

several fruit trees. There are diverse ranges of gardeners, a few of which have been members since as long as 2002. The researcher was invited to collect data at a monthly member meeting, which was an exciting time for long time members because new young gardeners were signing up for plots.

Community Gardening in Los Angeles

Community gardens in L.A. are unique from community gardens in various parts of the country because L.A. County sits at the cross-section of several factors that make community based food growing a viable tool for improving healthy food access. The first is that Southern California has a year round growing season which means that there is potential to produce food year long (Geller, 2016). Second is the strong presence of a population with a culture rooted in food growing, farming, and agriculture. L.A. County has the highest population of immigrants in the state (California Immigrant Policy Center, 2014), many of which came to the U.S. to work on farms or practiced farming in their native countries. Immigrants that are members of community gardens are able to use the garden to reconnect to these farming practices. Community gardens are important in this regard because they allow for the growing of organic produce and other culturally traditional crops that people aren't able to find in U.S. grocery stores. Having a means to connect back to a country one has left is vital and significant to many immigrant gardeners and food is a vibrant and powerful way to feel that connection (Romero, 2016).

Community gardening and urban farming in L.A. has taken on a radical reputation because of the great disparities that exist between the affluent and the impoverished people that reside within the same County. For example there are 5,957 people per grocery store in South L.A. and 3,763 people per grocery store on the Westside. Additionally, in

South L.A. 72% of restaurants are fast food contrasted by the 41% of restaurants that are fast food in West L.A (Community Coalition, 2014). In response to these and other disparities, underserved areas of L.A. County such as South L.A. have a rich history of radical food growing. One such effort is guerilla gardening led by Ron Finley who addresses food insecurity in his South L.A. neighborhood by taking back vacant land and planting fruits and vegetables while educating his communities' youth on food growing. Additionally the South Central Farm, from 1996 to 2006 produced enough food to feed farmers' families, and to sell the extra food at a weekly farmers market on the farm. In 2006, the farmers were evicted and their crops were bulldozed by a property developer making way for a warehouse that has yet to be built. The farmers have since relocated to a farm in Buttonwillow, California and have continued the South Central Farmers Cooperative and maintain their presence in the community by providing fresh produce to an estimated 10,000 families in the area (Romero, 2016).

The examples of Ron Finley's guerilla gardening and the resilience of the South Central Farmers are two instances of communities resisting the systems that have led to their communities' lack of access to good food options. The community food growing efforts like community gardens in Los Angeles sit at a unique intersection of a yearlong growing season, ties to cultural farming practices, and a history of radical food justice efforts. The goal of this research is to examine how and if a food insecure person's access to fresh food is affected when they take their food growing into their own hands with the support of their community through a community garden.

Methodology

This study aimed to answer the research question, “how do community gardens affect access and availability of fresh produce for community gardeners in food insecure Los Angeles County neighborhoods?” using responses from semi-structured interviews with community gardening experts as well as a survey distributed exclusively to garden members. The research began with an examination of the landscape of community gardens in LA County using two maps available from online resources. The American Community Garden Association maps all community gardens in their network, as does the Los Angeles Community Gardens Council. The researcher used the latter mapping tool for the rest of the project because it is updated by an Los Angeles based organization and provides the most recent and relevant data for research focused on Los Angeles County. It should be noted that there are many community gardens in Los Angeles County that are not in food insecure areas, however this research question seeks to understand the relationship between food insecurity and community gardens. It may be that some gardeners that belong to gardens in food secure areas experience food insecurity at some times, however only gardens located in areas that are considered food insecure were used in the study based off data that asserts that an individual’s food insecurity is determined by the level of food security in the area where they live (USDA, 2016)

To identify gardens within the county that fall under the category of food insecure, the researcher used the Food Access Research Atlas developed by the US Department of Agriculture. This atlas takes into account several factors in identifying food access, including:

