 (2016): 550.

⁸⁴ Ronto et al., 550.

children.⁸⁵ Specifically, urban agriculture encourages children to think about their eating habits and have a much more positive relationship with food and nature. UA has the power to impact rates of obesity and other food related health issues in children by encouraging farm to table approaches to food. Additionally, foods grown using urban agriculture are often healthier, as they are not subject to being grown with pesticides and harsh chemicals.⁸⁶

Obesity has been a rising issue in the country for years and scientists have been trying to uncover the relationship between obesity and food insecurity. While people often associate undernourishment with food insecurity, obesity is often found in households that are experiencing low levels of food security. In the US alone, it is estimated that about 1 in 3, or more specifically 31.9% of children are overweight or obese.⁸⁷ So far, the evidence on the relationship with food insecurity has been mixed, with results finding both positive and negative correlations between the two. However, one author has proposed a possibility to the paradox of hunger and obesity existing in the same place. The relation could be due to a number of factors including the overconsumption of cheaper, unhealthier, energy-dense foods, overeating during times when food is more plentiful, parents looking to protect their children by feeding them more during times of food availability, and mothers experiencing food insecurity while pregnant.⁸⁸

There are examples of youth programs throughout the city that have worked to expand the benefits of urban agriculture to make them more easily accessible for kids. One such program is the East New York Farms! Project, which runs an internship program for youth living in Brooklyn ages 13 to 18. The program promotes environmental stewardship and outdoor

⁸⁵ Dillon, Justin, et al. *Improving the Understanding of Food, Farming and Land Management Amongst School-Age Children: A Literature Review*. London: National Foundation for Educational Research and King's College London, 2003. 14.

⁸⁶ Pawlowski, "Food Deserts to Just Deserts," 40.

⁸⁷ Kuku, Olujemisi, Steven Garasky, and Craig Gundersen. "The Relationship between Childhood Obesity and Food Insecurity: a Nonparametric Analysis." *Applied Economics* 44, no. 21 (2012): 2667.

⁸⁸ Kuku, Garasky and Gundersen, 2669.

recreation by having the youth participate in cultivating urban community gardens. The program is based in a theory that environmental stewardship towards public green spaces will create positive social changes in the lives of these youth on both an individual and community level. A study of the program found that participants, along with gaining an increased knowledge of gardening and nutrition, gained greater levels of self-efficacy, self-esteem, and academic performance.⁸⁹ A similar program that involved the youth of the Los Angeles Latino population found that their program improved preferences and attitudes towards fruit and vegetables among the participants, encouraging healthier food habits.

One study done by researchers in Buffalo, NY indicates that fruit and vegetable consumption went up in youth that participated in urban agricultural programming.⁹⁰ However, it is important to note that this increase was noted mostly in neighborhoods with greater access to resources and those of higher socioeconomic standing. While this case study demonstrates that UA programs can have positive impacts on the habits of youths, it also illustrates the point that the focus of the urban agriculture movement must be in providing justice for underprivileged communities in need. These UA programs need to be about more than educating and recreation, and they must serve as sources of food protection and security for urban communities.

As well as teaching about developing healthy habits related to food, incorporating agricultural education into the lives of children has shown to increase their ability to pick up basic math and science skills. Researchers in the UK have argued that, “supervised agricultural experience is educationally valuable.”⁹¹ However, it’s about more than teaching a few

⁸⁹ Sonti, Nancy Falxa, Lindsay K. Campbell, Michelle L. Johnson, and Sarita Daftary-Steel. 2016. “Long-Term Outcomes of an Urban Farming Internship Program.” *Journal of Experiential Education* 39 (3): doi:10.1177/1053825916655444. 270.

⁹⁰ Raj, Raja and Dukes, “Beneficial but Constrained,” 422.

⁹¹ Dillon et al., *Improving Understanding of Food*, 37.

agricultural skills in an extracurricular or outside program. Active relationships between local government agencies, school districts, and urban agricultural organizations will create numerous opportunities not just for low-income children, but for their families as well.⁹² It will provide them with the opportunity to actively engage and learn in green spaces.

Another positive aspect of these urban green spaces is that they create a connection with nature that many kids living in cities often do not have. They make them more aware of their relationship with and impact on the environment. Through interacting with these spaces, children create an emotional connection with nature that also generates environmental concern. An appreciation of nature and the environment are characteristics that urban green spaces hope to foster in young children that will then be taken with them into adulthood. It was discussed how urban agriculture has the potential to increase food literacy and knowledge. This is reinforced by the fact that not having an established connection with nature can affect one's relationship with food in a negative way.⁹³ In fact, a child's understanding of food and agriculture as a part of nature is crucial for building a strong relationship with nature.⁹⁴

Some claim that today's generation of children are living in a "nature deficit" for a number of reasons. Many people in different professions have spoken highly of the correlation between proper childhood development and spending time in nature. For urban children, it's a combination of disconnection from green spaces, a shift towards indoor recreation thanks to electronics, and changes in parental attitudes to letting their children roam freely. This increased separation applies to food as well, as children are becoming increasingly more distanced from

⁹² Raj, Raja and Dukes, "Beneficial but Constrained," 423.

