



VOLUME 11 ISSUE 1

Food Studies

An Interdisciplinary Journal

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Framing the Positive Externalities

Community Gardening in Bridgeport, CT

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FOOD-STUDIES.COM

**FOOD STUDIES:
AN INTERDISCIPLINARY JOURNAL**

<https://food-studies.com>
ISSN: 2160-1933 (Print)
ISSN: 2160-1941 (Online)
<https://doi.org/10.18848/2160-1933/CGP> (Journal)

First published by Common Ground Research Networks in 2021
University of Illinois Research Park
2001 South First Street, Suite 202
Champaign, IL 61820 USA
Ph: +1-217-328-0405
<https://cgnetworks.org>

Food Studies: An Interdisciplinary Journal
is a peer-reviewed, scholarly journal.

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Framing the Positive Externalities: Community Gardening in Bridgeport, CT

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Abstract: Green spaces in urban environments provide a broader payback to the neighborhoods and communities in which they reside, beyond the obvious. Adapting a framework utilized for open space and parks valuation, this project seeks to characterize many of the ways that community gardening projects provide health and wellness to those that live in the city of Bridgeport, CT. Not only do gardeners grow produce to feed their families and share with neighbors, but gardening provides labor hours in the community, added nutrition and exercise for participants, housing value stabilization if not increase due to safer neighborhoods through latent policing activities, potential reduction in public costs for police services from the same, and a host of cultural and community building exchange opportunities through storytelling, sharing food and recipes and comradery.

Keywords: Agriculture, Valuation, Urban, Gardening, Community

Introduction

Urban Agriculture (UA) is a method of sustainable farming in a metropolitan area that supplies crops to area residents. Incorporating greenspaces in urban environments has been documented as a priority since before 600 BC. Over the thousands of years it has existed, its purpose has changed from a display of social status to knowledge expansion to food production and more, in the present day. From its early inception, UA has granted city inhabitants the opportunity to utilize local resources to grow their own produce and supplement their diets with foods they may not otherwise have access to (Leeuwen et al. 2010; Moore 2006).

Urban Agriculture provides many economic, social, and health benefits to gardeners. Urban gardens supply both use value and non-use value, as distinguished in the economic valuation literature (see Dixon and Hufschmidt 1986; Acharya and Bennett 2001; Champ et al. 2017) in the neighborhoods they occupy. Community gardens can generate income for gardeners, produce fresh harvests at a lower cost to consumers, and lower transportation costs due to fewer necessary trips to markets. A 2008 study of urban garden neighborhoods in New York City investigates the potential impact of neighborhood gardens on property values, documenting a 9.4 percent increase in properties within 1000 feet of a garden over time (Voicu and Been 2008). Gardeners are able to reconnect with nature and with their food in urban gardens. These gardens have been lauded as safe spaces for relaxation, empowerment, building community and gathering (Litt et al. 2011; Morrow and Martin 2019). In areas where urban gardens are common, street crime may be reduced and neighborhood pride surely increases (Schmelzkopf 2002). Neighborhood attachment fosters increased participation in community as well as improved teamwork between community members (Litt et al. 2011). These values set neighborhoods on the path to revitalization for “when residents begin to work together, they can

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identify the challenges their community faces and solve them together. When people begin to know their neighbors, they believe they can create a strong community and overcome urban blight” (Hanna and Oh 2000, 211). Urban gardens are also shown to enhance physical health of gardeners. A 2011 study found, “56% of community gardeners met national recommendations to consume fruits and vegetables at least 5 times per day, compared with 37% of home gardeners and 25% of nongardeners” (Litt et al. 2011, 1466). As fruit and vegetable intake increases, risk for disease, especially cardiovascular disease, stroke, and obesity, decreases. For example, consuming even one more serving of fruit daily decreases total mortality risk by 21 percent (Miller 2017).

As diet improves from eating what they grow, gardeners also experience better mental health from the process of gardening. Urban greenspace, especially in the case of gardens, was linked to a 41.5 percent reduction in depression and a 50.9 percent reduction in feeling worthless in neighborhood residents (Jerrett and van den Bosch 2018). These reductions were even larger in poorer areas than in wealthier ones.

In addition to its community and individual benefits, UA also improves environmental health. Organic farming, which many community gardens embrace, “usually increases species richness on average 30 percent and abundance of organisms by 50 percent” (King 2008, 116). Providing wildlife a safe haven in the midst of a paved over, built up urban area protects them and preserves small spaces for their habitats too. Cities have been able to implement desired sustainability measures through urban gardening projects (Lang 2014). Climate changes are also stabilized on a small scale thanks to urban greenspace providing humidity, rainfall, temperature control, runoff absorption and soil erosion control (Leeuwen et al. 2010).

