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# Cultivating an Alternative Paradigm in Urban Areas to Achieve Greater Food Certainty in The United States

Owen Beatty

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Johnson & Wales University

Cultivating an Alternative Paradigm in Urban Areas to Achieve Greater Food Certainty in The  
United States

By

Owen Beatty

Submitted in Partial Fulfillment of the Honors Program Requirements  
For the Degree of Bachelors of Science in Culinary Arts and Food Service Management

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## Introduction

Many families in the United States live in communities in which availability and access to nutritionally acceptable foods may be scarce. Some Americans have great concern about where their next meal will come from and how they will manage to feed their families from a limited or unstable income. *Hunger* is undeniably one direct result of *poverty* in the United States, and it is also a factor used to measure the level of such privation. However, poverty is not the only contributor to the reasons why people remain uncertain of their next meal. For example, some families live in rural communities where access to affordable quality diets, defined as safe and healthy, can be miles away, and their only mode of transportation to access food (or food stores) is often restricted to walking. Others live in poverty-stricken, urban communities where their nutrition is limited because economic factors have driven large corporate supermarket chains out of these areas. This forces many people to resort to inexpensive high-caloric foods found at gas stations, convenience stores, and restaurants both fast and casual. Sadly, these populations may only be able to enjoy luxuries such as a simple tomato through the packet of ketchup that comes with their French fries.

These issues are encompassed by a term that is known as *food insecurity*. According to a 2015 report, by Alison Coleman-Jenson, Matthew P. Rabbitt, Christian A. Gregory, and Anita Singh for the United States Department of Agriculture (USDA), 42.2 million people lived in a household that experienced conditions classifying them as food insecure. This population constituted 13.4 percent of the non-institutionalized (jailed or imprisoned) portion of the country, including 29.1 million adults and 13.1 million children (6). Forty-two million people suffering from an insecurity of attaining a basic need necessary to survive is a silent alarm to issues stemming from the U.S. food system.

Food insecurity is discussed here in terms of what it consists of and how it is measured; a historical government response to hunger in this country; how the industrialized food system has contributed to its development; the current system's consequences such as *food deserts*; and how urbanized paradigms of food cultivation can be a viable means of relief for those suffering from the deprivations of hunger and poverty.

By contrast, *food security* is the “access by all people at all times to enough food for an active healthy life,” according to experts Michael LeBlanc, Betsey Kuhn, and James Blaylock at the Economic Research Service for the USDA, in an article entitled “Poverty Amidst Plenty: Food Insecurity in The United States” (159). These experts agree that the problems of food insecurity occur when the ability to achieve a healthy diet, without relying on emergency food supplies, becomes uncertain. In *Food and Society Principles and Paradoxes*, Amy E. Guptill, Denise A. Copelton, and Betsey Lucal elaborate on the definition of food insecurity as the limited access to high quality, safe, nutritious, and culturally sound foods in socially acceptable ways (212). The authors also provide other definitions that allow one to recognize what the food insecure eat and under what circumstances sound nutritional needs are satisfied. The term *foodways* is used by the group to describe patterns that formulate one's nourishment through cultural, social, and economic practices and outlets (5). *Community food security* expands on the general definition and is described by Guptill et al. as “a condition in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice” (qtd. in Guptill et al. 209). Culturally acceptable food can vary from culture to culture; however, practicing a diet that ensures an active healthy life can be described universally for all cultures.

In the 2015-2020 *Dietary Guidelines for Americans*, a healthy diet includes a mix of all vegetables, fruits, grains, proteins, and oil in moderation. In addition, the guidelines also emphasize that a healthy diet limits: saturated fats to less than 10 percent of calories per day; sugars to less than 10 percent of calories per day; and less than 2,300 milligrams of sodium per day (U.S. Human and Health Services USDA xiii). The troubling reality is that many food insecure groups rely heavily on inexpensive unhealthy products that limit their ability to meet these requirements. The information below offers recommended types and variety of each food group for an adequate diet (see table 1).

Table 1

## Key Recommendations for a Healthy Diet

<b>Food Groups</b>	<b>Examples</b>
<b>Vegetables</b>	Dark green, red and orange, legumes, starchy, and others.
<b>Fruits</b>	Especially whole fruits
<b>Grains</b>	At least half of which are whole grains
<b>Dairy</b>	Fat-free or low fat dairy including milk, yogurt, cheese, and/or fortified soy beverages
<b>Protein</b>	Including seafood, lean meats and poultry, eggs, legumes (beans and peas), and nuts, seeds, and soy products;

<b>Oils</b>	Olive oil, grape seed oil, and other unsaturated non-hydrogenated oils.
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Source: United States Department of Health and Human Services and U.S. Department of

Agriculture. *2015 – 2020 Dietary Guidelines for Americans*. 8<sup>th</sup> Edition. December 2015.

Leblanc et al. point out that the form of *malnourishment* that occurs from such insecurity in the United States is evident through a serious obesity epidemic and other chronic diet-related diseases—not *undernourishment* (159). According to the 2015-2020 *Guidelines*, the medical costs related to obesity were upwards of \$147 billion. In 2012, the total estimated costs for diabetes, often associated with the poor dietary choices stemming from food insecurity, was \$245 billion (U.S. Human and Health Services USDA 2). Billions of dollars are being spent on chronic diseases due to unhealthy eating patterns and lack of food security, but even higher costs are accrued by businesses. According to, "Report: Obesity Must Be Curbed to Cut Cost of Chronic Illness," by Jeremy Smerd the Milken Institute (an economic think tank focused on improving the economic conditions for people in the U.S and around the world) reported that "U.S. businesses lose \$1.1 trillion annually in productivity because of chronic illness" (Smerd). These staggering sums of money show that not providing affordable and reliable access to a healthy diet becomes an expensive problem for the rest of the county, not just for the food insecure.

The problem for the country is not solving hunger; the U.S. food system adequately produces enough food to feed the population. The issue is providing people with *food certainty*, in other words, consistent access to safe foodways that secure a healthy lifestyle. In turn, *food uncertainty* describes the anxieties from the concern of whether available foodways will provide appropriate options that are safe, healthy, and affordable. This certainty can be achieved through

government intervention, support of new local food initiatives, and most of all, increased use of underutilized parcels of land in urban areas that can provide relief for those suffering from the uncertainty of the quality of their next meal.

Leblanc et al. exhibit that although it may be true that food insecurity in the United States is in most cases episodic, the issue can still lead to many health concerns for Americans. For example, it may result in stunted psychological development of children and the formation of metabolic disease symptoms in adults such as, diabetes, coronary issues, and high blood pressure. These issues can be seen through undernourishment – the adverse physical symptoms as result of energy and nutritional deficiencies because of an inadequate or unbalanced diet – in the form of obesity (159). Often malnourishment is seen in developing countries through lack of calories and insufficient nutrients. However, many experts would agree that Americans do not adhere to the aforementioned *Dietary Guidelines* and experience forms of undernourishment through diet-related illness.

Christina Fox, J.D. in, “Teach a Man: Proactively Battling Food Insecurity by Increasing Access to Local Foods,” published in the *Journal of Food Law and Policy*, many of the limitations that lead to inadequate diets are discussed. Aside from geographic disadvantages, income, and transportation (all of which will be discussed later), inclination to practice poor dietary habits along with a lack of education are key components that Fox focuses on. Fox explains that after working full-time jobs, heads of food insecure households are too tired to creatively use fresh ingredients to prepare meals. She adds that even when there exists a degree of food certainty, many people are still inclined to eat high-caloric low-nutrient rich foods due to family traditions, convenience, and the lack of knowledge of healthy dietary requirements. It is asserted in the article that this lack of education contributes to the disregard of facts mitigating

against poor dietary choices and increases the disposition to endure these lifestyles. Fox claims that while the inclination to continue poor personal habits and education are not necessarily factors of food insecurity; they both directly influence how people react and behave in regards to food choices (244). While education and inclination are not discussed in great detail in this study, their importance still deserves to be mentioned when discussing the exigency of food insecurity.