⁹³ Uhlmann, Kora, Brenda Lin, and Helen Ross. "Who Cares? The Importance of Emotional Connections with Nature to Ensure Food Security and Wellbeing in Cities." *Sustainability*10, no. 6 (2018): 2.

⁹⁴ Dillon et al., *Improving Understanding of Food*, 18.

the sources that make and distribute their food.⁹⁵ Today's kids spend about half as much time outside as they did twenty years ago, contributing to a lack of connection with nature.

Developing more urban agriculture projects that youth can interact with gives them the opportunity to understand where their food is coming from, make healthier choices when it comes to food, and reconnect with nature.⁹⁶

As it is known today, "nature deficit disorder," is a popular theory set forth by Richard Louv which is based on the assumption that today's children have an increasingly alienated relationship with nature.⁹⁷ This higher degree of separation can lead to a number of physiological, emotional, and social problems for children down the road including issues with obesity, ADD/ADHD, stress, and decreased academic performance. While nature deficit disorder is not a real diagnosable medical disorder, reestablishing a child's connection with nature has actually shown results in behavior improvement. The therapeutic and restorative aspects of a relationship with nature cannot be denied and children who have been exposed to nature often show higher levels of academic performance and lower levels of hyperactivity and other symptoms associated with ADD/ADHD.

Food insecurity can lead to a number of physiological developmental problems for children due to issues with undernutrition and deficiencies of important macronutrients. These issues have led to complications with the development and functionality of the brain in kids, resulting in poor cognitive functioning and physiological, behavioral, and emotional problems.⁹⁸ Past studies have suggested that these issues are the same across the board for all children,

⁹⁵ Uhlmann, Lin and Ross, "Who Cares?" 10.

⁹⁶ Pawlowski, "Food Deserts to Just Deserts," 540.

⁹⁷ Dickinson, Elizabeth. "The Misdiagnosis: Rethinking 'Nature-Deficit Disorder.'" *Environmental Communication* 7, no. 3 (September 2013): 315.

⁹⁸ Hobbs and King, "Unequal impact of food insecurity," 687.

however more recent findings suggest that they impact kids from different demographics in different ways. For example, evidence shows that young girls are more susceptible to the harm from living in a food insecure household than boys are.⁹⁹ One study found that the effects of food insecurity are felt more in households where children are already experiencing behavioral or other problems. Therefore, food insecurity has the potential to exacerbate preexisting problems and lead to issues such as poor academic performance or increased risk of delinquency.¹⁰⁰

Author Elizabeth Dickinson seeks to expand upon the theory set forth by Louv and critiques our society's larger reaction to the environment in general. While issues such as technological development, urbanization, over protectionism, and educational reform do contribute to an increased level of separation between humans and the environment,¹⁰¹ a large factor that has impacted our connection with nature is the idea that nature is not valuable. Anthropocentrism has perpetuated the idea that humans are dominant over nature and this belief has become deeply embedded in history and culture throughout time. In order to address the separation of humans and nature, we must as a society begin to reconcile with nature and see it as not only beneficial to us but as intrinsically valuable in and of itself.

Cultivating urban green spaces is a community act and encourages collaboration among children. This expanding network of children interested in urban agriculture increases food protection as well, ensuring that communities will have food for years to come. As the people who will be in charge of the next generation, it is important that children are taught about urban agriculture, food security, and food literacy in order to continue the trends in the urban agriculture movement. Social constraints on urban agriculture programs for children and youth

⁹⁹ Hobbs and King, "Unequal impact of food insecurity," 687-8.

¹⁰⁰ Hobbs and King, 692.

¹⁰¹ Dickinson, "The Misdiagnosis," 328.

must be eliminated in order to rebuild these community food systems as well as encourage residents to make full use of the benefits these systems provide through economic means.¹⁰²

Youth will be the ones carrying on the food justice movement and fighting for change in their communities.

Chapter 4. Urban Agriculture's Impact on Urban Sustainability

Urban agriculture has the potential to change the way that food systems are managed in large urban areas. So far it has been explored how UA has the potential to improve food security for underprivileged children in New York. However, urban agriculture and its incorporation into urban infrastructure can provide numerous other ecological, social, and economic benefits that can create a more sustainable urban environment for children, teens and youth as well as current and future generations of adults. Traditionally, green infrastructure referred to designs that were supposed to facilitate the water cycle by mimicking infiltration processes through resources such as soil and plants.¹⁰³ Now, the understanding of the concept has expanded to refer to designs that incorporate nature in a way that hopes to address and mitigate some urban or environmental problem. Examples of green infrastructure include green roofs, green walls, rain gardens, and permeable pavements. While many of these designs can serve as options for implementing urban agriculture, they can also provide public green spaces for all and do not necessarily equate to agriculture. Green infrastructure now provides a number of benefits to the urban environment including providing habitat, flood protection, cleaner air, and cleaner water.¹⁰⁴

¹⁰² Raj, Raja and Dukes, "Beneficial but Constrained."