The focus of this study, Bridgeport, Connecticut, has recently begun embracing urban community gardens. Bridgeport, home to 145,000 people, is the largest, most densely populated city in Connecticut. It is also Connecticut’s poorest city and one of the ten poorest cities in the nation, despite being located in one of the wealthiest counties. This discrepancy in geography and economic prosperity makes it the most unequal region in the US (Bertrand 2014). The population in Bridgeport is “minority-majority” with 62.7 percent of the total population represented by minorities. This disparity is reflected in other parts of the community’s socioeconomic fabric. More than 16,000 Bridgeport parents have no health insurance, and the high rate of free and reduced school lunch participants means the school district qualifies as a universal free school lunch program. Supplemental Nutrition Assistance Program (SNAP) usage in the city is also well above state average with a ratio of 306 per 1,000 people, compared to Connecticut’s 117 per 1,000. Correlated to socioeconomic well-being, food insecurity is a frightening reality for those who fall under the poverty line, particularly in urban areas such as Bridgeport. Plagued with the inability to consume an appropriate number of calories daily, roughly 12.3 percent of US households (15.6 million) suffered from food insecurity in 2016 (Coleman-Jensen et al. 2016). According to a 2015 Bridgeport Prospers report, 23 percent of Bridgeport’s residents are food insecure and 55 percent earn less than the basic cost of living in Fairfield County. In their 2014 study, LeClair and Aksan used Geographic Information Systems (GIS) mapping, direct observation of food store inventory, and price-distance cost to study the problem of food access in Bridgeport. They identified four sections of Bridgeport that met the criteria for food deserts. Of the 72,000 residents in those sections, 60,000 were found to face obstacles accessing a major grocery store. While access to smaller food outlets, such as bodegas and corners stores, was high, direct observations found that these businesses did not offer a variety of fresh food with high nutritional content. Further, price-distance cost analysis found that enhanced public transportation may not be the best solution, because the cost of travel (time and monetary) outweighed the benefits of higher quality food access. Thus, LeClair and Aksan suggested that a better solution was to bring fresh, high quality foods into communities (2014). One way to do this is through the development of community gardens.

The Green Village Initiative (GVI) is a nonprofit organization that has helped to maintain 13 community gardens throughout Bridgeport. The Green Village Initiative strives to improve Bridgeport's economy, environment and community through urban gardening (GVI 2018). Fairfield University's Center for Social Impact partners with GVI to realize and promote the benefits Bridgeport experiences from its investment in UA. From summer 2018 through autumn 2019, during growing and harvest seasons June through October, photographic data of crop growth was taken in nine separate GVI gardens. Starting in mid-summer, eight individual gardeners were selected, on a volunteer basis, to track harvest and labor data for the study. These gardeners accounted for twenty-four of the total eighty-four beds in the gardens GVI supports. In addition to the quantitative productivity data, qualitative analysis of gardening was performed through interviews with the volunteer gardeners that has resulted in a digital GVI cookbook.² Even before its necessary continuation with a broader data sample size, this study's findings of community garden benefits correspond with and expand upon those outlined in the existing and aforementioned UA literature.

Methodology

Phase one of this project began with a pilot study. In June of 2018, nine of GVI's thirteen gardens were visited weekly³. The addresses stratified 7 distinct neighborhoods across the city of Bridgeport, CT. These gardens were chosen based on accessibility, geographic location, and size. The nine gardens chosen range from 10 beds to 39 beds. The differing locations and sizes allow the study to assess the impact of community gardens individually. Size differences permitted the impacts to vary based on extent and number of families able to utilize the garden.

The gardens were visited weekly, depending on weather variability, for photo documentation. Gardeners from four gardens, Denver, Reservoir, Ridge, and Wood, volunteered to track their activities over the span of twenty-one weeks, from the second week of June until the last week in October 2018. During each garden visit all garden beds were digitally photographed, as depicted in Figures 1 and 2, below.

Plot labels or tent cards were employed to establish a consistent bed numbering system. The photographs were uploaded and sorted based on the garden name, visit number and the bed number. This made recording plant growth progress simple to reference from week to week. The photographs speak to the timing of the gardening season throughout the summer and fall. The team used the photographs to verify when garden beds were planted, began growing and were harvested, providing evidence in support of the self-reporting data from each gardener.