Moreover, John T. Cook and Deborah A. Frank, from the Department of Pediatrics at Boston University School of Medicine in, “Food Security, Poverty, and Human Development in the United States,” discuss the importance of nutrition to optimal development and function in both children and adults. In the process of their report, the authors define hunger as “the uneasy or painful sensation caused by a lack of food...The recurrent and involuntary lack of access to food...Hunger may produce malnutrition over time...hunger...is a potential, although not necessary, consequence of food insecurity” (193). Cook and Frank also point out that at *low food security* levels, household managers (commonly mothers) substitute quantity for quality to prevent members, especially children, from the effects of hunger (193). In 2015, the USDA Economic Research Service stated that although children are generally protected from considerable reductions of food intake, one or more children experienced reduced calorie consumption and interrupted eating patterns during the year. In addition, the ERS reported that 3 million or 7.8 percent of children were food insecure at some point during 2015 (Coleman-Jenson et al. v). While these numbers may seem minuscule to the total population of the country, many Americans would agree that the thought of just one child going hungry in the country is a serious issue.



Furthermore, Cook and Frank found that nutrient sparse high-calorie energy-dense options are less costly. At the other end of the spectrum, nutrient dense low-calorie energy-sparse choices are more expensive. The observations made in their study on the inverse relationships between price and quality show how households are further inclined to make poor dietary choices because of financial restrictions. The authors claim that these poor choices for households with children can have negative impacts on those children in a number of ways such as: reduction of parents' energy for providing care and developmental stimulation; inadequate nutrition and an imbalance of macronutrients and micronutrients which leads to abnormal growth (short stature); underweight for age or height; improper balance of nutrients that can lead to childhood obesity; and impaired mental development effecting education and learning. In addition, they include the adverse effects on adults with regard to parenting such as depression and deprived parent-child interaction (197). Overall, it is established that food insecurity is a severe hindrance to growth, physical and mental health, and the adverse behavioral potential of those Americans unable to acquire sufficient resources to meet the standards of food security (193). Experts would concur that because of business and economic factors, inclinations to continue poor personal habits, and a lack of resources, many resort to the unhealthy decisions that begin a chain of damaging effects that can start in fetal development and persist into adulthood and elder years.

### **Measuring Poverty and Food Insecurity**

In order to understand food insecurity in the United States, poverty must be defined in clear terms in order to accurately label those who are food insecure. Most officials and advocates agree that this population consists of those living in food deserts and in impoverished circumstances. Some argue that immigrants, the unemployed, and the elderly (because of limited

financial and other resources) also fall into this category. However, the USDA uses specific qualifiers to measure food insecurity in the United States.

LeBlanc et al. offer insight into poverty in the U.S., which is strongly linked to determining food insecurity. Their article explains that in 1968, the federal government adopted an official definition of poverty that is used to compare statistics on income and set requirements for public programs (160). The study states, “The official definition of poverty compares a family’s cash income with an estimate of its needs. Family needs are calculated as a function of the number of family members and their ages and sex” (160). The group clarifies that social norms often influence a society’s definition of poverty, and in the U.S. the threshold for families exceeding three or more members was set at three times the minimum cost of food, or otherwise known as the *Economy Food Plan* (160). Christine K. Ranney, an Associate Professor at Cornell University, in an article entitled, “Determining Food Expenditures and Measuring Poverty: The Work of Mollie Orshansky: Discussion,” discusses the development of the poverty line in the 1960s. Ranney describes the methodology developed by Mollie Orshansky, known as Mollie’s Measurement (MM), which is still used today to determine the level of poverty in the United States. Using the 1962 Economy Food Plan (EFP- the minimum cost of providing a palatable healthy diet) and the 1955 average food expenses consisting of one-third of total living expenses. MM uses the determined multiplier, a factor of three, times the EFP, which sets the poverty thresholds. The author continues to explain that this threshold represents the minimum amount of income needed for a household to attain a reasonably healthy diet (600). Experts would agree that poverty is basically measured on whether a household is living in food insecure conditions.

These basic measurements used to determine poverty fail to incorporate sustainable cost of living differences among those living with food uncertainty. According to a special report

from *The American Prospect*, “Mis-Measuring Poverty,” the 2009 income threshold for a four-person household was \$21,200, but that does not take into account the different living expenses from those living in Los Angeles, California, and those living in Fargo, North Dakota, including the exclusion of government aid contributions (“Mis-Measuring Poverty”). According to the USDA Economic Research Service, in 2015, the federal poverty line—for a four-person household—was \$24,036. (USDA ERS “Key”). *The American Prospect*’s article claims that these inaccuracies point out that current measurements fail to accurately assess government support programs efficiency (“Mis-Measuring Poverty”).

Advocates for food insecurity would likely agree that these measurements do not accurately represent levels of insecurity in the U.S. and measurement techniques are outdated. Moreover, Cook and Frank claim that the estimates for minimum incomes needed for households to sustain basic economic self-sufficiency are closer to twice the current threshold levels (195). Since 2010, the government has developed and updated its conventional model for measuring poverty, but continues uses the definition discussed above to determine poverty rates.

While the official poverty measurement was based on Orshansky’s access to the best resources available at the time, the supplemental poverty measurement (SPM) is an improved tool to determine the actual rates of those in impoverished households. Anupama Jacob in, “The Supplemental Poverty Measure: A Better Measure for Poverty in America?” for the University of California Davis’s Center for Poverty Research—the supplemental poverty measurement—developed for the Obama administration in 2010, uses the lack of available resources for consumption to meet a household’s basic needs for food, housing, utilities, and clothing. The article also stresses that in order to measure the amount of resources needed both private and public gross income is accounted for, as well as deductions from a family’s income (1-2). Instead

of using the decades old Economy Food Plan and relying on only one basic need (food) that at the time was considered a major expense, the SPM includes other necessities of living, including supplemental income and accounts for out-flowing money for inevitable expenses such as child care and health care premiums.

Using updated techniques to account for modern expenses and aids is a relevant way to qualify the portion of the population that is in poverty. According to Stanford University's Center on Poverty and Inequality, a program for the Institution for Research in the Social Sciences, *State of the States: The Poverty and Inequality Report*, the maximum SPM poverty rate was 23.40 percent in the state of California, while the average official poverty rate (OPM) for the country was 15.13 percent (5). Policy makers agree that accounting for different costs of living for specific households can be a more accurate way to measure poverty, which also determines the portion of the population that is likely to lack food certainty.

A more current and realistic understanding of how poverty is determined and measured is critical to further assess the population that is food insecure. As mentioned earlier, hunger and food insecurity are conditions correlated to poverty. These conditions are barriers to households attaining food certainty.

The USDA ERS defines household food insecurity, low food security, and very low food security as:

*Household Food Insecurity* - at times during the year, these households were uncertain of having, or unable to acquire, enough food to meet the needs of all their members because they had insufficient money or other resources for food. Food insecure households include those with low food security and very low food security. *Low Food Security* – these food-insecure households obtained enough food to avoid substantially disrupting

their eating patterns or reducing food intake by using a variety of coping strategies, such as eating less varied diets, participating in Federal food assistance programs, or getting emergency food from community food pantries. *Very low food security* – in these food-insecure households, normal eating patterns of one or more household members were disrupted and food intake was reduced at times during the year because they had insufficient money or other resources for food. (USDA ERS “Key”)

In addition to these terms, the USDA ERS also uses other terms to classify the levels of food security in the United States: “*High food security*- Households had no problems or anxieties about, consistently accessing adequate food. *Marginal food security*- Households had problems at times, or anxiety about, accessing adequate food, but the quality, variety, and quantity of their food intake were not substantially reduced” (USDA ERS “Measurement”). The USDA introduced these terms in 2006 to categorize the range and severity of food security. It is important to note the infancy of these terms in relevance to the detrimental impacts they have had on the country for decades prior.

The USDA’s “Measurement” article offered by the Economic Research Service provides an overview of the methodology for measuring food insecurity in the country. Those Americans are deemed secure if they meet the requirements of high food security or marginal food security. The USDA’s data is gathered using the Current Population Survey (CPS), a nationally representative survey conducted by the Census Bureau of Labor Statistics. After the survey is completed, approximately 45,000 households respond to a series of questions in The Food Supplement questionnaire. The responses to these questions are used to represent all civilian households in the country (see table 2). Households are determined food insecure when three or more responses to these questions indicate insecurity. However, the article does clarify that the

survey is designed with questions that are used to determine the level of severity. These questions referenced by the USDA are: question 1 (least severe), question 3 (somewhat more severe), question 14 (midrange severity), and (most severe) questions 9&18 (USDA ERS “Measurement”).