¹⁰³ Rogers, Charles M. and Colleen C. Hiner. "Siting Urban Agriculture as a Green Infrastructure Strategy for Land Use Planning in Austin, TX." *Challenges in Sustainability*, no. 1 (2016): 39.

¹⁰⁴ Rogers and Hiner, 40.

There are a few advantages that New York has compared to other cities when it comes to the implementation of urban agriculture and developing new infrastructure. While property costs remain high, this is due to the economic and social vitality of the city, meaning there are often high levels of awareness and support when it comes to new projects that emphasize issues such as sustainability and health. These are issues that are at the forefront of more and more New Yorkers minds every day and at the core of the UA movement as addressed in the previous chapter. Additionally, factors such as diversity, a large consumer base, and a rich food culture make New York an alluring city for anyone interested in starting an urban farm.¹⁰⁵

Incorporating urban agriculture into green infrastructure provides a number of ecosystem services to all inhabitants of the city.¹⁰⁶ Green infrastructure has the potential to increase carbon sequestration in urban areas. While the impact made from new designs would not be enough to offset the contributions to climate change from the city, they would still improve the general air quality in the city by getting rid of pollutants.¹⁰⁷ Minority populations of children and teens living in NYC disproportionately experience the highest rates of asthma in the country, especially in the Bronx. More green spaces would mean cleaner air, which could cut down on the suffering from these afflictions. The same can be done for water systems, which was the original focus of developing green infrastructure. Green infrastructure has had the potential to reduce urban storm water runoff by up to 100% in some urban centers. There is also increased filtration of water as it is absorbed by soil and plants, including removing pollutants from runoff.¹⁰⁸ These

¹⁰⁵ Ackerman et al., "Food Systems for Future Cities," 202.

¹⁰⁶ Zeman, Frank. *Metropolitan Sustainability: Understanding and Improving the Urban Environment*. Cambridge, UK: Woodhead Publishing, 2012, 119.

¹⁰⁷ Russo, Alessio, Francisco J. Escobedo, Giuseppe T. Cirella, and Stefan Zerbe. "Edible Green Infrastructure: An Approach and Review of Provisioning Ecosystem Services and Disservices in Urban Environments." *Agriculture, Ecosystems and Environment* 242 (May 1, 2017): 53–66.

¹⁰⁸ Walters, Stuart A., and Karen S. Midden. "Sustainability of Urban Agriculture: Vegetable Production on Green Roofs." *Agriculture* 8, no. 168 (2018), 3.

are just a few of the benefits that incorporating urban agriculture into green infrastructure can generate. Further benefits include noise reduction, energy saving, storm water retention, increased roof lifespan (for green roofs) and mitigation of the urban heat island, which are all examples of regulating ecosystem services.¹⁰⁹

One advantage of green infrastructure that benefits other inhabitants of the city, such as animals, is that urban agriculture and other green projects create new habitats for urban animals and increase the biodiversity of an area. As explained previously by Miller and Spoolman, protecting and encouraging biodiversity is a key concept in defending nature and helping the natural environment to heal. In a way, without this biodiversity, children would not be able to thrive either. However, biodiversity does not solely relate to animals, and a variety of different plant species aids in diversifying the makeup of gardens and provides homes for said animals. Increasing urban agriculture and green infrastructure will lead to a higher diversity of plant and animal species present in urban environments and greatly increase biodiversity.¹¹⁰

Urban agriculture and green infrastructure can provide a number of cultural ecosystem services, as well, that benefit all humans and have nothing to do with food. It has been proven that levels of stress have continued to rise among children and adults in Western urban settings.¹¹¹ Our bodies react to their natural environment in specific ways and can respond positively or negatively to urban environmental stimuli. Studies have shown that people are happier when they are able to interact with nature more frequently.¹¹² Especially for New

¹⁰⁹ Whittinghill, Leigh J., and D. Bradley Rowe. "The Role of Green Roof Technology in Urban Agriculture." *Renewable Agriculture and Food Systems* 27, no. 4 (2011): 315.

¹¹⁰ Walters and Midden, "Sustainability of Urban Agriculture," 5.

¹¹¹ Panagopoulos, Thomas, Ilze Jankovska, and Maria Boştenaru Dan. "Urban Green Infrastructure: The Role of Urban Agriculture in City Resilience." *Urbanism. Arhitectura. Constructii*, no. 1 (2018): 61.

¹¹² Panagopoulos, Jankovska and Dan, 60.

Yorkers, who live notoriously hectic and fast-paced lives, incorporating nature in their home, work, and social lives can aid in relaxation and stress relief.