Volunteer gardeners were issued small, digital hanging scales to weigh their harvest and sets of worksheets adapted from Farming Concrete designed templates (see Appendix). They agreed to record the weekly hours spent and harvests collected, and to a weekly check-in with a team member to review progress. Gardeners documented information on time spent participating in varying activities, such as raking or watering, and amounts (by kilograms) of different crops harvested. For some gardeners, the worksheets were translated into other languages, such as Spanish and Swahili, since Bridgeport is a city rich in varied cultures and ethnicities, hosting a variety of immigrant communities. Beyond the central project goal of data collection, community capacity was also built in tracking data and measuring outcomes in training the participants. The information recorded on the worksheets was then compiled into a master MS Excel spreadsheet, separated by garden, gardener, and sorted by week.

² The GVI Multimedia eCookbook: <https://indd.adobe.com/view/6148e2c5-7093-41e8-88f5-74a2181735ef>

³ Four of the gardens are mapped below in Figure 3, with proximity to the largest local grocery stores.



Figure 1. Reservoir Community Garden, bed #1 on June 15 (left) and July 27 (right)
Source: Nojeim 2018



Figure 2. Ridge Avenue Garden, bed #L-4 on June 15 (left) and July 27 (right)
Source: Nojeim 2018

Using the initial twelve weeks of late summer and early fall 2018 as our base data for this study⁴ on time and harvest, the gardeners' time was valued at the 2018 Connecticut minimum wage of \$10.10 per hour. Harvest value was estimated by averaging per pound prices for produce found at four local grocery stores in Bridgeport (see Figure 3). These stores, Super Stop and Shop, Food Bazaar, Price Rite and Gala, while in the city proper, are generally not reachable by the majority of city residents, landing Bridgeport on the FDA's "food deserts" listing in 2016. The per pound price averages between these four stores were then multiplied by the pounds of each crop harvested to get a value equivalent.

⁴ A full growing season worth of data was targeted for collection in 2019 to capture the seasonal variability of garden productivity, however a variety of complications compromised that data set. COVID-19 has delayed our plans to repeat and extend data collection for the 2020 season. We hope to be back in the gardens this year.

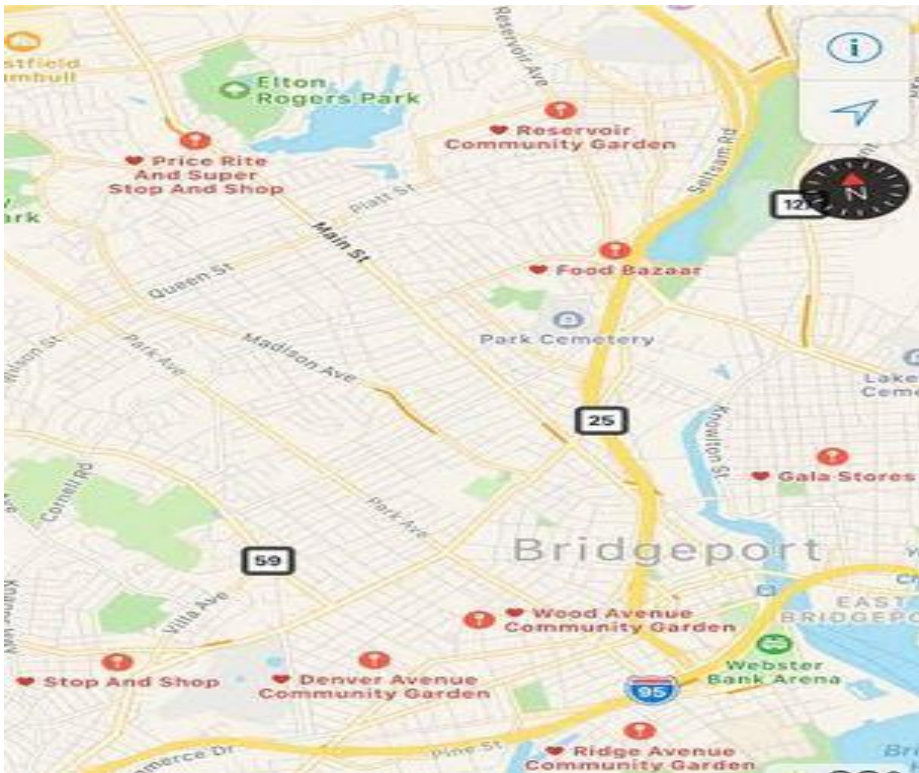


Figure 3: Map of the Five Grocery Store Chains and Four of the Proximate Community Gardens Visited
 Source: Nojem 2018

During the last week of October, the volunteer gardeners met individually with team members for exit interviews. Gardeners were prompted with initial questions but were allowed to take the conversation any direction they desired. The interview process is outlined in the appendix and repeated in late 2019 and early 2020, which also included elicitation of garden recipes for collecting. All interviews were audio recorded in addition to having note takers. Answering the questions was entirely voluntary, and gardeners were given the option to opt out of being recorded. Interview responses are used for both quantitative, such as crops grown, and qualitative, such as reasons for gardening, data analysis. Responses to a follow-up set of interviews are curated into the digital cookbook for GVI and the local community.