Table 2

## Survey Questions Used by USDA to Determine Food Security

<b>Questions 1-10 used to assess Household Food Security Without Children</b>
1. “We worried whether our food would run out before we got money to buy more.” Was that often, sometimes, or never true for you in the last 12 months?
2. “The food that we bought just didn't last and we didn't have money to get more.” Was that often, sometimes, or never true for you in the last 12 months?
3. “We couldn't afford to eat balanced meals.” Was that often, sometimes, or never true for you in the last 12 months?
4. In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food? (Yes/No)
5. (If yes to question 4) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
6. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food? (Yes/No)
7. In the last 12 months, were you ever hungry, but didn't eat, because there wasn't enough money for food? (Yes/No)
8. In the last 12 months, did you lose weight because there wasn't enough money for food? (Yes/No)
9. In the last 12 months did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food? (Yes/No)
10. (If yes to question 9) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

<b>Questions 11-18 are asked only to households that included children age 0-17</b>
11. "We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food." Was that often, sometimes, or never true for you in the last 12 months?
12. "We couldn't feed our children a balanced meal, because we couldn't afford that." Was that often, sometimes, or never true for you in the last 12 months?
13. "The children were not eating enough because we just couldn't afford enough food." Was that often, sometimes, or never true for you in the last 12 months?
14. In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food? (Yes/No)
15. In the last 12 months, were the children ever hungry but you just couldn't afford more food? (Yes/No)
16. In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food? (Yes/No)
17. (If yes to question 16) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
18. In the last 12 months did any of the children ever not eat for a whole day because there wasn't enough money for food? (Yes/No)

Source: United States Department of Agriculture. Economic Research Service "Measurement."

04 Oct. 2016. Accessed on 08 Dec. 2016

Using this series of questions, the government can estimate the food insecurity rates in the United States. The USDA ERS reported that the participants who answered these questions indicating they were experiencing low food security had decreased. This was a decrease from 8.4 percent in 2014. In addition, the Service informed that based on responses, 5 percent or 6.3 million households, down from 5.6 percent in 2014, were experiencing living conditions classified as—very low food security (USDA ERS “Key”). This 15.8 million, or 12.7 percent of the country, is the current representative sample of this study. However, there were specific

groups that experience higher rates above the national average. In addition, the USDA provided the following information for 2015 that specifies these samples (see table 3).

Table 3

Percentages of Cohorts Experiencing Food Insecurity Above the National Average

<b>Sample</b>	<b>Rate Above 12.7 percent</b>
Low- Income households 185 percent below poverty line.	32.8%
Households headed by single mothers	30.3%
Households headed by single fathers	22.4%
Black, non-Hispanic households	21.5%
Hispanic Households	19.1%
Households with children	16.6%
Households with children under age 6	16.9%
Single woman living alone	14.7%
Single men living alone	14.0%

Source: United States Department of Agriculture. Economic Research Service. "Key Statistics and Graphics." 21 Oct. 2016. Accessed on 29 Nov. 2016

It must be noted that while populations suffer from the closely related conditions of food insecurity and poverty, they are not the same. Moreover, as stated in Cook and Frank's study, the effects of food insecurity on human development surpass the poverty level. In their 2005 report, 35 million people were food insecure and 37 million people lived in households below this level, which was set at \$20,444 in 2006 for a family of four (195). The percentages reported above show that although the nation is slowly recovering from the effects of the Great Recession, these



numbers have increased dramatically (see table 3). Therefore, the pressure to achieve greater access to healthy fresh food by means of utilizing available urban spaces is imperative.

### **The Government's Response and Major Nutritional Assistance Programs**

In response to the prevalence of the anxieties that consist in the lives of the food insecure, the U.S. government has taken measures historically to push back on the pressures of poverty. In a USDA *Amber Waves Magazine* report by Victor Oliveria, Laura Tiehen, and Michele Ver Ploeg, "USDA's Food Assistance Programs: Legacies of the War on Poverty" informs that prior to the 1960s there were limited federally-run programs that aimed to deliver food to those in need. Oliveria et al. report that the earliest form of assistance was the Food Distribution Program, established in 1936 to provide commodities to struggling families (Oliveria et al.). The "War on Poverty" was declared by President Lyndon B. Johnson in 1964 due to the significant number of Americans with meager incomes who could not support their basic needs. This war is still being fought today, and many nutritional assistance programs and measures have been adopted to help alleviate one of those basic needs—food—and analyze the portions of the population who are food insecure.

After the initial recognition of this insecurity faced by Americans, other programs followed to address the needs of providing nutrition for children. Following the 1936 Food Distribution Program, the USDA states that in 1946 the National School Lunch Program was launched to provide subsidized lunch to students (Oliveria et al.). However, after President Johnson's declaration of "War on Poverty," many more programs were conceived. The ERS explains that the Food Stamp Program, which began in 1961 as a pilot program, was only offered in a limited number of counties.

Therefore, in the President's 1964 State of the Union Address, he stressed the need of expanding the reach and capabilities of the assistance offered. Following this, the Food Stamp Act of 1964 made the program a permanent fixture in the country as it expanded nationally and is now referred to as the Supplemental Nutrition Assistance Program (SNAP) (Oliveria et al.). Fox provides more details to the features of SNAP. She clarifies that SNAP offers over 27 million people a month the ability to purchase groceries by the issuances of electronic benefit transfer cards (EBT). She continues that the program is currently the nation's largest nutritional assistance aid and serves one out of every eleven Americans monthly, averaging nine months of assistance (249). Oliveria et al. discuss the eligibility requirements for SNAP, which federal guidelines require that household income must be at or below 130 percent of the poverty guidelines (without elderly or disabled members); households with these members must be at or below 100 percent of these guidelines. In addition, the ERS states that SNAP is structured so that benefits decrease as income increases (Oliveria et al.). These percentages are based on annual income compared to the poverty threshold amounts. For example, if a family of four makes \$40,000 a year at the 2015 threshold of \$24,036, their income would place them at a margin approximately 166 percent of the poverty guidelines.

In the summer of 2017, the USDA will launch a pilot program that will offer SNAP recipients the ability to use their assistance funds online through e-commerce platforms. According to an article by Aimee Picchi, seven online retailers will be allowed to accept assistance dollars, including mega corporations Amazon and Safeway (Picchi). In another article, Elizabeth Wiese contends that this two-year program can potentially close the gap for the food insecure living in areas that are out of touch with fresh, affordable, and healthy food (Wiese). Expanding the resources for participants is vital to improve food certainty for SNAP recipients.

Understanding the evolution of the food stamp program (SNAP) is important, but also understanding other major assistance programs is also necessary. Descended from the National School Lunch Program of 1946 and products of the Child Nutrition Act of 1966, child nutrition programs soon followed that were geared towards ensuring children with nutrition such as the 1966 School Breakfast Program (SBP) and the Summer Food Service Program (SFP) of 1968. Fox states that the Nutrition Act aimed to increase nutritional wellbeing for students in kindergarten through twelfth grade. She gives additional information as the SBP provides breakfast to eligible students for free or at low costs. She establishes that the SBP is popular with over 72,000 schools and institutions serving 8.4 million students on a daily average (250-51). However, every child does not meet the requirements set by the USDA. The ERS states incomes that are above 185 percent of the poverty threshold must pay full price; those below receive reduced price meals and those below 130 percent receive fully compensated meals (Oliveria et al.). Fox also describes the SFSP, which was established in 1968 as an entitlement program, and designed to provide funding to eligible organizations in order to feed children during the summer months when school is out. She explains that through this nutrition program the community receives the added benefits of involving children in healthy recreational and educational learning activities (251). These programs offer low-income children basic nutrition and their parents the opportunity to save money for other expenses.

Another key nutrition assistance program, discussed by Oliveria et al., is the Special Supplemental Nutrition Program for Woman, Infants, and Children – WIC – which was established in 1972 to address malnutrition among low-income women and children (Oliveria et al.). Fox clarifies that the program is offered to qualified pregnant, breastfeeding, and non-breastfeeding women, infants, and children up to the age of five. She highlights some features of

the program other than temporary food security as: health referrals, nutritional education, and the ability to use WIC vouchers at local farmers' markets through a subprogram, the Farmers' Market Nutrition Program (253-2). Programs such as WIC and the FMNP are an example of the kind of government influence needed to increase the self-sustainability of low-income communities through education and funding for healthier fresh foods. Likewise, urban agriculture initiatives are another instrument where assistance funds can be utilized to supplement dietary needs.