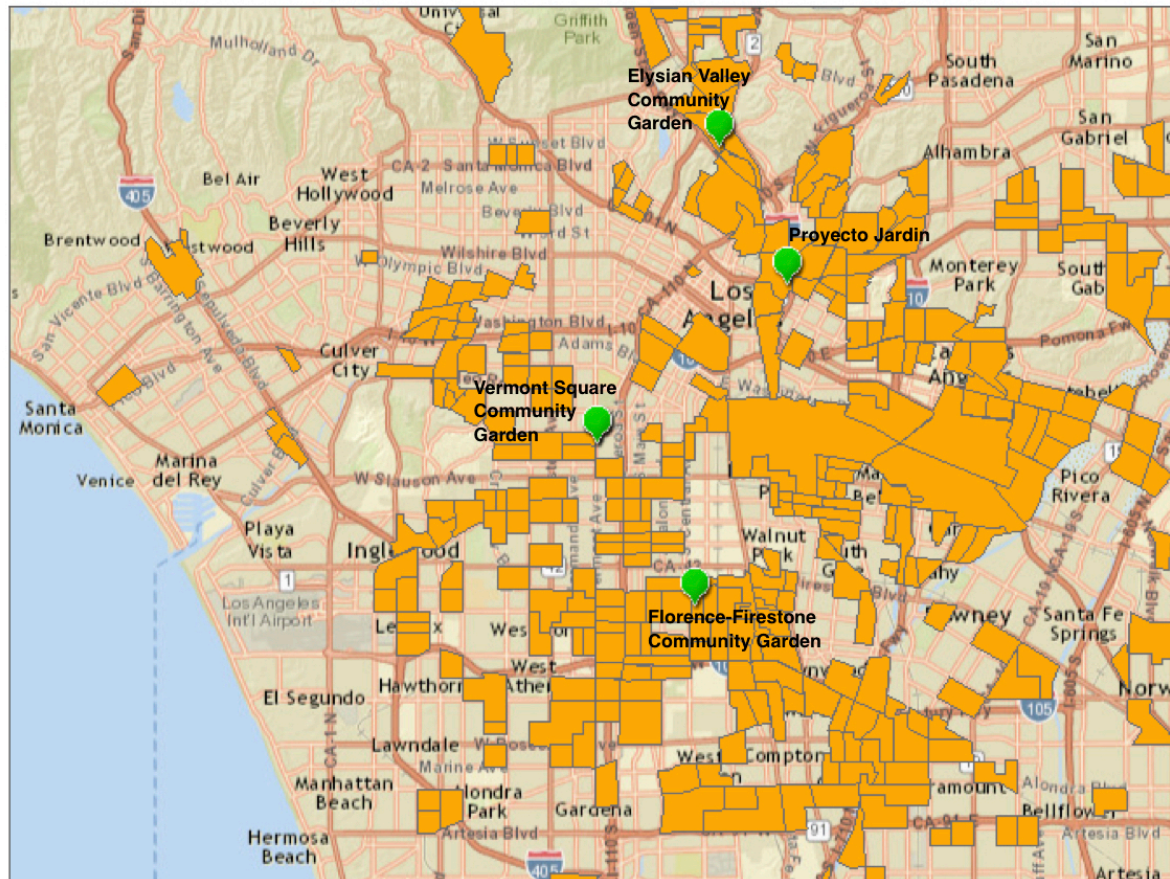
1) Accessibility to sources of healthy food, as measured by distance to a store or

by the number of stores in an area.2) Individual-level resources that may affect accessibility, such as family income or vehicle availability. 3) Neighborhood-level indicators of resources, such as the average income of the neighborhood and the availability of public transportation. (US Department of Agriculture Economic Research Service, 2013)

The Food Access Research Atlas uses food access indicators for census tracts using ½ mile and 1 mile demarcations to the nearest supermarket. The Atlas also allows users to view whether a census tract has a significant number of housing units that are far from supermarkets and do not have vehicles. Estimates in the Atlas are based on a 2010 list of supermarkets, and the 2006-10 American Community Survey. With this tool, the researcher used the addresses of the gardens provided by the Los Angeles Community Gardens Council map, and imputed the garden location to determine whether the garden was located in a census tract where a significant number of residents are more than ½ mile from a supermarket.

Once a number of gardens were identified as food insecure using this measure, the researcher partnered with the Los Angeles Community Gardens Council to reach out to garden leaders and explain the purpose of the research project. Several gardens expressed interest in participation, however due to scheduling constraints four gardens are represented in the research. The four gardens where surveys were distributed are shown in Figure 1. Though only four gardens were ultimately able to participate in the study, they represent various parts of the county and are geographically distinct from each other. Figure 1 shows the areas that are food insecure in areas that are highlighted in yellow. The green markers show the locations of the gardens present in this study. The gardens are all located in food insecure areas because they are located within the boundaries of the food insecure areas as defined by the USDA data.

Figure 1: Community Gardens and Food Insecurity



Data developed by the USDA Economic Research Service. Details are available here: <http://www.ers.usda.gov/data-products/food-access-research-atlas/documentation.aspx> | Bureau of Land Management, Esri, HERE, DeLorme, NGA, USGS

Surveys- Community Garden Members

For the purposes of this research community gardeners or garden members are defined as an individual who participates in a Los Angeles County community garden by attending garden events, owning a plot within a garden, or has contributed to garden maintenance at any time in the past year. The researcher initially reached out to the garden leader to set up an initial contact with the garden. From there best days to visit the garden were identified. Some of these were educational garden events others were the monthly garden workdays or meetings. The researcher consulted with the garden leader about potential events where many garden members would be present. At these events

gardeners were approached, introduced to the researcher and were explained the purpose of the project, from there they were asked if they would be willing to take a survey. Surveys at three out of the four gardens were distributed in person by the researcher at a member meeting or garden event. An online survey was requested for one garden and was made available via Google Forms. Surveys in either English or Spanish were provided based on the gardeners' preferences.

The survey collected quantitative data from gardeners while evaluating measures of food insecurity based on the USDA six-item assessment. The survey also asks gardeners to identify demographic questions, how often they visit the garden to work in their plot, how often they use produce from the garden in the meals that they eat at home, and if they perceive the garden as a means to supplement their food needs (See Appendix 1 for full list of survey questions).

In addition to these questions, was a six-item module used by the USDA to assess food insecurity. A twelve-item U.S. Household Food Security Survey Module or the 10-item Adult Food Security Survey is traditionally used to assess food security if respondent burden permits. However, the six-item short form of the survey has been shown as acceptable and is a robust method when classifying food security of households (Blumberg et al. 1999). The six-item measure has been shown to identify food-insecure households with very low food security with reasonably high specificity and sensitivity and minimal bias when compared to the 18-item measure (USDA, 2012). This six-item survey module was chosen as an appropriate method to assess food security because it was also used in the Los Angeles County Health Survey (LACHS) issued by the City of Los Angeles Department of Public Health. In the Public Health Department's data collection,

respondents with incomes less than 300% of the Federal Poverty Level were asked the six-item set of questions. The community gardeners participating in this study were asked the same six items set of questions to assess food insecurity, which are the following:

1. In the last 12 months, did you or any other adults in your household ever have to cut the size of your meals or skip meals because there wasn't enough money for food?
2. If yes, how often did this happen?
3. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?
4. In the last 12 months, were you every hungry but didn't eat because you could not afford enough food?