Data and Analysis

The value or cost in the marketplace is only one measure of the success or complete value of a project to a community or group, especially if a project or problem has public goods characteristics⁵ or spillover elements.⁶ Certainly, the market value of the produce a community garden produces and the labor provided in its up keep are readily monetizable in relation to comparable market goods and values. These can be characterized as direct, market values of community gardening projects and are detailed for this case study in Bridgeport. But the fuller value of community gardening projects goes well beyond those direct values to include effects that incidentally spillover from the gardening effort itself. That is, for example, gardening

⁵ Public goods are defined by two distinct characteristics, non-excludability and non-rivalry.

⁶ Spillover effects, also called externalities can be either positive or negative to the parties they impact, and denote costs or benefits accrued outside of the market value for a good or service.

endeavors are not necessarily undertaken to lessen public incidence of disease and hence healthcare costs, but certainly do so by improving diets. Nor are they implemented for the purpose of reducing crime, yet studies have shown just that. In our data gathering exercise, we attempt to shape a fuller picture of the value of community gardening in our Bridgeport locations by outlining an understanding of some of the indirect, nonmarket values community gardens provide in addition to the direct value the gardening ventures yield.

Direct Value

Labor

Clean quantitative data regarding labor hours and harvest were completed for twelve weeks in 2018, allowing the study team to develop baselines about the quantitative benefits of urban community gardening. Time to instruct, language barriers, misses in remembering to log information and other factors created barriers to participation. Nonetheless, information from eight gardeners who completed the spreadsheets adequately tallied over 112 total hours spent in the garden, which inherently has effort value in and of itself. At the Connecticut minimum wage rate of \$10.10 per hour, these 112 hours translate into \$1,136.69 worth of labor done in the gardens for this limited timeframe. In the Connecticut growing zone, we recognize that gardening starts in early spring with bed preparation, in March or April, depending on weather and carries well into fall, doubling or even tripling the length of work time. In addition, the contribution of these eight gardeners represents only one third or a quarter of the gardeners providing effort in GVI's gardening locations. Extrapolating the pilot data gathered across a full growing season and across all of the organization's gardeners, labor hour contributions could range from \$6,800 to \$13,700, total, for GVI gardens per season. While this estimation is not describing hours spent in a formal labor market, sweat equity invested in public space and the worth of gardener time invested in a public, collective activity valued at market rates, gives us proxy information of the value of these gardeners' time spent at this activity.

Produce

Likewise, the direct value of the garden harvest was estimated. The four most popular crops grown across all eight gardeners surveyed were plum tomato, sweet pepper, purple eggplant, and bok choy. Plum tomatoes cost \$1.49 per pound on average. Over forty-one pounds of plum tomatoes were harvested by the eight gardeners during the four-week period that harvests were recorded. This comes to a total of \$61.86 of direct value or economic benefit from gardeners harvesting plum tomatoes. A total of 16.23 pounds of sweet peppers were harvested at \$1.49 per pound, tallying a sweet pepper harvest benefit of \$24.18 to the eight gardeners. Purple eggplants, which cost \$1.99 per pound on average, supplied an economic benefit of \$39.96 from the 20.08 pounds harvested. Bok choy gave \$42.48 of economic benefit at \$1.77 per pound and 24.00 pounds harvested. In total, 101.83 pounds of these most popular crops were harvested over the four latter weeks of the growing season. This translates into a total economic benefit or direct value of \$168.49 for the eight gardeners who were able to harvest this produce rather than purchase it at a grocery store. Table 1 exhibits the next most popular crops grown.

Table 1: Secondary most Popular Crops Grown

Crop Grown	Number of Gardeners Growing	Amount Harvested (lbs)
Spinach	1	53.50
Hot Peppers	3	22.98
Cherry Tomatoes	2	9.46
Cucumber	2	36.76
Japanese Eggplant	2	13.71

Source: Nojeim 2018

While seemingly not significant in total, the value of the produce grown in gardens represents dollars saved from often small, limited household budgets that can be spent on other pressing family needs.