As discussed in the previous chapter, people have an innate desire to interact and connect with nature. We can combat nature-deficit disorder by establishing more biophilia in our populations. "Biophilia" is a term coined by E. O. Wilson, which hypothesizes that humans naturally desire to create emotional bonds with nature and the living organisms in it.¹¹³ Children living in urban areas are less likely to have these connections than children living in rural areas. Many people understand the potential benefits of incorporating more time in nature into their lives. This has been discussed in previous chapters, but increased interactions with the outside environment provide urban dwellers with an opportunity to form a sense of community both with nature and the other people that are interacting in these green spaces. By feeling connected to something outside of their home, and by seeing how other people interact with nature, a stronger sense of community is being formed among the people. This feeling can be further beneficial, leading to community engagement and planning that could eventually lead to improvements in the lives of those community members.¹¹⁴ Additionally, all the previously mentioned social benefits of urban agriculture that children receive apply to adults here as well, such as serving as places for recreational, educational, or religious activities that grow and foster a community. While this paper primarily focuses on the benefits that UA can provide to children and youth, adults are necessary components of the movement as well because they serve as leaders and teachers to the children. They are the ones that will help shape habits and provide access to urban youth.

¹¹³ Cho, Yoori, and Dowon Lee. 2018. "'Love Honey, Hate Honey Bees': Reviving Biophilia of Elementary School Students through Environmental Education Program." *Environmental Education Research* 24 (3): doi:10.1080/13504622.2017.1279277. 446

¹¹⁴ Panagopoulos, Jankovska, and Dan, "Urban Green Infrastructure," 60.

In order for green infrastructure to make a wider impact, it is important that not only new projects are built, but old buildings and structures are updated and altered to contribute the same environmental benefits.¹¹⁵ It is also important that we create safe access for children in these new and renovated projects so that they can properly experience these spaces. As green infrastructure will hopefully become more widespread, incorporating it in unexpected places will show how creative solutions can be generated through innovation and encourage others to support the message of sustainable infrastructure while becoming more commonplace among all buildings. Coming up with creative solutions can demonstrate to us how we can incorporate urban agriculture into the city infrastructure more. One issue that has challenged the implementation of urban agriculture in some urban areas has been the perceived lack of space to establish gardens. Green roofs have become especially popular in New York, as there is little ground left to develop for farming. However, many other cities have undervalued the potential of green roofs and walls as locations for providing homes for urban agriculture projects. These forms of green infrastructure solve the issue and provide locations to expand agriculture in the city as well as provide additional benefits such as insulation against heat, leading to lower energy bills. There are examples of these types of projects being developed in the city right now. Eagle Street is a rooftop farm that is fighting food insecurity in the streets of Brooklyn. They recognize that these farms have the potential to aide in environmental issues, such as mitigating the heat island effect and serving as places for relaxation and recreation in the increasingly hip and chic neighborhoods of Brooklyn.¹¹⁶ They also provide guides on how to transform one's own rooftop

¹¹⁵ Panagopoulos, Jankovska, and Dan, "Urban Green Infrastructure," 63.

¹¹⁶ Hanson, David, Edwin Marty, Mark Winne, and Michael Hanson. *Breaking Through Concrete: Building an Urban Farm Revival*. Berkeley: University of California Press, 2011. 122.

into a farm, complete with tips on how to handle the various problems that come with constructing a garden on one's roof.

As urban agriculture evolves and changes, a new form of urban farming has begun to become more and more popular. Controlled environment agriculture (CEA) is typically larger in scale, more technologically advanced and for commercial value. This type of farming is done without soil and consists of using systems such as hydroponics, aeroponics, or aquaponics. There are many advantages to this type of farming as opposed to typical agriculture which is done in soil. CEA can be implemented on walls, roofs, and indoors, which could address some of the issues mentioned before that have to do with a lack of space for urban agriculture. Among the benefits of this type of farming are maximizing produce yields, reducing water usage and lessening the need for fossil fuels among many more,¹¹⁷ but these types of infrastructure often do not serve as places for recreational or community building.

While the implementation of urban agriculture in the city could have wide reaching impacts, there has been significant pushback in the past. Thankfully, some of the biggest challenges to establishing an urban farm are similar problems that many small businesses owners face when getting started, such as securing loans and managing labor requirements.¹¹⁸ When the owners of farms do get started they often face challenges with figuring out things such as pest management and distribution planning. Farmers also highlight the inherent issues with farming in an urban setting as possible limitations. However, as noted from the example of the Eagle Street farm in Brooklyn, there are plenty of resources out there for farmers who are interested in joining the urban agriculture revolution. As with starting any business, it will take resilience and perseverance to succeed.

¹¹⁷ Goodman and Minner, "Vertical and soilless," 161.

¹¹⁸ Ackerman et al., "Food Systems for Future Cities," 198.

It seems clear that there must be some additional challenges to getting this type of infrastructure implemented if it is not more common already in urban areas. One complaint about these projects has been that the designs can be expensive and labor intensive to construct, especially if they feature a more complex solution to address an environmental issue. However, many times these projects prove to be more economically beneficial, by extending the life of the buildings they are installed on and by cutting down on energy use, leading to energy conservation. Many also worry that when not cared for properly, these agricultural districts can actually be detrimental to human health. Some opponents fear that humans may come in contact with heavy metals in soils or other pollutants in poorly cared for plots.¹¹⁹ However, with a commitment to sustainability and improving the urban ecological environment, it would be a challenge for urban agricultural workers to let their plots get to a point of contamination so bad that they would negatively affect the people around them. Not that it is not a possibility, but regulations also will play a role in maintaining the integrity of green infrastructure and urban agriculture.