Now you will read 2 statements that people have made about their food situation. For these statements, please tell me whether the statement was often, sometimes, or never true for you (or the members of your household) in the last 12 months:

5. The food that was bought just didn't last; we didn't have money to get more.
6. We couldn't afford to eat balanced meals.

From these questions, participants were given a score based on the number of times they responded positively to experiencing a sign of food insecurity. Responses of "often" or sometimes were coded as an affirmative (yes). Responses of "almost every month" and "some months but not every month" were also coded as affirmative (yes). The sum of affirmative responses to the six questions is the participant's score on the scale. If a participant indicated no signs of food insecurity, they were given a score of zero. A score of zero indicated that they have what the USDA considers "High Food Security". If a respondent scored a 1 or 2, meaning they have experienced 1-2 signs of food insecurity, they are considered to have "Marginal Food Security". Similarly, a score of 4-5 is considered "Low Food Security", and a score of 6 or greater is considered "Very Low Food Security". The survey results allowed the researcher to analyze relationships between a gardener's

level of food security and their relationship to growing and consuming food from their community garden.

Interviews- Garden Experts

To determine the relationship between food security and community gardens from a more removed yet still informed perspective, the researcher conducted five semi-structured interviews with experts in the field of community gardening or food policy. Experts were identified based on their affiliation to a place based community organization working on food access and/or community gardening. Additionally one expert was not affiliated directly with a non-profit, but was a manager of a community garden. The researcher developed a script that guided interviews based on the existing literature on community gardens and food access. This script guided interviews but also allowed experts to elaborate on different topics and personal experiences. Examples of questions asked in the community garden expert interviews included, “Do you feel community gardens play a role in addressing food insecurity in communities with limited access to food?” and, “In your experience, what factors influence a community gardens success in gardens providing fresh produce to the community in which they are located?” (See Appendix 2 for full list of interview questions) Three interviews were conducted over the phone, and two were conducted in person. Interviews were audio recorded with the interviewees consent, and coded to identify emerging themes.

Findings

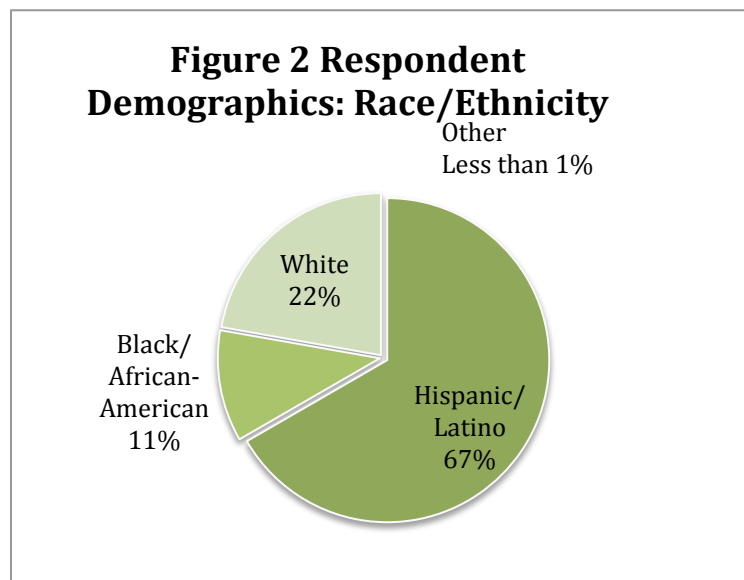
Data was collected through a mixed methods approach using both surveys and interview data. As previously stated, surveys were collected from community gardeners from four different community gardens in food insecure areas. The results of the survey

data are organized into three categories: demographics, garden food and produce consumption, and food insecurity. In addition to surveys, interviews were conducted with five community gardening experts. The data from these interviews is organized into the two distinct themes, education and equity, in addition to setbacks discussed in the interviews. The analysis section following the findings section provides an interpretation of the data and addresses which findings are significant to the research question of the project.

Survey Data

Demographics

Surveys were administered to community garden members of the four gardens that participated in this project. Community garden members were identified by their presence at the community garden event of meeting at which the researcher distributed surveys, or had contributed to the garden by attending events, meetings, or workdays any time in the



past 12 months. The survey administered asked several demographic questions about the respondent in an effort to create a holistic picture of the social characteristics of this sample population. Of the 30 surveys completed, 16 respondents were

male and 19 female. The average age of respondents surveyed is 49.5 with a range of 60. As shown in Figure 2, 67% of the population surveyed identified their race or ethnicity as

Hispanic/Latino, 22% identified themselves as White, 11% identified themselves as Black or African-American, and one respondent identified as “other”.

Income was assessed on a scale ranging from “Less than \$24,999” to “Over 80,000”. 47% of the respondents reported that they made less than \$24,999 annually. The second most commonly reported income level was \$25,000 to \$39,000 annually representing 23% of the respondents.¹ The most frequently reported level of educational attainment was 12th grade or less, representing 40% of the population surveyed. The next most commonly reported education level was a Bachelor’s degree representing 23% of the sample population. Additionally 40% reported an educational attainment of 12th grade or less and 23% of the sample population held a Bachelor’s degree. Lastly, 30% of the sample population reported being a recipient of federal food assistance.