Indirect Value

Community Health

Urban community gardening extends its benefits to gardener health; where notably physical activity levels increase, and risk of heart disease and obesity decrease in garden participants. These factors in turn lower the costs of healthcare the city of Bridgeport endures. Fairfield County, which contains Bridgeport, is classified as a large central metropolitan area (Meit et al 2014). The City of Bridgeport is Fairfield County’s primary metropolitan area, with a population of 146,579 out of the county’s total 947,328 residents. (US Census Bureau 2018) The diverse city is made up of 21 percent white, 35 percent black, 39 percent Hispanic, and 3 percent Asian Americans (US Census Bureau 2018). A total of 20.8 percent of Bridgeport’s residents live below the poverty line (US Census Bureau 2018). The diversity and economic status of Bridgeport residents is much like that of a typical large central metropolitan area in the American Northeast.

Using generalized health statistics of average Northeastern large central metropolitan areas allows us to estimate the status of public health for the population of Bridgeport. Heart disease affects 253 out of every 100,000 residents, or 0.25 percent (US Census Bureau 2018). About 27.5 percent of Bridgeport residents are obese and an estimated 45 percent of Bridgeport residents are considered physically inactive (US Census Bureau 2018). These rates are elevated above national averages and take a toll on the local public health system. Public health can be improved and rates of incidence of these diseases in particular can be reduced with increased implementation of urban community gardening.

Urban community gardening increases produce intake and physical activity levels of participants. Urban community gardeners consume an average of 3.9 vegetables a day and engage in physical activity over four times per week (Alaimo et al. 2008). This is a noticeable increase from non-community gardener values of 2.9 vegetables per day and less than one time per week of physical activity. Additionally, urban community gardeners are 3.5 times more likely to eat the recommended five plus daily servings of produce than non-gardeners are (Alaimo et al. 2008). Another study finds a similar increase in produce intake and physical activity, but in different amounts. In completing an average of thirty-two hours per week in the garden, urban community gardeners ate produce 54 percent more often or regularly and got 18 percent more physical activity than non-gardeners did (Van den Berg et al. 2010). Men and women who participate in increased levels of physical activity decrease their risk of death by 20–35 percent (Warburton, Nicol and Bredin 2006). Urban community gardeners meet these criteria for high vegetable intake and increased levels of physical activity by consuming what they grow and exercising through gardening.

Specifically, increased produce intake affects risk levels for cardiovascular disease, stroke, and mortality. Risk factors for cardiovascular disease and stroke include high fat, high cholesterol, high sodium, and low vegetable intake diets (Brown 1991). Produce intake and disease risk rates have an inverse relationship: as produce intake increases, risk rate decreases, and vice versa. For eight plus servings of produce, the relative risk rate of major cardiovascular disease is 0.9. This is significantly less than the 1.09 relative risk of major cardiovascular disease for people consuming only two to three servings of produce a day. Similarly, consuming eight plus daily servings reduces stroke risk rates to 0.92 compared to 1.05 for two to three daily servings. Finally, mortality event risk rates were measured at 0.81 for eight plus daily servings in contrast to 0.91 for two to three daily servings (Hung et al. 2004).

The eight volunteer gardeners we surveyed spent an average of 9.4 hours per week in the garden. This exceeds, and nearly quadruples, the two to three weekly hours of exercise proven to reduce premature death rates by 39–54 percent (Warburton, Nicol, and Bredin 2006). Urban community gardens provide increased opportunities for gardeners to increase vegetable intake. By providing increased options for healthier food consumption, urban community gardeners can lower processed food intake that consists of high fat, cholesterol and sodium levels. Since urban community gardeners average about four vegetables consumed per day, it is likely that their total daily produce intake, coming from fruits and legumes as well, is higher than four. When true, urban community gardeners benefit from reduced disease risk rates. Many community gardeners can be expected to land somewhere in the eight plus daily produce servings category for disease risk rates. However, even if urban community gardeners only consume four total produce servings daily, the disease risk rates are still reduced from what non-gardeners, who average less than four total daily produce servings, experience (Miller 2017).

Across Connecticut, cardiovascular disease is at the top of the diagnosis list for 51,722 patients and cost the state \$2.8 billion in 2014 alone. A further breakdown notes heart disease costs of almost \$2 billion and stroke costs at \$394 million (Poulin 2017). A stroke treatment normally requires a 3-day hospital stay and tallies a median cost of \$31,711 for a Connecticut patient. To be treated for coronary heart disease (CHD), a subset of cardiovascular disease, the average three-day hospital stay median cost is \$54,048. (CT.gov 2014). More specifically, Fairfield County, in which Bridgeport is located, has a rate of 259.6 heart disease cases in 100,000 people, men and women combined. The combined rate for stroke is 77.5 in every 100,000 residents (US County Profile 2016). Extrapolating, the 259.6 heart disease cases in Fairfield County amounts to \$14,030,860 when multiplied by the median per person cost of treatment. Similarly, the estimated cost for the 77.5 stroke cases in Fairfield County adds up to \$2,457,602.5. The eight volunteer gardeners surveyed each reduce their risks for stroke and cardiovascular disease. These reduced risk rates can save Bridgeport \$253,688 in stroke costs and \$432,384 in CHD costs yearly when these eight gardeners do not suffer from either.