The topic of food insecurity can cause many critics to point out that government assistance programs in the U.S. already deliver adequate nutrition for those in poverty. However, experts agree that the degree of the actual relief received is only temporary. Leblanc et al. state:

Poverty and food insecurity are affected by economic conditions in the business cycle. Job transitions, layoffs, and family disruptions result in periods of low income and vulnerability to food insecurity. Government transfer programs in the United States provide an economic safety net to buffer people from the vagaries of the market, but are not typically viewed as mechanisms for permanently or sustainably lifting people out of poverty. (160)

The federal government offers relief; however, this aid is only temporary, and the need to seek alternative paradigms to offer sound nutritional security is important. Food policies need to proactively make alternative options, such as urban farming, available and accessible.

Some critics claim that undernourishment in the United States is only occasional and not severe. Leblanc et al. report that "each year, a small proportion of the country's population is food insecure and a smaller number experience hunger at times because they cannot afford enough food" (159). However, the 12.7 percent of the country's food insecure has shown to have

grown from the group's report in 2005, which found that an estimated 10.7 percent lived with the anxieties of an uncertain diet (159). This shows that while there are battles being won in the war on poverty, the effects that contribute to food insecurity are still a major issue.

### **Shortcomings of the U.S Food System**

It is important to understand that there are government assistance and social safety nets in place to help temporarily alleviate people's uncertainty, but focusing on the current food system's barriers, and the potential for urban alternatives to become mechanisms for relief is important. According to many scholars, this system that made available access to nutrition today is dysfunctional. Oran B. Hesterman, PhD, and former Professor of Agronomy at Michigan State University, is one advocate for the redesigning of our nation's food system. In his book, *Fair Food: Growing a Healthy and Sustainable Food System for All*, writes about a system that has been built to emphasize specialization, convenience, and high yields of commodity crops. He emphasizes that technological advances of the Industrial Revolution, such as machinery, crop genetics, chemicals, packaging, production, and distribution, allowed 98 percent of the country to focus on other innovations not related to promoting a healthy and secure food system for all (8-9). As stated by the author, these innovations such as television, medicine, education, and the internet are now fixtures in society that would not have been possible without the developments of agriculture (8-9). However, these advancements have contributed to innovations that many would say have caused negative consequences on the health and sustainability of the current food system.

Developments of the modern world may not have been possible if the population was solely focused on farming to feed their families, as in the early 20<sup>th</sup> century and prior, but the progressions of the current food system can be said to have grown out of control. According to

estimates calculated at the W.K. Kellogg Foundation, a national organization that provides grants to improve inequalities and insecurities across the country, only an estimated 2 percent of food purchased in the U.S. comes from local, sustainable sources. This means that the other 98 percent is interested in specialization, centralization, concentration, and globalization for the goal of mass production of food at low costs (Hesterman 15). However, because of this mass production much of the items that line the shelves of grocery, convenient, and supercenter outlets are filled with low cost food products unsuitable for an active healthy life.

Undoubtedly advancements in agriculture did drive down food prices, and the policies that have created the current system did exhibit good intentions. Nevertheless, today the system's byproducts are not perceived to be beneficial. As highlighted by Hesterman, some of the problems that have been created are animal welfare concerns, water pollution, separation of crops and livestock, soil erosion and depletion, energy consumption and greenhouse gas production, worker exploitation, and an aging farming population, all of which are crucial to the future of the planet. However, as he writes, there are more pertinent issues that have arisen as a result of this dysfunctional system such as declining food quality, compromised food safety, loss of farmland, diet-related illness, and, most important to this study, problems of food access and food security (15-19). Advocates agree that the later of the negative consequences listed can be directly correlated to a consolidated food system that has become specialized and centralized in the farming, manufacturing, and retail sectors of the economy.

### **Corn Production and Subsidies**

The major reason for the specialization of the food system are the commodity crop subsidies that were designed to help farmers afford high input costs, provide income security, and act as safeguards from the instability of the market. As asserted by Anthony Kammer from

Harvard Law School in, “Cornography: Perverse Incentives and The United States Corn Subsidy,” in the *Journal of Food Law and Policy*, agricultural subsidies were logical answers to the deflation that followed the Great Depression and the food shortages of the 1970s. Kammer claims that the legislative action to these crises were not meant to offer temporary income relief but to promote a stabilized food supply (20). However, failure to review and revise subsidy programs and food policies failed to take into account the changes in the economy since. The author suggests that subsidies “initially created in the 1930s to stabilize agricultural prices during the Great Depression, agricultural subsidies and price supports have since turned food production markets upside down” (2). No longer are contributions being made to support farmers, but now the aid has been continued to be provided in order to support large corporations’ bottom line. They have created a system that encourages entrepreneurs to find new ways to manipulate commodity crops. Consequently, causing the production of new products that flood the market with high-caloric nutrient-sparse foods.

While subsidies were introduced to assist farmers, today they serve different purposes that do not have any positive value for human consumption. Kammer goes on to argue that the incentives for corn growers in particular have changed. He contends that rather than aiding family farmers, the benefits support large corporate growers and production is promoted no matter how much corn is already available on the market (3). This overabundance of corn has encouraged entrepreneurs to use the product in areas not meant for produce as nutriment for society. The secondary effects are described by Kammer as the “over-[stimulation of] high fructose corn syrup, ethanol, and factory farmed meat production” (3) which only begin to list the impacts that current policies have had on agriculture. Health experts acknowledge that while the feeding of surplus corn to cattle, chicken, pigs, and fish that humans eat creates cheaper

prices in the market, the unhealthy side effects of these animals' unnatural diet on humans has contributed to alarming chronic health related illness. Furthermore, the flooding of the market with processed foods that utilize high fructose corn syrup because of its excessive availability and features that make it more profitable to use over natural sugar have only degenerated the path towards food security. As stated in an article entitled, "The Corn Connection" by Eric Roston:

About 5 percent of our corn is refined to high-fructose corn syrup, which is cheaper, sweeter and, because it is liquid, easier to transport and mix into foods than sugar.

Beverage and food manufactures see that low price as a signal to use the high-fructose cocktail in virtually everything, substituting it for more nutritious ingredients—not just for sugar—in peanut butter, fruit juices and spaghetti sauce. (Roston)

Kammer points out that the low prices for these corn-containing products for both manufacturers and consumers in turn caused the cost for nonsubsidized healthier products to become unnaturally expensive (21).

The impacts of corn subsidies are important to understand, but noting the magnitude of using tax-based dollars to fund them is also relevant, as it gives insight to where potential money can be shifted to an urbanized agricultural system to improve food security. In Kammer's article, it is calculated that corn growers received more than \$56 billion in federal subsidies between the years 1995 and 2006, and this amount may soon surpass \$10 billion per year. He quantifies the cost and gives information on the average annual tax expenditures for corn subsidies reaching "nearly \$5 billion for the past 16 years, with a total of \$77.1 billion" (61). He also claims that a disproportionate amount of these expenditures went to large commercial producers, and also to subsidize a number of products that provide deceiving benefits to society such as ethanol, high-



fructose corn syrup, and concentrated animal feeding operations (62). Many activists for a redesigned food system agree that taking money away from commodity production and shifting it to other crops, such as fruits and vegetables, would cut hundreds of billions of dollars spent on healthcare each year.

The production of corn to be used for resources such as ethanol also provides a separate avenue of federal subsidy money that could be used for more socially utilitarian reasons, such as agriculture for human consumption. For example, in “Corn Ethanol: Setting Straight a Misguided Attempt to Free the United States from Foreign Oil,” by Natalie Jean Kurz, published by the *Houston Journal of International Law*, it states that under current legislative laws, by 2022, 15.2 billion gallons of ethanol is mandated to be introduced into commerce. According to Kurz, filling this order using corn ethanol, at the current subsidy rate of \$0.51, would amount to \$18 billion. The report follows that this is only accounts for one subsidy, and should it include other federal and state level supports are included the total would exceed \$130 billion annually by 2025, according to the Energy Information Administration (394-95). Advocates agree that cutting the amount of tax payer money for the support of corn production would affect the cost of corn and likely raise the price of its products. However, when looking at this from a food security and healthier lens the result is a positive one. For example, as quoted in Kammer’s article, John Mackey the founder and CEO of Whole Foods states:

Eliminating corn subsidies is a first step to valuing animals more accurately. If those subsidies were taken away, animal products in general would become more expensive, and it is likely that less meat, eggs, and milk would be bought as a result—a positive outcome for our health, economy, environment, and the animals themselves. In addition, if corn were not subsidized by the government, higher welfare products like grass-fed

beef would become more economically competitive in the market with beef from cattle confined on feedlots—another way of giving customers a fair alternative. (qtd. in Kammer 26)

Considering this passage from Mackey, it is obvious how many fast food restaurants are able to offer countless processed beef and other items at cents to the dollar. Kammer's report points out that between 1997 and 2003 the average costs of vegetables rose by 17 percent, while the cost of Big Macs dropped 5.4 percent; in turn, the cost of a bottle of Coca-Cola declined by 35 percent (29). Activists acknowledge that a large part of the trouble with the current food system lies with the neglect of government reform on the policies that support the overproduction of commodities that have contributed negatively to health and food insecurity issues.