This demographic data gives a better overall picture of the sample population in the study, to take this a step further I wanted to compare the demographics of my sample to the demographics of the larger Los Angeles County area. The demographic data for Los Angeles County is important to compare and analyze because the geographic focus of this study is community gardens located within Los Angeles County. Comparing the sample population and the population of Los Angeles County across the same demographic indicators can reveal factors that make the sample population different or representative of the larger Los Angeles County population.

To make this comparison I used the county wide U.S. Census data from the American Community Survey. The demographics of the population surveyed compared to the same

¹ This income scale was based off a similar study by Poulsen et al. (2004) that surveyed community gardeners in an urban area.

demographics for Los Angeles County reveal several key areas in which community gardeners surveyed differ from the average adult living in Los Angeles County (Figure 3).

Figure 3: Demographic Comparison to LA County

	Community Gardeners Surveyed	LA County *
MEDIAN AGE	49.5 years old	35.4 years old
RACE/ETHNICITY		
White	22%	53.3%
Latino	67%	47.9%
Black	11%	9.5%
Other races	>1%	
HOUSEHOLDS		
Annual household income less than \$24,999	47%	14.8%
Average household size	4	2.94
EDUCATIONAL ATTAINMENT		
12 th grade or less	40%	23.4%
High school degree	13%	20.5%
Associate or technical	3%	6.9%
Some college no degree	3%	19.6%
Bachelor's degree	23%	19.4%
Graduate degree/professional	13%	10.2%

*Data from US Census American Community Survey 2014

**The population surveyed only represented the three racial groups shown above

In regards to race and ethnicity, the gardeners surveyed represented a larger population of Latinos (67%) in comparison to the percentage of the Latinos in Los Angeles County (47.9%). As shown in Figure 3, the average age for the community gardeners surveyed is older by 14.1 years and has a larger average household size by one person. In terms of income, the majority of the gardeners surveyed make less than \$24,999 a year, which is less than the median annual household income for Los Angeles County (\$55,780). Forty-percent of the gardeners surveyed have an educational attainment level of 12th grade or less, compared to 23.4% of the Los Angeles County population that has achieved this level of education. As evident in Figure 3, the sample population for this study is comparatively older, more Latino/a, lower income, mostly individuals with an educational attainment level of 12th grade or less, and a larger household size than the L.A. County population.

Garden Food and Produce Consumption

In addition to demographic information, the survey used questions that addressed gardeners' likes and dislikes in addition to questions that quantify certain behaviors in relation to the garden. The survey asked questions about the gardeners' history with the community garden and food growing, their perception of the garden as a food source, and their favorite garden elements. Fifty-three percent of community gardeners surveyed reporting having food growing/gardening experience prior to joining the garden and the majority of gardeners surveyed (43%) reported belonging to their community garden for over two years. As shown in Figure 4, when asked "Do you see the garden as supplementing your food needs?" 73% of gardeners responded positively (yes). This question is important to the research question because it assesses how gardeners themselves perceive the garden as a source of food.

In contrast to the previous question addressing gardeners' perceptions, gardeners were asked to report how often they use produce from the garden in the meals they eat at home on a scale ranging from "less than once a month", to "several times a week In order to determine how often gardeners consume food from the garden," This question aimed to quantify how frequently gardeners

use produce from the garden in the meals they eat at home. From their responses, participants were categorized as using produce from the garden in their home meals on

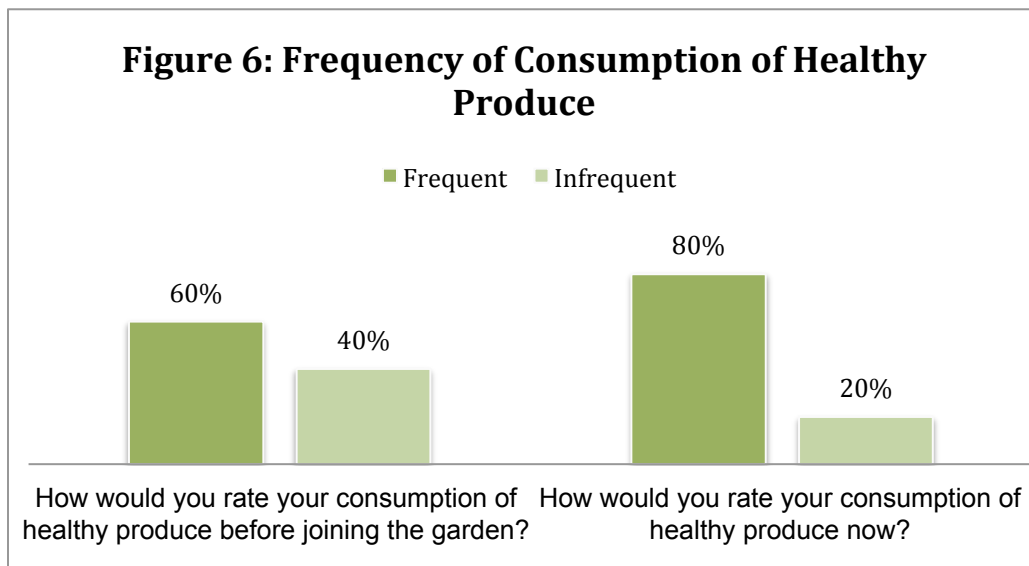
Figure 5: Most commonly listed likes

What are your three favorite things about being a part of your community garden?	% of Respondents
Eating food from the garden.	63%
Being outside.	43%
It's good exercise.	20%
Meeting friends and neighbors.	27%
Learning about gardening.	43%