Property Value

An observable change in Bridgeport property values is seen in areas next to gardens compared to areas not near gardens. To study area property values, the US Census Geocoder, MapInfo 16, and IBM's Statistical Package for Social Sciences (SPSS) software packages were employed. These software packages were utilized to identify garden locations in 2008 and 2015 and obtain tax files for 2008 and 2015. Gardens were classified based on their affiliation with an established in-city organization, non-affiliation, or supervision by GVI. There were a total of twenty-five gardens active in both 2008 and 2015. Only nine of these gardens were affiliated, meaning sixteen were non-affiliated. Of these sixteen non-affiliated gardens, nine were run by GVI. A 500-foot buffer zone was created around each garden location to capture houses in the area and observe their prices. In the case of the Reservoir Community garden, its size (1+ acre) required a 1000-foot buffer to be set. Some homes fell into the buffer zone for one garden,

while others fell into the buffer zones for multiple gardens. These homes in multiple buffer zones were called clustered houses.

The timeframe of analysis, from 2008 to 2015, coincides with “The Great Recession.” In this time of national economic hardship, properties across the nation lost value no matter their location. The observable changes in property values in Bridgeport were all negative, but properties in clusters had lower losses in value than properties not in clusters. Houses not in a buffer zone of any garden saw an average of a -28.88 percent change in value from 2008 to 2015. Houses in a buffer zone of one garden experienced similar percent losses in value. Houses in the buffer zone of a non-affiliated garden felt a -27.98 percent change in value. The findings are most visible in the cases of clustered homes. Homes clustered near any gardens had an average of a -27.84 percent change in value. Homes clustered near non-affiliated gardens saw a change in property value of -26.00 percent. Most telling of all, homes clustered near GVI gardens experienced only a -21.80 percent change in property value. Establishing gardens close together may improve property values most for homes in overlapping buffer zones. Homes clustered near gardens run by GVI experienced the lowest losses in property value. The Green Village Initiative establishing more gardens in close together locations around Bridgeport could have the greatest impact on property values for the city and its resident property owners. Stable property values have a variety of benefits including tax revenue for the municipality and resale. Increasing property values could also put an upward pressure on rental prices, which would have a negative effect on the predominantly low income and minority populations in cities with a similar demographic make-up as Bridgeport.

Other

In addition to harvest produced, labor hours generated, improved health and property values stabilized, we note even more contributions to neighborhoods from community gardening efforts. Crime reduction and the associated cost reductions in public expenditure due to latent policing services by community members’ presence outside their homes have been shown to be significant in related studies (Schmelzkopf 2002). Procuring city budget figures on public security spending, as well as crime rates across the city are a priority for future study. Gardeners surely have a positive impact on community security—characterizing that impact further is a natural extension of this work in the GVI neighborhoods across the city.

Additionally, tracking key environmental variables across cities with large forests, parks and green spaces, including community gardening acreage would likely result in better air quality, lower urban heat radiation (and hence less need for cooling and energy use), and better water quality due to better absorption (less urban runoff) in densely populated cities. Cities are often hotspots for elevated rates of respiratory disease due to high levels of air pollution or poor water quality due to urban runoff and air borne pollution deposition. The benefits expansive gardening plot systems can have in urban locations toward sustainability measures is key and should be explored further.

Further, positive impacts to mental health can be attributed to community activity, in general. We would be remiss if we did not raise the value of community gathering, when carried out safely, in the current climate of COVID-19 and the social isolation that a pandemic brings. GVI worked to get urban gardening on the “essential” list, providing food for the table and much needed social distanced human interaction potentially reducing the unseen impacts of social isolation in 2020 and into 2021. But even in non-COVID-19 times, community work and socialization across a variety of activities is attributed to mental health improvements.

Gardener Interviews

While more extensive quantitative conclusions are still to come, the early qualitative analysis gathered from conversations with gardeners clearly displays the benefits of gardening on individuals and communities. The gardeners shared multiple reasons for involvement in gardening and enjoyment in it. The reasons for both can fall into the categories of economic, dietary and emotional. The vast consensus concluded that urban community gardens are appreciated for their sources of food, safe spaces, mental health benefits, and relational improvements.