The concentration and control of the market also transfers to the retail sector. As a specialized food system has grown so has a more centralized one that has also progressed the symptoms of food insecurity on society. Hesterman claims, producing specialized crops in central areas makes sense economically; therefore, it makes the same sense for grocery firms such as Wal-Mart, Kroger, Safeway, and Supervalu, who control 47 percent of all meat sales alone, to become more centralized. He describes the grocery market philosophy in simple terms: "as long as people have ready access to a car or other form of transportation and can afford gas, it makes sense to build 40,000 – to 60,000 – square foot grocery stores and supermarkets to sell food to urban and suburban consumers" (13). He expands on this stating that retailers are then able to expand their fixed costs over less locations and earn more total revenue (13). The problem is that low-income citizens do not have ready access to reliable transportation and often acquiring transportation would mean drastic financial restraints on more practical expenditures such as food.

In an article entitled, “Retail Concentration, Food Deserts, and Food-Disadvantaged Communities in Rural America” Troy C. Blanchard and Todd L. Matthews, Associate Professors of Sociology at Louisiana State University and LaGrange College, point out that the problem with a concentrated market is compounded by the lack of rural public transit and the ability for low income families to own vehicles. For example, the authors write that low-income families receiving food stamps are limited to \$6,550 of total assets, which forces families to neglect owning a vehicle in order to continue to receive aid (205). The emergence of these large corporations with the ability to offer discounted goods has pushed the smaller neighborhood grocers out of the market that were once convenient to those with limited transportation. Furthermore, the low cost of calorie dense, nutrient sparse foods, produced by larger corporations that appeal to the budgets of low-income families, increases the costs associated with diet-related diseases.

### **Food Deserts**

The shortcomings of the U.S. food system, such as subsidies and the concentration due to specialization and centralization, have negatively contributed to food insecurity in the United States. In “Food Deserts: Demand, Supply, and Economic Theory,” published by the Agricultural & Applied Economics Association, Alessandro Bonanno uses the definition of food deserts from the 2008 U.S. Farm Bill: “as areas with limited access to affordable and nutritious food, particularly composed of lower-income neighborhoods and communities” (1). Many business-minded individuals do not deny that in order to make a profit, businesses must exist in a market where its demographic holds a strong enough purchasing power in order to cover expenses. Therefore, these low-income communities have been neglected by larger retailers that are proprietors of fresh produce and healthier goods compared to the offerings of *fringe outlets*.

*Examining the Impact of Food Deserts on Public Health in Detroit*, by Mari Gallagher's Research & Consulting Group, one of the leading researchers on food deserts, fringe outlets are retailers whose range of food is restricted and dominated by products that are bad for health such as gas stations, liquor stores, fast food restaurants, and convenience stores (3). Early research on the impacts of food deserts conducted by Blanchard and Matthews, in their article presented earlier, found that in the mid-1980s changes in technology of food distribution and corporate mergers resulted in the redesigning of food retailing. In addition, they found that from 1992 to 1997 smaller local grocers' sales decreased by 8.9 percent, while larger discount merchandisers gained 9.3 percent of grocery sales (204). They state that combined discount stores and large chain supermarkets make up 89.8 percent of all grocery and food for off premise consumption in the country. Their study focuses exclusively on Wal-Mart, because of the supercenter's constriction on smaller competitors (203). The buying power of these larger retailers reduces the ability of smaller establishments to survive.

These effects of the centralized and the specialization of the country's food systems have forced many low-income communities to become increasingly distanced from the resources provided to communities that possess the buying power that larger corporations seek. Unfortunately, food desert populations are left to nourish themselves by relying on fringe outlets and if available, some sort of emergency food supply or government assistance.

While an understanding of how food deserts have emerged is critical, comprehension of how they are identified and their effects is also important. In Blanchard and Matthews' study, they classify a food desert population – as the population of a county – residing ten or more miles from a large food store (supermarket/superstore) (206). Gallagher's group, in their more recent report, expanded on this consensus of food desert populations using the application of

their Food Balance Score, which is the distance to any mainstream food venue divided by the distance to fringe outlets. In their work, the need for this measurement was important as there is no perfect distance to a large grocery store, and as communities become increasingly out of balance in terms of food options, poor diet-related health outcomes also increase, holding all other factors constant, otherwise termed by the group as food balance theory. Their description for the levels of scores range from far above one (high score and worst outcome), around one (average score and average outcome), and far below one (low score and worst outcome) (8). These techniques are critical in determining where and what exactly a food desert is. More importantly, they clarify that while the term implies rural areas, many urban, suburban, and major US cities can also be home to those suffering from the uncertainty that these locations provide.

A more in-depth look into some specific areas where food deserts exist can illuminate a need for action, in which urban agriculture could be a model for alleviating the food insecure. In Blanchard and Matthews' work, they found that only the states of Massachusetts, Rhode Island, Connecticut, and New Jersey hold no food deserts (208). Scholars would agree that the size of these smaller states limits their imbalance potential. However, this points to the fact that the rest of the country is at risk. In their report, higher imbalances in non-metropolitan areas reside in the Midwest, Mountain West, the western part of the Great Plains, the Canadian and Mexican border, and the Southern Southeast (208). Circumstances experienced in these areas can be contributed to extensive travel expense, poor climate conditions, low income, and limited access to large grocers with competitive prices. In an article for the magazine *Organic Gardening*, Katie Walker profiles Grant County, New Mexico, where 30,000 residents live more than 150 miles from a semi-metropolitan area, where access to affordable food prices exist (Walker). Rural

America, once a cornucopia of produce, is now suffering from the effects of a centralized and increasingly specialized food system. As a result, residents are left to resort to fringe food and experience the consequences of uncertainty.

While there is a high concentration of imbalance in rural America, urban and municipal areas are also deprived from a healthy level of food certainty. Walker points out that Cook County, Illinois, home to Chicago, with more than 5.2 million people, one out of every four children lives below the poverty line and in a food desert. "Thinking Outside the Bun: How Chicago Can Combat Food Deserts and Obesity Through Public Health Policies and The Law," published in *the DePaul Journal for Social Justice*, Calvin Edwards points out that 22 of Chicago's communities possessed no supermarkets or grocery store chains, and 384,000 Chicago residents live in imbalance and are forced to rely on fringe outlets (140-41). This shows the potential for smaller grocers utilizing produce from an urbanized model of agriculture can be beneficial. While this number may be concerning to many Americans who do not have to worry about deciding whether to spend limited resources to travel to healthier outlets, there still exist major cities where the problem is more severe. In Gallagher's report "roughly 550,000 Detroit residents –over half of the city's total population– live in areas that are far out-of-balance in terms of day-to-day food availability" (8). As a result, the lack of transportation and limited finances forces people in these areas to resort to fringe outlets.

Concepts and exigency that coincide with food deserts and food insecurity are relatively new with regard to government recognition. The need to present potential solutions to these issues is becoming more and more crucial. In Bonanno's article, expanding the capabilities of support programs (SNAP/WIC) to incorporate smaller fringe outlets with healthier produce could combat the issues of residents only relying on larger retailers (2). Many advocates for

change would endorse that more immediate access to healthier food would also extinguish the inclinations to choose lesser quality diets, and this would decrease the level of imbalance.