a frequent basis if they reported doing so once a week or more. In contrast, use was categorized as infrequent if they reported using garden food in their home meals less than once a week. The results from this question indicate that 67% of the gardeners use produce from the garden in their home meals on a frequent basis. This supports the previous finding that most of the gardeners perceive the garden as supplementing their food needs and demonstrates that in practice, the majority of gardeners supplement their meals with garden produce frequently. Additionally, Figure 5 demonstrates that the most frequent favorite element of being a member of a community garden is "Eating food from the garden", with 63% of respondents listing it as one of heir three favorite elements. These findings demonstrate that for the majority of community gardeners surveyed, the garden is an important source of food and they enjoy consuming food grown in the garden.

The literature and interviews with experts in the field of community gardening report that being a member of a community garden can lead to an increase in healthy

eating choices overall, including sources besides the garden (Gottlieb and Fisher 1996). In order to determine if the garden plays a role in addressing healthy eating habits overall, and further investigate this claim by the literature, gardeners were asked about their produce consumption from any source. The gardeners were asked to report their consumption of healthy produce from any source before joining the garden on a scale ranging from “never” to “everyday”. Then they were asked to report their current consumption of healthy produce from any source, on the same scale. Their responses were then categorized for both questions as frequent or infrequent consumption. As shown in Figure 6, the percentage of gardeners who reported healthy produce consumption on a frequent basis from any source, before joining the garden is 60%.

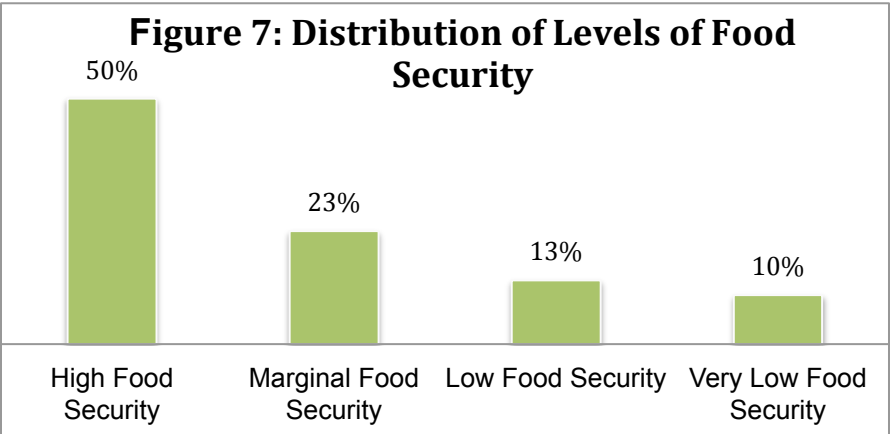


Despite most gardeners reporting consuming healthy produce on a frequent basis before joining the garden; there was a 20% increase in the number of gardeners who reported consuming healthy produce on a frequent basis when asked about how often they consume healthy produce now. This indicates that for 20% of gardeners, joining the garden

had a positive affect on their frequency of consuming healthy produce. Along with these findings, 69% of people who work in the garden on a frequent basis also view the garden as supplementing their food needs, compared to 31% of infrequent workers that view the garden as supplementing their food needs. This finding demonstrates that gardeners that work in the garden on a frequent basis are more likely to view the garden as supplementing their food.

Food Insecurity

The survey administered included questions that were taken from the USDA’s short form method for assessing food insecurity. The distribution of the levels of food security for gardeners surveyed is shown in Figure 7. Half of the gardeners are considered to have “High Food Security”, followed by Marginal Food Security with 23% of the sample, Low Food Security at 13% and Very Low Food Security encompassing 10% of the sample size based on the USDA’s metric.



Although half of the respondents experience a high level of food security, it is important to note that the remaining half of respondents have experienced an interruption in normal eating behaviors because of lack of money to buy enough food in the past 12 months. Because of this significant finding, I use Food Secure and Food Insecure as two

binary categories in several areas of this data analysis. In order to analyze the relationship between Food Security and community gardens, I cross-tabulated the Food Security variable with three other variables that indicate gardeners' behaviors with food and the garden.

The first was the "supplementing" variable. As described earlier in this section, this question determined if a respondent does or does not perceive the garden as supplementing their food needs. The cross tabulation reveals that 87% of food insecure people said that they view the garden as supplementing their food needs compared to the 67% of Food Secure people who supplement with food from the garden. People who are food insecure are more likely to view the garden as a means to supplement their food needs than people who are food secure.

Some of literature cites a barrier to community gardens serving as a successful food source as gardeners not having enough time to devote to their plots (Wang, Qiu, and Swallow 2014). To determine if this barrier exists for my sample population, I evaluated time gardeners spend in their community gardens doing garden work by asking participants to report how often they visit the garden to work. They reported on a scale ranging from "less than once a month" to "multiple times a week". From their responses, participants were categorized as frequent gardeners if they worked in the garden once a week or more often and infrequent gardeners if they worked in the garden less often than once a week. Overall 67% of gardeners surveyed work in the garden on a frequent basis. With this finding I was interested in determining a difference, if any, between how often gardeners who are food insecure and food secure work in their gardens.