Many gardeners moved to Bridgeport from other nations. Gardeners hail from Puerto Rico, Jamaica, Tanzania and Thailand, to name just a few. Bridgeport is a diverse city, but the transition to a new nation and culture is still difficult. While the transition to a new landscape, primary language, and much more can create anxiety, one source of comfort can be food. Many immigrants preserve their homeland plate cultures for comfort. As many gardeners trying to maintain their food cultures shared, finding ingredients specific to a different nation is often expensive and occasionally impossible. One gardener from Thailand expressed her struggles finding long beans in Bridgeport. This type of bean is essential to her Thai dishes but was eliminated from her diet by inaccessibility. Once given a bed in a community garden, this gardener was able to grow long beans as well as other native Thai plants. She is now able to recreate the dishes she used to eat regularly in her homeland. This is something she could not do when solely dependent on grocery stores. Urban community gardens allow gardeners to maintain their homeland cultures by growing crops that are expensive and hard to find in their new location.

Before arriving in Bridgeport, numerous gardeners lived in rural areas and had homes with land. Bridgeport, while called The Park City, is far from rural (Bridgeport Connecticut 2018). The urban landscape is in stark contrast to the plains many gardeners were used to before moving. Gardeners stressed the importance of community gardens as a source of greenspace in the midst of an otherwise concrete landscape. Time spent in the community garden provides peace of mind away from the fast-paced stress of city life. Entering the garden is equivalent to entering a safe space. Gardening is a time machine back to the prior lifestyles gardeners held before immigrating into a city. Urban community gardens grant gardeners a chance to relax in the midst of a bustling place as well as a comforting landscape compared to the unforgiving city.

Another gardener shared stories of her family's long battle with depression upon moving to Bridgeport. She spoke of therapy sessions as well as anti-depressant medications her family needed to improve their mental health. The family was used to the rural landscape and lifestyle they lived in their homeland of Puerto Rico. When they discovered the community garden nearby their Bridgeport home, they were excited to have the opportunity to reconnect with their culture. After a few years in the community garden, family members no longer take medication or rely on therapy to treat depression. The alleviation of depression saves the family money on medical bills. According to members of the family, gardening has improved relations between one another too. It has brought them closer together through sharing techniques, food and time together in the garden. Urban community gardens improve mental health of individuals and improve familial relations (e.g., Clatworthy, Hinds, and Camic 2013; Page 2008).

Beyond improving family relationships, urban community gardens form and strengthen community bonds. Gardens usually attract people from different neighborhoods who would not have interacted if it were not for gardening. Spending time in the same space gives gardeners the opportunity to meet new people. The diversity of gardeners combined with new connections made in the garden fosters an educational environment. Gardeners share techniques, crops unique to their cultures, and harvests with one another. Many gardeners spoke of growing crops they did not know existed until another gardener introduced the crop to them. The generosity gardeners exhibited to one another and to outside organizations is inspirational. Produce was donated by

gardeners to food pantries, churches, fire departments, and more. Gardeners were welcoming and more than willing to impart life advice in addition to their personal stories. They are thankful the study gives them a chance to share their stories and publicize their appreciation for gardening opportunities. Urban gardens expand occasions for socialization, generosity, and trust.

Conclusion

Benefits provided by urban community gardening are clear in Bridgeport, Connecticut, even with a limited quantitative data set representing only a portion of the gardening season. Gardeners during the four weeks of data collection spent over 112 total hours in the garden. The total number of hours over this four-week period translates into \$1,136.69 of labor, at minimum wage, contributed. The eight gardeners harvested over 100 pounds of produce, which tallied to \$168.49 saved from gardening rather than purchasing. The qualitative benefits of urban community gardening were highlighted in one-on-one gardener interviews. These benefits stretched over the economic, dietary, and emotional aspects of individual lives. Community gardeners reduce their relative risk levels for diseases such as cardiovascular disease, stroke, and diabetes. Their presence in Bridgeport means the city will have fewer instances of these diseases and therefore experience lower costs in the healthcare system. The subtraction of costs of just the eight people who participated in this study potentially saves the city \$432,384 in coronary heart disease costs and \$253,688 in stroke costs annually. These savings drastically increase as the number of community gardeners in Bridgeport increases. Houses clustered near gardens felt a lower loss in property value than homes not clustered near gardens in the property value downturn during the “Great Recession.” Homes clustered around GVI run gardens experienced only a -21.80 change in property values compared to a -28.88 change in homes not near any gardens. Gardeners appreciate community gardens for providing sources of food, safe spaces, mental health benefits, and relational improvements.