Gallagher's report claims that:

because there is such a wide-spread concentration of fringe Food Stamp retailers throughout Detroit, we suspect that the negative health effects with food imbalance impact not only the poor, but thousands of additional moderate and upper income residents who also have difficulty reaching mainstream grocers or who have grown accustomed to the pervasive fringe food environment. (6)

The statement above points out that food deserts are not limited to poor communities. Therefore, a market exists for larger retailers to return to these areas. The former First Lady of the United States, Michelle Obama, in "The Business Case for Healthier Food Options," explains why healthier options make good business sense. Obama contends that companies are beginning to respond to the trend of consumers demanding these products. She states that 82 percent of consumers feel it is important for companies to offer healthy goods, that conform to family budgets. She also provides information that a recent study found contrary to families' tight budgets, sales of fresh produce increased by 6 percent in 2012 (117). The incentives for business leaders is evident, and the need for healthier outlets is not a necessity solely for wealthier populations; low-income communities and citizens need food security as well.

### **Urban Agriculture as an Alternative Paradigm**

The demand for organic, fresh, local, and sustainably grown food, even by those in poverty, has shown that relocalizing agriculture to counter the repercussions of the current food system in order to reach food certainty, is a budding solution. In less than 50 years, the world will be faced with the daunting task of feeding nine billion people. To meet this task North

America will have to increase current production by 30 percent in order to feed a projected 384 million people (“Population Growth and Food Needs”). This inevitable progression applies the pressure to seek alternative methods for feeding citizens in the U.S. and around the world.

Advocates for alternative food systems and those opposed acknowledge that the issues that exist today concerning food insecurity will only increase as the population rises. Along the same timeline, according to Katherine H. Brown and Anne Carter’s “Urban Agriculture and Community Food Security in the United States: Farming from the City Center to the Urban Fringe,” the U.S. Census Bureau projects that the American population will increase from its current amount by 400 million. The authors also state that 80 percent of the population live in municipalities across the country (3). According to, “Food Justice, Hunger and the City,” by Nik Heynen, Hilda E. Kurtz, and Amy Trauger, from the University of Georgia, “urban agriculture is increasing the ability to achieve models that encourage community food security” (308).

Utilizing urban agriculture as a means of increasing the success of community food security is a step forward to reaching individual and family food certainty.

Understanding what exactly urban farming is, and the types of agriculture it consists of, is necessary in order to see it viably as a system of sustenance for the insecure. According to Brown and Carter, urban agriculture is the foremost instrument to contend with the issues of persistent hunger and poverty (2). The authors are often referenced for the use of their definition of urban agriculture – “growing, processing, and distribution of food and other products through intensive plant cultivation and animal husbandry in an around cities” (1). They offer more insight into what exactly qualifies as urbanized cultivation such as green belt areas around cities, farming at cities’ edges, vegetable plots in community gardens, and farming in the plethora of vacant inner-city lots. In addition, the group clarifies this is “comprised of fish farms, farm



animals at public housing sites, municipal compost gardens and beehives, window box gardens, and much more” (1). These definitions of civic farming highlight its versatility and potential to be successful on larger scales.

While these examples give a general idea of the capacities of civic farming, it is not limited to those alone. The editor for the *Boston College Environmental Affairs Law Review*, Kate A. Voigt, states that both urban agriculture and urban farming can be used interchangeably to define a vast amount of activities (539). Voigt explains these activities as, “growing tomatoes on a roof to supplement a family’s dinner; cultivating a variety of crops on vacant, industrial plots to sell at a local farmer’s market, and raising chickens in a backyard coop to produce enough eggs for a few families” (539). Limiting the terminology to one specific activity is difficult as the potential and possibilities are so diverse. However, many activists agree that simply improving education and resources to increase the number of urban gardens like those mentioned would be a tremendous relief for those lacking food certainty.

Mainstream industrialized farming can be easily contained into a few examples, but civic agriculture takes the shape of a variety of diverse types such as commercialized urban initiatives. Flavie Halais in, “Can Urban Agriculture Work On a Commercial Scale?” discusses the innovation of an unlikely trailblazer moving towards commercializing city cultivation, Mohamed Hage of Montreal, owner of Lufa Farms, is the world’s first hydroponically run greenhouses atop city buildings in northern Montreal (38). While Hage’s business is not U.S. operated, the scope of its capabilities is not held to any geographical borders and is worth integrating into the American market. In fact, the author states that Lufa plans on opening their third location in Boston, and start-up cost are reported to be \$3 million (41). Hage’s Lufa Farms concept of utilizing a horizontal plan to scale up farming on an urban level is viable, and while Boston may

not be in need of urban farms for food security, the integration of the concept into the U.S. market can spark further expansion, eventually increasing affordable prices for local fresh produce. According to the article, even in cold climates, Lufa Farms was able to feed fresh produce farmed without chemicals, pesticides, herbicides, or fungicides to 10,000 citizens (38). Urban commercial farms, such as Lufa, paint a clear picture of the capabilities that modern technology holds in closing the gap for those living in food deserts. Furthermore, commercializing urban agriculture can offer relief from food uncertainty by providing accessible fresh foods and creating jobs.

While costs may still be a factor, other e-markets are emerging that are focused on supporting low-income families in the United States. These groundbreaking of commercialized civic farms have sparked the ideas of other less agronomically inclined entrepreneurs who are seeking to disrupt a new market, the food distribution sector. One example, as mentioned in Halais' article, is Good Eggs, a San Francisco-based tech company that uses an e-commerce and delivery site similar to Lufa. Good Eggs acts as a local food aggregator facilitating the needs of many local farmers who are over-shadowed by larger industrial competitors, making their entry into supermarket chains difficult. The author points out that urban farms are unable to match the requirements of the traditional retail chains and resort to selling straight to restaurants (39).

While this seems like a good niche for a small farmer to cut out middle men and sell produce directly to the restaurant industry, the food insecure are cut off from access to these fresh foods, and local farmers are pushed further out of competition.

Nevertheless, these new commercialized companies capitalizing on the distribution and marketing difficulties offer lower prices for fresh, healthy food, but the costs can be too high for those households on a strict budget. However, the article states that Good Eggs is planning to

begin accepting food stamps (40). The awareness of companies like Good Eggs to tap into a market that is demanding a healthier lifestyle can help support an alternative food system needed to feed hungry Americans. In addition, increasing the amount of like-minded companies which notice the need to provide and support programs that offer nutritional aid can increase the amount of healthier produce available to the food insecure.

Another more common form of urban farming is community gardening, which increases availability and access to fresh produce for those living with the anxiety of food uncertainty. According to Brown and Carter, community gardening can be described as “large lots of land that have been divided into smaller plots for each household’s use. These lots can be owned by a municipality, an institution, a community group, a land trust, or private ownership” (13). Activists for civic agriculture insist that while some community gardens exist as profit-generating operations, this is rare; whereas, harvests are more commonly used for households as nourishment and to supplement family food costs.

In even fewer cases, some gardens are grown philanthropically and produce is given away to those in need. One such example, as noted in the activists’ study, is Field of Dreams, near Milwaukee, where volunteers raised upwards of 45 tons of food (or 305,000 servings of vegetables) for the city’s emergency food outlets, such as food pantries and soup kitchens (13). Community gardens existing for this purpose are proof that this alternative can be useful to increase food security by contributing to emergency food supplies. “Community Food Projects and Food Systems Sustainability” an article by Audrey N. Maretzki and Elizabeth Tuckermanty, supported by the Community Food Projects program and the USDA Cooperative State Research, Education, and Extension Service, speaks to the importance of urban farms providing for those that rely on emergency foods. The authors suggest that these local safety nets rely on the

donations from the community and those from large manufactures bartering for federal tax benefits. In addition, they point out that many facilities are limited in their storage capacities and, as a result, depend on the shelf-stable processed products that are disproportionately detrimental to the poor community that seeks refuge in these outlets (334). However, advocates support the fact that a consistent local supply of fresh food could offset the processed food stocked shelves.

In return, these food banks can serve as outlets for overflow for community gardens, and other urban farmers. Marezki and Tuckermanty claim that the chronic health problems that are consequentially affecting the low- income population has led these organizations to “improve the variety and nutritional quality of foods included in their offerings. This quest has become especially important in light of increased reliance on emergency [food] sources by families whose dietary needs are not being met by the public safety net” (334). These statements show that the potential and significance of urban farming is worth warranting increased efforts to support its benefits.