When I cross-tabulated frequent/infrequent gardeners with food insecure/secure gardeners, it was evident that the group with the most frequent garden workers is gardeners who are also considered food insecure. 73% of food insecure people also work in the garden on a frequent basis. This is compared to food secure participants, 60% that are also frequent garden workers. While the majority of food secure gardeners are also frequent workers, it is important to note that people who are food insecure work in the garden the most (73%), even when compared to the sample population as a whole (67%). Based on my sample, gardeners who are food insecure are more likely to work in the garden on a frequent basis.

The third variable I compared with food security is how frequently gardeners use food from the garden in the meals they consume at home. This is an important relationship to consider because it would point to whether or not food insecurity influences how garden food is a part of their meals at home. 73% of people who are food insecure also use produce from the garden in the food they eat at home. Comparatively 60% of people who are food secure said they use produce from the garden in the food they eat at home. People who are food insecure are more likely to use food from the garden in their meals at home.

Interview Data

To further evaluate the relationship between community gardens and food insecurity in Los Angeles County I interviewed five individuals who currently work in the community gardening or food justice field at various non-profits or have been running a community garden for several years. Community garden experts were asked interview questions such as “Have you seen evidence that community gardens can be a pathway to food security?”, and “Do you feel community gardens play a role in addressing food

insecurity in communities with limited access to food?” From these interviews two main themes emerged: equity and education. While there were other significant topics discussed in the interviews, these two themes were consistently brought up by the community gardening experts. Additionally, community gardening experts disclosed several setbacks that community gardens face in being able to be used as a source of healthy food in food insecure communities.

Equity

The first theme that emerged in the interviews was *equity*. The interviewees spoke of equity in regards to community gardens serving as a path to more equitable access to fresh healthy foods. One community gardening expert described how people in the communities where she works don't have access to the stores that sell the best, high quality, organic produce. The interviewee includes herself in her statements because she is from a low-income neighborhood with similar lack of access to healthy food. “We usually have to drive out to seek good produce. The markets that are in these neighborhoods have the leftovers and they're not the best quality”.

The same community gardening expert goes on to describe how community gardens can be a pathway for communities to bridge this gap to better access the healthy food they need:

What community gardens do is provide access to organic healthy food. It teaches our community how to grow it, it teaches kids where it comes from and teaches us the health aspects of growing your own food. You don't have to buy McDonalds, you can grow it yourself, you make sure its what you want what you need use it in your home, and share it with your neighbors.

In addition to not having equitable access to healthy food sources, people that live in areas with high concentrations of food insecure people face challenges in access to land and

green space. Another community gardening expert described the issue of equity in terms of land use:

More affluent communities, not food insecure communities, are more likely to have access to land because they have backyards. In food insecure communities they are typically dense, apartment style living so people don't have back yards or access to land. They're lucky if they have a balcony so it creates an inequity in terms of people being able to grow something if they want to.

Several of the interviewees mentioned how in many food insecure areas people do not have backyards, and have poor access to green spaces and parks. The interviewees report that community gardens are solutions to bridge the gap in more equitable access to green space in addition to healthy food.

One community gardening expert brought up the term *sweat equity* as an explanation for why community gardens are important to have in low-income food insecure communities. She explained sweat equity as contributing to a project through effort, labor, and consequently, sweat. She described how community gardeners she works with are so invested in their plots and spaces because although they have not put in a lot of money into their gardens, they have put in their labor, which is even more important in her opinion. This idea of sweat equity can be applied to the concept of food insecurity because while gardeners in these areas may not have the financial means to buy organic healthy produce, they can contribute time and labor to bridge the gap.

Education

The second theme that emerged in the interviews was *education* as a tool that makes community gardens successful as food producing spaces. This coincides with the

equity issue because people living in areas with limited access to fresh and healthy food sometimes face challenges in terms of technical knowledge about food growing. One community garden expert describes the role of her non-profit as providing this technical assistance and training. She describes the importance of having knowledgeable gardeners mentor the novice gardeners and creating a community of shared knowledge. According to this expert, this is an important way to remedy problems in community gardens where there are garden plots where there is nothing growing.

Similarly, another community gardening expert describes how in her work with gardens she has seen education make a difference in the healthy eating habits with people living in food deserts:

There are a lot of beliefs that eating healthy is really expensive. And if it is unavailable you have to walk 45 minutes or take a bus for 30 minutes just to do healthy grocery shopping, that is an issue and of course you're not going to have the correct conceptions about it. Putting a community garden in an area that normally lacks access to healthy foods shows people, "Hey I can grow this with my own hands!", and they're able to take that into their own hands and share within their communities.

Several of the other interviews touched on the importance of education and sharing of knowledge within the community gardeners themselves. One expert said that community gardens should serve to promote, "the meeting of diverse people from different cultures and different gardens and have them share their best practices with each other." Similarly, another expert spoke on how community gardens can be an educational tool to promote a culture of engaging with food. The expert describes how community gardens allow people to engage with food before the actual consumption level, which is when habits are formed. She emphasized the importance of engaging with food at the growing stage because it is important in terms of developing a strong culture around healthy food.