Furthermore, urban agriculture promotes and supports urban sustainability in all forms. One of the primary pillars of the urban agriculture and food justice movement is ensuring economic equality for all. In a variety of different ways, urban agriculture can have a positive impact on the economy and boost economic opportunities for those involved in it. For example, increases in urban agriculture projects lead to the creation of more jobs which can then boost household incomes and offset the money that families spend on food.¹²⁰ They also provide opportunities for women specifically to push for social and economic progress, as women have historically been some of the biggest proponents of urban agriculture. UA also provides

¹¹⁹ Russo et al., "Edible Green Infrastructure."

¹²⁰ Ackerman et al., "Food Systems for Future Cities," 191.

economic benefits in the form of creating new linkages throughout the urban area and their food system by pulling in new capital and creating opportunities for new businesses. UA projects also increase land values and tax values.¹²¹ One case study found that urban agriculture developments raised land values by 9.4% within 5 years of their establishment.¹²² Finally, local food production also cuts down on costs that go into food transportation.

The development of urban agriculture has the potential to reshape the food system of New York. In recent years, focus on “local” food movements has been increasingly popular for a number of reasons. Often, foods grown in the local area are much fresher and healthier. Growing food in nearby regions also contributes to reducing the amount of energy that goes into supporting our food systems by lowering the distance that foods have to travel before they reach our plate. Typically, food travels an estimated 1,300 miles before it reaches our plates. Foods that are produced more locally only require about 30 miles of transportation, greatly reducing the time and energy needed for our food to reach us.¹²³ Cutting down on transportation also reduces the amount of spoilage and therefore food waste that is generated. Urban agriculture also highlights another key component for promoting environmental sustainability that Miller and Spoolman established. Chemical cycles are important processes that occur in nature and through local recycling and reuse of water and organic waste, nutrients become cycled throughout the urban ecosystem and reduce the city’s ecological footprint.

Urban agriculture has already begun to have a large impact on food production in the city over the last few years. In 2010, 87,690 pounds of vegetables were grown on just 67 community

¹²¹ Nogeire-McRae, Theresa, Elizabeth P Ryan, Becca B R Jablonski, Michael Carolan, H S Arathi, Cynthia S Brown, Hairik Honarchian Saki, Starin McKeen, Erin Lapansky, and Meagan E Schipanski. 2018. “The Role of Urban Agriculture in a Secure, Healthy, and Sustainable Food System.” *BioScience* 68 (10): doi:10.1093/biosci/biy071. 750.

¹²² Nogeire-McRae et al., 751.

¹²³ Ackerman et al., “Food Systems for Future Cities,” 193.

gardens of the estimated hundreds of various locales that are supporting urban agriculture.¹²⁴

Many of the larger farms in the city have been instrumental in establishing a stronger connection among growers and consumers in the city, expanding the network of people that UA reaches.

Recently, the city government has partnered with Just Food, a nonprofit organization established in the city that has been a pioneer on issues of food justice and sustainable agriculture, to establish farmers markets at community gardens in order to reach larger consumer bases. They are often set up in neighborhoods that may be food deserts or are experiencing high levels of food insecurity. They also provide the opportunity for other regional producers, say in the Hudson Valley, to sell their produce and to connect to a more urban consumer base.

At this point, it is not expected for the city to become entirely reliant on local food production to supply everyone with the food they need to survive. Research done by Ackerman et al. suggests that between 162 and 232 thousand acres of land would be necessary to scale the food system using only urban agriculture. Currently, there are nearly 5,000 suitable vacant plots where urban farms could be established. However, according to these estimates, only between 103 and 160 thousand people could be feed with the food from farms, and that's only if all the land was utilized and working at full capacity.¹²⁵ While this is in fact a significant number, it nowhere near covers the over 8 million residents of New York City that would need to be fed.

Urban agriculture in the city has the potential to extend the benefits beyond the range of typical comprehensible possibilities. For example, many farms in the city rely on compost to feed crops. The compost is often composed of locally sourced food scraps and in the case of organizations such as the New York Barclay hotel, food scraps from the kitchen go directly into the compost that feeds the farm at the building. These changes demonstrate how developing UA

¹²⁴ Ackerman et al., "Food Systems for Future Cities," 194.

¹²⁵ Ackerman et al., 195.

in New York has the potential to have wide-reaching impacts on sustainability on a number of levels. While it is just one example, it is easy to see how the impact could be scaled to reach larger numbers of people.

Chapter 5. A Seat at the Table

As we have examined throughout the previous chapters, the implementation of urban agriculture has the potential to improve the physical and mental wellbeing of underprivileged NYC children and youth that may be food insecure, as well as provide them with a number of other benefits derived from the ecosystem services that UA projects provide. Additionally, the incorporation of urban agriculture into the infrastructure of the city will benefit all of the inhabitants of it as well as improve the environmental conditions of the city. However, without policy interventions by local government officials, there will be little way to guarantee that expansion of urban agriculture will actually improve the livelihood of kids and teens. While grassroots organizing has always been an important driver of the UA movement, policies that are implemented at higher government levels will actually be able to generate the broadest change and impact the most lives. There are a few areas to focus on regarding urban agricultural policy and they will all contribute to the betterment of food security for youth that may be living within low income neighborhoods in the city. As with all policy interventions, continuous monitoring and evaluation of the effectiveness of the policies implemented will be important to determine what is and isn't working. This will aid in developing the most effective strategies to improve food security in low income neighborhoods.