The different forms of urban cultivating are becoming more popular; moreover, the benefits, significance, and potential they provide to combat an issue such as food insecurity is encouraging. Many advocates for urban agricultural development would list health, economic, communal strengthening, and cultural traditions as some benefits to civic farming. Others would champion the local food movement as a major component to developing an alternative food system, providing an opportunity for increased certainty for those in need. According to Voigt, the health benefits would lead to improvements in the quality and prices offered in cities, especially for the food insecure. The author contends that urbanized food initiatives counter the high transportation costs that transfer into the high costs for low-calorie, nutrient rich foods, which often result in less or no healthier options in low-income neighborhoods (543). The

cheaper prices of processed convenient food contribute to the neglect of healthier options, and the inclination to practice poor dietary patterns, which leads to chronic health problems.

Furthermore, Voigt offers that urbanites have been able to supplement 40-60 percent of their household food supply from backyard gardens, therefore, creating more expendable income for expenditures such as health and education (544). Increasing education, nutritional, and home and community agronomic knowledge is critical in order to decrease poverty, and can also serve to lower costs associated with it such as extreme healthcare expenses.

Positive economic impact can arguably be the most promising benefit to urban farming. The ability to use vacant land that was once considered an eyesore can contribute revenue in the form of taxes for municipalities. Hesterman states that as local food businesses grow, some of their value accrue to communities over time. In reference to a study conducted in Detroit, the author notes that if consumers shifted only 20 percent of their budgets to expenditures spent on local food, the city's annual income would increase by half a billion dollars, 4,700 new jobs would be created, and \$20 million in revenue would come from business taxes alone (114-20). In "Hungry in the 'Land of Pleasant Living': Combating the Effects of Baltimore's Food Desert on Childhood Education Through Eminent Domain," by Gabriel H. Rubinstein, in the *Journal of Race, Religion, Gender & Class*, it is reported that civic farming projects can contribute six jobs per acre (409). Many legislative officials might agree that community projects, such as urban farming, creating more jobs are solid grounds to support a policy shift to fund operations that could boost municipal economies. In addition, many of the jobs created would provide the poor with opportunities to cultivate new skills who are many times denied job placement.

In the area of urban food development, Detroit is likely the forerunner for progressively changing the landscape of inner cities. In Voigt's article, it said that the city contains 40 square

miles of abandoned land (545). Moreover, the opportunity for some cities to rejuvenate their economy is greater. Again in Detroit, as mentioned in Voigt's paper, "one investor sees the potential for Detroit to be at the forefront of the growing trend in urban agriculture, so much so that he is willing to commit [thirty-million dollars] to developing a, large scale for profit agricultural enterprise, wholly contained within the city limits of Detroit" (545). Increasing investments like these, especially in projects such as large commercial operations, can excite the ambitions of corporations and the government interested in new avenues of profit and community development.

While the idea of urban farming may seem like a viable investment, it may also be considered a tool to counter the effects of hunger and a growing population, but it does not come without barriers that make its implementation difficult. In an article published by the *University of Louisville Law Review*, "Perennial Cities: Applying Principles of Adaptive Law to Create a Sustainable and Resilient System of Urban Agriculture," by Matthew R. Dawson, discusses one barrier to urban agriculture as the lack of land capable of producing crops within city limits (314). The author explains that in urban areas there exists an intense competition for limited land use, not only between potential food projects but for arguably more productive uses (303). The adaptivity of civic farming does overcome some of these challenges by utilizing, roof tops, schools and hospitals, and other open spaces providing a means to healthy produce at costs sufficient for the budgets of low-income citizens. Although, when considering larger scale urbanized agriculture, larger plots of land are necessary.

Undeniably larger parcels of land are needed; however, not all areas are suitable to provide safe food for those in need. In Dawson's article, he states that past industrial uses of urban land have left behind unsuitable soils because of dangerous amounts of contaminants that

were used previously such as: high levels of pesticides and herbicides, petroleum hydrocarbons, solvents, and heavy metals. In addition, the author claims that while industrial areas contain a large amount of contamination, residential areas are also subject to the harmful effects of the historical use of lead-based paints. It is mentioned in the article that these areas are tested by the Environmental Protection Agency, which determine their safety. He continues to list groundwater from neighboring properties becoming compromised as plants absorb harmful pollutants and transfer them to consuming humans. The article points out that simply working around contaminated soil can cause health problems for farmers by the inhalation of dust and skin contact (314-15). It is important to note barriers such as contaminated soil and dangerous working conditions in order to understand that some land may be unsuitable.

While the thoughts of producing unusable produce inhibits the success of urban farming, the versatility of its production offers solutions. For example, utilizing a horizontal urban hydroponic farming concept on the tops of wide buildings, as in Lufa Farms, may show a more sustainable approach in areas where contamination is harmful. In a broader sense Dawson states that “ultimately, expanding the practice of urban agriculture is one way to improve the sustainability of our cities and promote resilience in the agricultural system. Increasing the resilience of...[this] system will increase the likelihood that it can withstand the effects of climate change, population growth and other pressures while continuing to serve the needs of future society” (317). Many experts of agriculture and the U.S. food system would agree that future supply and demand needs should involve innovative solutions such as urban farming. For example, utilizing abandoned buildings for vertical farming, vacant lots for civic farming, and spacious rooftops for horizontal greenhouses can be solutions to counter the demand that a growing population presents.

Facilitating and improving the resilience of urban ecosystems can be beneficial to the success of city farming; however, it is not the only barrier to urbanized food initiatives as local zoning ordinances can become inhibitive. However, while these zoning codes can be a nuisance to farmers, they are typically in place to protect both farmers legally as well as the well-being of residents. For example, in Dawson's report, compost, poultry, and livestock can be disturbing to neighboring inhabitants attracting unwanted pests and creating odors, therefore, exposing would-be gardeners to lawsuits (304). Another example of city laws protecting the public is regulating the use of clean water, as Dawson says, "especially in cities that have limited water resources to begin with" (304). This stands especially important to consider in areas such as California, where drought has dramatically affected the agronomic climate of the region. However, some laws that were created to protect the rights of rural farmers failed to consider the newfound pressure of urban farming. Dawson explains the "right-to-farm" laws that were created to shield farmers from residential development on rural farmland; however, these laws fail to protect civic farms (who seek to do the opposite) and the liability protection the laws provided often do not apply to alternative practices such as urbanized agronomy. In addition, the article claims that many cities are amending their zoning codes to be less restrictive to city farmers, but the diversity of urbanized land uses are often not compatible with even updated codes (314). These barriers make it hard for local farmers to be successful, decreasing the quantity and variety of local foods being produced in deprived regions.

Policies can also restrict the livelihoods of farmers dependent on the sale of their produce. As Voigt states, "zoning can also unintentionally prohibit residents from growing crops and raising animals for sale. Regulations that discourage this kind of entrepreneurial urban agriculture often take the form of generic restrictions on retail and commercial activities in



certain zones” (553). As an example, the author claims that many municipalities may restrict the types of home occupations that are acceptable in residential areas. Furthermore, he informs that other district codes restrict the use of plots of land for the primary use of agriculture. She points out that this prohibits restaurants, schools, and other organizations from buying land for primary purposes, and prevents the integration of healthier foods in the market place, educational gardens, and farms that could provide jobs and income (554). These codes discourage the investments of urban agriculture. Many legislatures agree that these laws should be updated in order to permit the success of these initiatives. In return, reform could provide more jobs, relief to the hungry, and promote a healthier alternative food system.

While health hazards from contaminated soil and laws that restrict the success of well-intentioned urban farmers, the lack of knowledge and experience to market and produce successful yields also constricts farmers. In Dawson’s article, it is stated that city farmers can potentially overuse fertilizers and pesticides that could be harmful to themselves and the public (315). However, in Brown and Carter’s primer, they state that some of the most vulnerable people in the country, such as immigrants, have years of experience, expertise, and knowledge about raising, growing, and preserving food (6). While some immigrants may already hold the necessary knowledge, the authors also point out that a number of non-profit organizations, university programs, and local media, offering education and on-site demonstrations have successfully provided training to inexperienced farmers (16). One example discussed in, “Growing Local Food Access Among Triangles Immigrant Communities” by North Carolina State University’s Carla Davis, shows the efforts of three of the university’s professors and faculty members. The group, led by Darla Bloom, a North Carolina State University Professor and Extension Specialist focusing on local food, launched a program that educated a Latino and a

Karen refugee community (a diverse ethnic group living in southeast Asia). Davis mentions that the two communities were introduced to Wake County Cooperative Extension agents and Master Gardeners that held on-site workshops and showed the farmers how to successfully and safely grow food to provide them a degree of food certainty (Davis). Efforts to provide urban agricultural education become key elements to increase availability to local foods.