All community gardening experts reported community gardens as one of many tools to alleviate food insecurity. Overall community gardening experts cited education and equity as the most significant factors as reasons why community gardens are important in food insecure communities. The experts were realistic in their claims that community gardening is not always a perfect tool, and that gardens experience many setbacks in becoming sustainably food producing. While experts stressed that is rare for people to completely sustain their food needs with food from community gardens, they also reported that community gardens can be used as a means to bridge the gap in the lack of healthy food access experienced in these communities. Additionally there was consistency in the responses about gardens being able to provide educational opportunities about food and food growing for gardeners. Community gardens provide opportunities for knowledge share between gardeners, they can shift the beliefs previously held about healthy foods, and can change the culture around food to one that appreciates the food growing process which in turn effects gardeners' consumption habits on healthy food.

Setbacks

Also brought up in the interviews with community garden experts were setbacks or barriers that community gardens face in serving as a food source. Factors such as low member turn out, paying for resources like water, issues over garden land and leases, and lack of technical garden knowledge were brought up as barriers gardens faced based off experts' work with gardens. One expert spoke on the difficulty of getting member turnout and keeping people engaged and how, "the hardest part is the management and making sure that you have an engaged community around the space." She also noted that once a community is engaged

with the garden, they tend to stay engaged. Another expert noted how for a garden to serve as a source of food, it is important to have several dedicated community gardeners who are involved in the planning and management of the garden.

Several of the expert interviews included instances of issues around paying for water, an integral part of gardening. They spoke on how water is a very expensive factor for community gardeners. Several community gardening experts brought up the recent 298% pay rate increase by the Los Angeles Department of Water and Power (LADWP) as a current obstacle facing community gardens in Los Angeles. One spoke on the work of her organization as advocating against this pay rate increase. Another expert specifically brought up a solution to address the cost of water for gardens as the City of L.A. implementing different water rates for community gardens and urban farms. One community gardening expert spoke on how there are a lot of measures proposed by City Council that end up working against community gardens. This expert spoke on the work of her organization as serving as the go between community gardens and the City of Los Angeles:

We try to make sure that all community gardens that start up are under a five year lease because often time depending on the owner the land can be taken away from them at any moment. Making sure that if the city were to go in at any moment they wouldn't be able to say that this place isn't functioning and would shut them down.

Additionally she spoke on how a lot of the work she does is advocating for community gardens to get proper City recognition. When asked how community gardens can stay or become successful and sustainable as a source of food in food insecure communities, most of the experts touched on the issue of lack of technical knowledge around food growing and gardening. One expert said, "its important to

have gardeners who really know what they are doing and can provide some mentoring of others.” One expert described this in relation to lack of experience as well:

There are a lot of community gardens where nothing is being grown because the gardener is inexperienced, and they don't have the level of productivity they could in their plots. A lot of people who sign up for a community gardens are beginning gardeners and they don't have any experience.

Another community gardening expert spoke on how she believes more education about how to have consistent yields, crop rotation, and soil building, water conservation, is needed in community gardens. In her interview she also brought up how in her experience she has seen people come to the garden really enthusiastic about growing their own food, and then realize they don't know what they're doing and become discouraged.

Analysis

The results of the survey highlight the vulnerability of the sample population of this study. On average gardeners in the community gardens surveyed are lower income, have a lower level of educational attainment, consist of majority minorities, and have larger household sizes than the average for LA County. Community gardens to include in the study were selected based on their location in an area that is considered food insecure by the USDA's standards, yet only half of respondents reported one or more signs of food insecurity in the last 12 months. The questions that assessed food security were sensitive in nature and could have led some respondents to feel uncomfortable reporting any signs of food insecurity. Even so, half of the participants reported levels of Marginal to Very Low

Food Security, and any level of food insecurity is a stressor on ones physical and mental well being (Food Action Research Center, 2015).

The results of the survey suggest that people who are food insecure have a different relationship to community gardens compared to people who are not. This finding supports the claim that food insecure people are more likely to view the garden as supplementing their food needs. *People who are food insecure also use food from the garden in their meals more than people who are food secure.* This finding is supported by the claims made by the community gardening experts who reported community gardens as paths to improve the access of food insecure people to healthy foods that are not available in their neighborhoods.

Another significant finding from the survey data is that joining the garden had a positive effect on the frequency of healthy food consumption for 20% of gardeners surveyed.

While a suggestion for this increase could be the in access to healthy produce from the garden, it is not the only explanation. Data from the garden experts suggests that joining a community garden has an effect on ones healthy eating habits, beliefs, and perspectives on food. This finding suggests that gardeners began consuming more healthy produce in general because they had access to it through the garden in addition to becoming more aware of the importance of eating healthy produce and were buying more from other sources.

The survey data also suggests that people who are food insecure are also more likely to work in the garden on a frequent basis. Gardeners who are food insecure rely on the garden more and consequently spend more time working in the garden. Individuals who experience food insecurity face challenges in having enough money to fully meet their food

needs and require other ways to supplement this gap in nutrition. As indicated by the survey data, the majority of food insecure gardeners surveyed view their community garden as supplementing their food needs. Additionally, the majority (67%) of gardeners who are food insecure reported making less than \$24,999 annually and every gardener surveyed who is also food insecure makes less than the median income for Los Angeles County which is \$53, 482 (U.S. Census, 2015).