The best way to encourage the growth of urban agriculture initiatives is to promote it in all forms and to make it easily accessible for children, so that they remain a primary focus of the

movement and can achieve all the necessary benefits. This includes promoting both outdoor versions of farming including community gardens, rooftop farming, and greenhouses as well as enforcing the idea that indoor farming, through methods such as vertical farming, aquaponics, and aeroponics are viable methods for producing food in cities. Additionally, we must promote methods of urban farming that many don't immediately associate with the movement, including, beekeeping and the raising of livestock.¹²⁶ All of these various forms contribute to the movement. We must also promote urban agriculture for both commercial and individual use. This means not only supporting the growth and expansion of things like community gardens and CEA, which service larger numbers of people, but also promoting and allowing establishment of smaller gardens for personal use, such as on balconies and fire escapes.

The city's wish to expand urban agriculture programs and initiatives has been well documented in numerous policy briefs that the city has distributed in the last few years. In 2015, the office of Manhattan Borough President Gale Brewer released a statement detailing the various efforts the office would be implemented in order to expand urban agriculture and even hosted an urban gardening symposium in October of that year where they discussed strategies for promoting urban agriculture in a borough with limited space. Brooklyn Borough President Eric Adams was doing very similar things as Brewer in 2015 as well, and in November of that year announced that \$2 million would be going to developing stronger urban agriculture programs in Brooklyn schools and that their initiatives would focus on creating economic opportunity and preserving green space.¹²⁷

Government Urban Agriculture Policies. There are a number of broad steps that the city can take in order to address the limitations to urban agriculture and make its implementation

¹²⁶ Pawlowski, "Food Deserts to Just Deserts," 535.

¹²⁷ Pawlowski, 566.

easier in the city. Making permits easier to obtain will allow those that are interested in starting a farm a much smoother chance at establishing their project. This applies to the previously mentioned smaller personal farms as well as programs such as composting, which are elaborated on below. Specific legislative measures can be taken in order to enforce many of these plans. The first would be to rewrite the zoning codes to make the restrictions on urban agriculture projects looser so that more residents can access the benefits of urban agriculture. Next would be to make a comprehensive plan that discusses a bill that would be written into law. That way, it would not be seen as some laissez-faire project that does not need to get anything done. We would also have to ensure that legislation was established that specifically addressed the needs of those in lower income neighborhoods.¹²⁸ These proposals will be discussed in more detail in the following sections.

City Urban Agriculture Office and Plan. The best way that the city could address the expansion of urban agriculture in the city would be by creating a comprehensive plan in the vein of the larger sustainability reports the city made for PlaNYC and OneNYC. Both of these plans include proposals and initiatives for more widespread sustainability measures throughout the city, but one devoted to urban agriculture specifically would create a list of objectives and goals for the movement to adhere to. This would be an itemized report of the various goals set forth by the city's government offices, nonprofit organizations, and urban agriculture advocates in favor of expanding UA programs to increase the number of children and youth reached. These goals should also specifically include provisions that apply to youth to increase their impact on them. It would be important to include provisions in the plan directly related to food justice for children. This plan could hopefully be established by a new government office that focuses directly on

¹²⁸ Pawlowski, "Food Deserts to Just Deserts," 571.

urban agriculture, which is discussed below. There are number of steps that must be taken in order to ensure the success of this plan. They would include delegating tasks to certain city agencies, creating a standardized system of reporting, establishing a system for accountability with the plan, and developing an implementation timeline that would seek to establish certain projects by a certain time. In addition to this plan, there must be a centralized hub of information regarding the various aspects of urban agriculture that residents of the city would have easy access to. This type of database would be similar to initiatives implemented in other cities in the US including Chicago and Boston.¹²⁹ The plan should also find ways to offer incentives to those that get involved as well as provide grants for certain initiatives. The plan needs to also make sure to understand and address the diverse needs of each borough and their differing neighborhoods.

While there is still plenty of work to be done, New York is ahead on sustainability for a number of issues that other US cities are not. Especially in the field of UA, the city has been ahead of the curve for a while and is still situated to remain a national leader on the sustainability front. For example, the city has established a number of positions in their government that others have not, including an Office of Sustainability and an Office of Food Policy,¹³⁰ which started a number of initiatives including the SNAP program, to help low income families supplement the costs of their diets with nutritious foods, and setting nutritional standards for meals and snacks, which had the goal of promoting a healthier diet among New Yorkers and reducing chronic disease. While these offices are great, progress on urban agriculture projects is often not pushed due to the bureaucratic nature of government and initiatives getting bogged down by endless red tape. In order to focus more on the benefits that urban agriculture can provide to the city and the

¹²⁹ Pawlowski, "Food Deserts to Just Deserts," 570.