These barriers are important to consider as these limitations can constrain urban agriculture success; nevertheless, the American spirit has shown to prevail in areas where these local food projects are showing to be cornerstones in what were once struggling food insecure communities. In the article, "Produce to the People," Constance Matthiessen and Anne Hamersky, writers for *Sierra Club* (the nation's largest grassroots environmental organization), give examples of four California communities suffering from the effects of food insecurity. Matthiessen and Hamersky report that an Alameda, California community, through local food initiatives, has provided jobs for formerly homeless families (42). In addition, Brown and Carter highlight the efforts of a Santa Cruz, California initiative, The Homeless Garden Project, which provided 12,250 hours of employment to 43 homeless people in 13 positions (1). In "UC Cooperative Extension Helps Farming Sprout in the City," the Universities of California Cooperative Extension programs' researchers are working to increase resources and programs that provide nutrition and education to community farmers (199). These urban initiatives are only a few of the programs integrating education and employment into communities through urban agriculture. There still consists a plethora of similar projects that are revitalizing urban areas across the country.

For the purpose of feeding insecure Americans, the success of these programs show that government funding and shifts in policy are needed to ensure the sustainability for urban

initiatives. Fox's article stresses that in order to combat food insecurity, government funding in the form of competitive grants is essential. She claims that the USDA should change their priority and focus from nutrition assistance programs towards the competitive grant program, which promises long-term sustainable initiatives (259). Maretzki and Tuckermanty explain that the Community Food Projects Competitive Grant Program (CFPCGP), provides a one-time installment of federal funds in order to meet the nutritional needs of low-income people and increase the ability of communities to provide their own food needs (335). Grants such as these are extremely encouraging for low-income groups seeking food certainty because they promote a self-sustaining culture.

Government funding to farmers' markets to increase the incentive for SNAP and other entitlement program recipients to purchase healthier foods is also important. In Dawson's article it is reported that the Obama Administration in 2014 amended the Farm Bill to provide matching funds upwards to \$20 million annually to farmers' markets to allow for the acceptance of government vouchers. However, the bill also released over \$40 billion in subsidies to support commodity crops (320). Many advocates for a redesigned food system concur that this is a step backwards in reforming a more sustainable food system. In fact, Dawson claims "the time has come to reevaluate this agricultural subsidy system that provides perverse incentives for unsustainable agricultural practices" (320). Michael Pollan, famed food culture author and Knight Professor of Science and Environmental Journalism at the University of California, Berkeley, discusses these subsidies disparagingly in the article "Political Forces Make It Difficult for Local Food Economies to Succeed." Pollan claims that these subsidies drive costs down for large corporations to produce unhealthy processed foods and target the susceptible low-income families' budgets (1). Experts agree that the government is wasting funds on a food

system that is damaging society, but refocusing legislative priorities to support alternative systems can combat the issues of food insecurity.

One of the most powerful subsidy changes that could do much for the promotion of urban agriculture is shifting away from the subsidies that support commodities such as corn. The money budgeted for these subsidies promote farmers to grow commodities not meant for human consumption. Many activists endorse that government funding should support the production of fruits and vegetables that contribute to a healthy diet, and not corn for biofuels or unnatural animal feed. Dawson's article focuses on the elimination of the wasted federal funds that support the production of corn ethanol crops, that have proven to show that they provide no energy or environmental gain (321). Kurz claims "support to the U.S. ethanol program should be scaled back... Indeed, reducing or eliminating subsidy payments could be extraordinarily beneficial" (396). In addition, she offers information on the amount of funding on ethanol through corn subsidies falls between \$820 million and \$1.4 billion per year, and due to the 2007 renewable fuel standard these numbers are expected to rise (401). Of course, many politicians and other promoters of the commodities argue that a reformed subsidy program will result in high social costs.

Eliminating corn subsidies can result in some negative backlash on the economy in the short-term, whereas long-term benefits can prove to be optimal in order to foster greater food certainty. Examining other examples in different economies where reform has worked can be helpful. Kurz points to New Zealand's agricultural subsidization program as an example of an economy that underwent subsidy reform and proved to be better off. The author outlines the situations that led to New Zealand's efforts to save a failing economy in the mid-1980s by eliminating numerous subsidies including "price control of wool, beef and sheep meat, free

government services...and tax concessions for farmers” (403). She contends that while the effects of the removals were drastic, the impact was generally positive. For example, the profitability and efficiency of sheep production has increased dramatically due to innovation and improved response to supply and demand. In addition, while rural economies would have likely been predicted to demise, the rural population actually rose from 1981 to 2001, and environment degradation improved because of reduced fertilizer runoff and greenhouse gas emissions. Kurz also notes that while New Zealand did benefit from the change, a smoother transition for the U.S. would be possible by examining the economy before taking swift action. She states that:

Reform that is too slow is vulnerable to commandeering by special interest groups and will eventually give way to these interests. But a quick transition does not have to mean a transition lacking support for those who will be affected by the reform—government should provide transitional assistance such as farm debt restructuring to move reform along smoothly...a coherent strategy that addresses the reform process holistically is necessary. The New Zealand government removed subsidies before it lowered tariffs on imported inputs, delaying the transitions and causing unnecessary loss of income. (404)

Ultimately, the author claims that reforming agricultural subsidies in the U.S. could save the country’s taxpayers billions of dollars and stimulate the much-needed redesign of a system plagued by damaging government subsidies (403-04). Breaking some of the budgeted money away from the mass production of corn, which produces much of the food contributing to chronic health diseases afflicting the nation can do much for scaling up urban agriculture and providing greater food certainty.

## Conclusion

The quickly expanding world population threatening to increase the 42.2 million people living in U.S. households that are deemed food insecure is a tangible reality. Without seeking new alternatives for farming, such as urbanized models, more and more people will experience food uncertainty, not just low-income families. The current techniques that estimate the insecure populations are outdated; they do not accurately represent those that are uncertain of where their next meal will come from, its quality, and its affordability.

It is clear that food insecurity has been an overwhelming dilemma in this country for decades, which led to President Johnson's "War on Poverty" and the government's intervention that helped push back the impacts. However, the risk is obviously still prevalent and will continue to affect future generations. In 2015, three million children in the U.S. experienced the effects of food insecurity, a number that is both alarming and shameful. While nutritional assistance programs do help alleviate the crisis, the physical, mental, and social development resulting from malnutrition can have lingering effects persistent into adulthood and later years. Detrimental side effects of food insecurity will continue to promote the existence of the problem due to the inability to retain or achieve higher education and impeded mental development.

By shifting government funding slowly away from a grotesquely overgrown commodity-producing food system towards the promotion of farmers growing more vegetable crops, the development of urban farms, and community resiliency projects can offer the support needed to generate healthier and more accessible food for the insecure. Cutting just a fraction of the \$77.1 billion spent on corn subsidies and shifting this money towards localizing agriculture in urban communities would create better livelihoods and food certainty for so many hungry Americans.

Furthermore, the thousands of jobs outlined here are only a few examples of the economic-boosting power that urban agriculture holds.

Food certainty can potentially be achieved through government support of new local food initiatives and increased use of underutilized land in urban areas. The answer can come from eliminating the over production of commodities, such as corn, that flood the market with so much unhealthy food that is detrimental to so many other aspects of life. While the price of these products would increase, the incentive to produce healthier, non-commodity crops, especially in urban areas, would eventually cause a decrease in the prices for healthier options. Furthermore, with decreased funding supporting the over production of products such as corn, the result would mean better competitive power for small farmers to take their share of the market. The health benefits from this change would be tremendous, and the likelihood of food insecurity diminishing is high as fringe outlets would have more access to fresh produce.

Simply put, the more effort put into new paradigms, such as urban farming, will equal higher amounts of healthier food which would eventually lead to lower prices and better access. The goal is to see the potential for reforming policy to shift funding away from rapacious commodity production towards scaling up urban farming for the purpose of supplying affordable healthier diets. The idea of integrating alternate systems, such as urbanized agriculture, can help achieve greater certainty among those suffering from food insecurity.

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