Going forward, the team will restart data collection when the COVID-19 pandemic ends, targeting the 2021 growing season. A smartphone-based app is currently being explored to expedite the gathering of the individual gardener spreadsheet data and photographs of garden beds. End of season in-person interviews will again be utilized. The summer and fall of 2018 pilot study outlined here, supplied crucial feedback that will be used to enhance the study’s efficiency and clarity for its relaunch in 2021. With its continuation, this study will better emphasize the already shown quantitative and qualitative benefits of urban community gardens in Bridgeport, Connecticut.

Acknowledgement

The authors would like to thank the Center for Social Impact and the Roger M. Lynch Chair in Economics at Fairfield University for generous support of this project. The authors also thank two thoughtful reviewers for helpful comments on this article and ideas for future extensions of this work.














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Appendices

A. Labor Hours spreadsheet asking gardeners to record amount of time spent in garden and garden activities completed.


PARTICIPATION BY TASK																								
Garden:				Gardener Name:				Phone/Email:																
Total Hours:								Start Date:		End Date:														
Tidying Up				Composting				Watering																
M	T	W	R	F	Sa	Su	Total	M	T	W	R	F	Sa	Su	Total	M	T	W	R	F	Sa	Su	Total	
																								
Weeding/Pruning				Planting/Seeding				Harvesting																
M	T	W	R	F	Sa	Su	Total	M	T	W	R	F	Sa	Su	Total	M	T	W	R	F	Sa	Su	Total	
																								
Building/Fixing				Coordinating				Other Tasks																
M	T	W	R	F	Sa	Su	Total	M	T	W	R	F	Sa	Su	Total	M	T	W	R	F	Sa	Su	Total	
																								
 Farming Concrete DESIGN TRUST FOR PUBLIC SPACE				 Green Village Initiative				 Fairfield University <i>Center for Faith & Public Life</i>																

B. Harvest Data spreadsheet asking gardeners to record type and amount of produce collected over the course of a week.

Harvest Count




Garden:		Gardener Name:			Phone/Email:		
		Date:	Date:	Date:	Date:	Date:	Date:
Crop Name	# of Plants	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
ex.							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							




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Downloaded by Dina Franceschi on Mon Jun 21 2021 at 09:20:14 AM CDT

C. Interview protocol

Gardener Exit Interview
Bridgeport Gardening Project
Fairfield University-GVI

Date: _____ Garden: _____ Interview #: _____
Interviewer/s: _____
Gardner (First Name) _____

INTRODUCTION & PERMISSIONS

Bridgeport Garden Research

- Fairfield University (teachers and students) with GVI & gardeners
- Garden advocacy project (started in May 2018)
- Learn & document benefits of gardens for gardeners, families, neighborhoods, and Bridgeport

The Questionnaire

- We’ve learned a lot from gardeners, including you, this summer, and we’d like to ask you about your garden now that the season is over. We will report back our results to you through GVI.
- It will take 15-20 minutes.

Permissions

- First, please understand that this conversation is voluntary, and that you do not have to answer any or all of our questions.
- We will record only your first name and garden location; you may give us an alternative name. We will not ask about your home address.

Yes No May we record your voice so we can play-back our conversation?

Yes No May we take notes of what you say?

YOUR GARDEN

1. What did you grow in your garden this year?

Items Notes on response

2. What is your specialty crop and what grew best this year?

Specialization crop: _____ What grew best: _____ Notes

3. Any difficulties this year?

4. How do you get to the garden (how far), and what do you like best about coming to the garden? Car Bike Bus Walk Other

5. What do you do with the food from your garden?

6. Do you give food away? Yes No Notes on response

7. Do you ever receive food from other gardeners? Yes No Notes on response

GARDENING QUESTIONS

1. Garden Calendar

When did you start gardening this year? _____ (month/week?)
 When did you stop working your garden? _____ (month/week?)
 How often did you go to the garden? _____ (times per week)

2. When and why did you start gardening at [insert garden name]?

3. When and how did you originally learn to garden, who taught you?

4. Have you taught or learned about gardening with a fellow gardener (at your current garden)?

5. Do you socialize or work outside of the garden with people who you met at the garden?

FREE-LISTING

List as many words as you think of for each theme...

Places you buy/get food (besides garden)

Favorite things to grow

SEED WISHLIST...

Open seed catalogue to starter page for the item at the top of the list above (“favorite things to grow”). Are there 3 varieties that look interesting to you? Why?

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Food Studies: An Interdisciplinary Journal explores new possibilities for sustainable food production and human nutrition. It provides an interdisciplinary forum for the discussion of agricultural, environmental, nutritional, health, social, economic, and cultural perspectives on food. Articles range from broad theoretical and global policy explorations to detailed studies of specific human-physiological, nutritional, and social dynamics of food. The journal examines the dimensions of a “new green revolution” that will meet our human needs in a more effective, equitable, and sustainable way in the twenty-first century.

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