¹³⁰ Pawlowski, 565.

expansion of projects, the city should create a more centralized office focused specifically on urban agriculture. This could be under one of the already established offices or an entirely new one created for this specific purpose. This way, issues regarding urban agriculture and food justice can be addressed by this office specifically and work can get completed in a much more efficient manner. If the creation of a new office seems unlikely, another possibility is the creation of a government consortium where officials from different offices meet to specifically address urban agricultural concerns.¹³¹

One of the first things that this new office could establish is the creation and maintenance of a number of databases on urban agriculture. The lack of a comprehensive database of existing urban gardens and other agriculture projects as well as a database of available land and that could be used for gardens in the future and a database of food production in the city, has placed limits on researching urban agriculture success and expansion. Without this information, government offices will not have access to knowledge regarding potential new sites for agriculture projects and fail to consider how food is produced in the city. The city should devote time to developing a report of some kind on the food system of the city. Without understand how citizens in New York are eating and getting access to food, there will be no way to address the needs of various different neighborhoods, as each neighborhood has specific needs to be meet in regard to food security. In order to ease the creation and dissemination of this information that is stored in databases, the city should seek to integrate the information with other preexisting databases like OASIS and the Department of Buildings.¹³² The creation of an app may be beneficial as well for allowing people easy access to the information.

¹³¹ Pawlowski, "Food Deserts to Just Deserts," 569.

¹³² Pawlowski, 570.

Zoning Laws. Zoning laws and restrictions have played a huge role in the history of urban agriculture, both allowing its expansion and restricting it. Investigating how the city utilizes its undeveloped land could provide locations for potential urban agriculture projects. All residents of the city should have green spaces within walking distance of them. New York should devise a program where all city agencies that have jurisdiction over property must perform an audit in order to determine whether the land they possess would be suitable for use in food production. This program would follow a similar program that was developed by former San Francisco mayor Gavin Newsom.¹³³ This type of program would encourage food production in unusual locations and contribute to increasing interest in urban agriculture. It may also promote creating more green infrastructure projects, which was the focus of chapter 4. The information that is collected about available land could then be contributed to the creation of the databases discussed above.

One of the most important things that can be done in order to create a more comprehensive language surrounding urban agriculture in the city's zoning laws would be to adequately define terms associated with urban agriculture. One of the biggest challenges faced by proponents of urban agriculture in the past is that there are very loose definitions of the terms. In order to create a stronger dialogue about zoning and implementing urban agriculture, it is important to create widely accepted definitions of words such as "urban agriculture," "indoor farm," "vertical farm," and "commercial farm" among others as well as words associated with the farms such as "aeroponics" and "aquaponics."¹³⁴

¹³³ Nordahl, Darrin. *Public Produce: Cultivating Our Parks, Plazas, and Streets for Healthier Cities*. Vol. Revised & expanded [edition]. Washington: Island Press, 2014. 60.

¹³⁴ Pawlowski, "Food Deserts to Just Deserts," 570.

Green Building Regulations. In 2010 at the request of Mayor Bloomberg, the nonprofit group Urban Green Council worked with the city's Green Codes Task Force to amend the preexisting regulations regarding green buildings by creating a set of guidelines that would promote sustainability in the city's preexisting buildings. Through this work, the Department of City Planning then began to incorporate the 2012 Zone Green Text Amendment into their ongoing green projects.¹³⁵ While the changes did in fact increase a number of sustainable measures in regards to green buildings, it did not do enough to expand urban agriculture as it only focused on green roofs and greenhouses. New language must be created surrounding UA, as discussed above, in order to allow for more comprehensive decisions to be made regarding project construction. Restrictions on establishing urban agriculture projects on existing buildings in the city need to be loosened in order to allow for their expansion. While obviously remaining in compliance with building codes and regulations, new and creative solutions should be pursued with the goal of having them established on more New York buildings.

Composting Regulations. Large scale city wide composting is another move that would support the development of urban agriculture around the city. It would be a way for more citizens and businesses to get involved with the UA and local food movement, as anyone can donate their food scraps to composting bins.¹³⁶ Mayor De Blasio presented an initiative in his OneNYC plan to encourage more citizens to compost. Food scraps, yard waste, and paper products that are not suitable for recycling but are great components of compost make up 31% of the city's residential waste streams.¹³⁷ Back in the 90s, the NYC Compost Project was created in order to educate residents about the benefits of composting their food scraps as well as foster

¹³⁵ Pawlowski, "Food Deserts to Just Deserts," 565.

¹³⁶ Ackerman et al., "Food Systems for Future Cities," 203.

¹³⁷ OneNYC, 178

community growth and composting initiatives in all five boroughs. This program was founded as part of the NYC Organics program which Mayor De Blasio hoped to expand to reach more residents. In order to make composting a more viable option for all New Yorkers, these programs must be expanded to increase the amount of curbside organic collections and we must increase the amount of easily accessible organics drop-off locations.¹³⁸

Agricultural Permits. One thing that has halted the perceived success of establishing urban gardens in city neighborhoods has been restrictions on urban agriculture that are much tighter in residential areas than they are in commercial areas. The city needs to develop a strategy for addressing the needs of smaller gardening operations in residential areas, especially those that are low-income. According to a report in the Journal of Affordable Housing, one of the best ways to address food deserts in a city as large as New York is to allow residents to grow and sell within the food deserts themselves, rather than by building a larger network of connected “food corridors.”¹³⁹ This report discusses the ways that urban agriculture can benefit the entire city, yet the core focus is how it can fight food insecurity in areas of the city that may be food deserts. Urban agriculture cannot provide the benefits it does to people if they do not have access to it. Therefore, establishing gardens and other projects directly in neighborhoods struggling with food security or food deserts would offer the residents much greater access to the benefits. If it is not possible to allow the expansion of urban agriculture into more residential areas, it could be beneficial to at least establish a smaller business to address these concerns in neighborhoods with identified food deserts.¹⁴⁰

¹³⁸ OneNYC, 178.

¹³⁹ Pawlowski, “Food Deserts to Just Deserts,” 568

¹⁴⁰ Pawlowski, 569.

Neighborhood Developments. Developing food insecure neighborhoods with new programs will encourage healthy lifestyles among children. In the city there have been a few attempts at establishing policies to improve neighborhoods access to fresh foods. The Green Cart program was organized during the Bloomberg administration in partnership with the New York City Department of Mental Health and Hygiene with the goal of increasing a community's access to fresh produce where there was little availability. To this day, while the Green Cart program is reaching its target communities, the number of carts currently operating is far less than the number of permits the city has issued for them. More effective monitoring of the city's Green Carts may be able to provide solutions to increasing their effectiveness around the city.

One study showed that developing the public transportation nodes in a neighborhood would contribute to greater access to food.¹⁴¹ Especially in food deserts, increased public transportation would provide new opportunities for citizens to access food sources that may not have been previously available to them, as most city dwellers, especially those in low income neighborhoods, do not own personal methods of transportation. This type of development may also bring with it new amenities, such as supermarkets, which would provide access to fresh and healthy foods. However, these policies must be considered carefully because this type of development is prone to gentrifying neighborhoods. If displacement were to occur as a result of gentrification, it may push the people who need access to food the most, farther into neighborhoods that are food deserts. Close monitoring in conjunction with working closely with city agencies will offer the best solutions to addressing the specific needs of communities.

Educational Programs. As mentioned throughout, and specifically in chapter 3, education itself has the potential to shape the eating habits of kids and encouraging them to make

¹⁴¹ Freudenberg, Nicholas, Sandro Galea, and David Vlahov. *Cities and the Health of the Public*. Nashville: Vanderbilt University Press, 2006. 115.

healthier food choices. The larger issue we have been examining is food insecurity, so even with the educational tools that students gain in learning and making healthy food choices, they still may not even have access to the fruits and vegetables they need for a nutritious diet.

Nevertheless, educational policies will influence the choices of children and youth in a positive way, even if they are limited. Education empowers people and makes them feel good about the decisions they are making,¹⁴² which is especially important for children. Mandating nutrition education in primary schools would be the first step in improving the food literacy of urban children and encouraging them to make healthy food choices.

Furthermore, policies should link urban agriculture with schools. Programs could be developed between agencies to promote children's interest in gardening and food production. One program like this that already exists is Farm to School, which brings fresh produce and other goods to schools to put on their lunch menus while also offering hands on gardening learning and nutritional education for kids. Expanding the farm to school network into the city would be a great way to link urban agriculture and the students that can benefit from it the most. In addition to increasing their environmental literacy, these programs would also provide schools and the communities they inhabit with fresh and healthy produce, which would promote food security in these neighborhoods. Community based interventions will be some of the most effective at establishing permanent change in low income neighborhoods that may be food deserts or subject to food insecurity.¹⁴³ The establishment of community programming surrounding urban agriculture will promote education, recreation, and connection among members of these neighborhoods as well as get people involved in their own food production methods.

¹⁴² Freudenberg, Galea, and Vlahov. *Health of the Public*, 114.

¹⁴³ Freudenberg, Galea, and Vlahov, 115.

Universities in cities serve as important cultural and intellectual centers. New York City is home to some of the most prestigious universities in the country including Columbia, NYU, and our very own Fordham. Developing urban agriculture programs at these universities are ways to cultivate and to share knowledge with the communities who could benefit from it most.¹⁴⁴ For example, Fordham Rose Hill has taken steps to open a community garden on campus and even hosts CSA drop offs for students. The garden has even partnered closely with the Edible Academy in the NYC Botanical Gardens, which provides programs for children and students to get hands on education about gardening practices while cultivating a sense of nutritional awareness and environmental stewardship. The question to be asked now, is how Fordham and the Botanical Gardens can continue to expand these programs so that they can increase food security for students and the wider Fordham community. It was noted in Chapter 1 that the Belmont area is a frequently food insecure neighborhood of the city and it is right outside our gates! This demonstrates that we all have a role to play in shaping the food system of our city and fighting for more food justice.

¹⁴⁴ Ackerman et al., "Food Systems for Future Cities," 203.

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