Gardeners who are food insecure do not have the financial means to spend money on healthy organic produce. They are not able to put in money but they can put in their *sweat equity*, as described in an interview with a community gardening expert. As previously stated, gardeners who are food insecure report working in the garden on a frequent basis more than gardeners who are food secure. This suggests that they are in fact putting in more labor in the garden as a means to access healthy produce they can't access financially. The data from both the surveys and interviews present support that food insecure gardeners have a unique relationship with their community gardens and have different needs when it comes to using the garden as a source of healthy produce. Community gardeners who are food insecure have a more closely tied and reliant relationship to community gardens as a food source. Community gardens improve availability of fresh produce for community gardeners in food insecure Los Angeles County neighborhoods because they are able to use sweat equity in place of monetary resources. Additionally they create a space that is not otherwise present in food insecure communities to engage with healthy food.

Recommendations

From the survey and interview results, it can be concluded that for the population surveyed, participating in a community garden positively affected their access of fresh produce, especially for gardeners who are food insecure. Additionally, food insecure people rely on the garden more than those who are food secure because they use produce from the garden in their home meals more frequently, work in the garden more often, and are more likely to view the garden as supplementing their food needs. This relationship is important to address the larger issue of food insecurity in Los Angeles County. The relationship between community gardens and food insecure people exists because there are such poor healthy food options in the underserved communities of Los Angeles County. As demonstrated by the results, community gardens have the potential to fill the gap in lack of access to fresh produce. There are certain factors however, that are barriers to community gardens serving as a food source. In addition, there are factors such as education and equity that must also be *supported* to ensure that community gardens can help food insecure gardeners better meet their food needs.

The expert interviews highlighted education and equity as factors that make community gardens a source of fresh produce and place to engage with healthy food. They also brought up several setbacks that can deter community gardens from meeting this need. My recommendations will include ways to support the factors of education and equity in gardens, in addition to ways to address the setbacks. In order to address the research question, these recommendations will be specific to supporting community gardens as a food source specifically for communities that are food insecure, but will also include recommendations to address the rising rates of food insecurity in Los Angeles.

Increasing Technical Experience and Knowledge

Slightly more than half of community gardeners from the sample population (53%) had food growing experience prior to joining the community garden, yet many others had no prior experience. Additionally the community garden expert interviews indicated education as one means to ensure community gardens are successful in producing food. In order to ensure that all community gardeners in food secure communities receive the technical training necessary to maintain sustainable and food producing gardens, there must be ways experts can share knowledge with gardeners and ways gardeners can share knowledge with each other. The Los Angeles Community Gardens Council hosts many workshops for gardeners on topics such as composting and drought conscious watering practices, however their main mode of communication about events is online through email and Facebook (LACGC, 2016). This is the most effective way to reach the most about of people at once, however the event information inevitably cannot reach people without access to email or Internet. *Gardening workshops and programming should take place in the gardens that need the technical assistance or the source of fresh food the most.* Community gardeners who use the garden as a food source shouldn't have to travel to the other side of the city to receive expert information, workshops should be brought into the communities or individual gardens where there is a need for them. These workshops should occur during a time that is respectful of the schedules of working class people and provide childcare or ways children can participate in the workshops.

Another program that is focused on educational and technical training that is already in place in Los Angeles County is the University of California Cooperative Extension's Master Gardening Program. This program has been successful in training people passionate about community gardening on more technical skills specific to

gardening in the Los Angeles County area (Surls, 2016). *I recommend that a different type of master gardening class be formed to better meet the needs of gardeners who lack healthy food sources in their communities.* The UC Master Gardening course requires that students pay for the class themselves and is only offered in English. There are bilingual experts in the field of ecology, urban agriculture, and gardening that could teach a class better suited to meet the needs of community gardeners who are food insecure or live in food insecure communities. These classes should take into account traditional and diverse cultural practices and should be spaces for cultural food growing knowledge exchange. Additionally they should take into account the areas of technical assistance where the gardeners themselves feel they need additional knowledge. After completing this specialized course, the gardeners can return to their community gardens armed with technical knowledge and disseminate the information. *It is important that community gardens receive technical knowledge from people from that are from their community so there is a sense of trust of the information and its source.*

Continuing and Increasing City and County Support

The results of the interviews indicated paying for water as a significant barrier to gardens serving as a source of food for food insecure community garden members. Because community gardens are required to follow City zoning and pay for water through the municipal utility, the Los Angeles Department of Water and Power (LADWP), municipal policy solutions should also be explored in regard to these barriers. Community gardens are a response to systematic inequities in place by policy decisions (Gottlieb & Fisher, 2010) and should be supported by policy as well. In February 2016, the Department of Water and Power proposed a rate increase that would negatively affect community gardens

across Los Angeles, especially those who are in low income or food insecure communities (L.A. Food Policy Council, 2016). According to the L.A. Food Policy Council, community gardens, which currently pay the Schedule F discounted rate, will soon see bills increase by 298%. Currently most community gardens in Los Angeles pay \$1.37 per unit of water, however the increase would make this rate rise to \$5.32 by 2019. This rate would drastically increase the garden member dues paid by community gardeners and could lead to many gardeners not being able to pay garden dues and participate in the community garden. A city-based recommendation to address this injustice would be enforcing different and more affordable water rates for community gardening and urban agriculture. If the pay rate increase is approved, there should be an exception for community gardens because water isn't being used for aesthetics or for decorative purposes it is going to produce food that feeds people. While solutions for keeping the pay rates low are being discussed by the City Council Energy and Environment Committee, it is important that LADWP continue providing resources for free water catchment systems and ensure that the process for obtaining and installing the systems is streamlined and accessible for community gardens in food insecure areas.

In regards to rights to land City departments such as the Planning and Land Use Management committee should collaborate with the L.A. Food Policy Council's Urban Agriculture Working group to ensure community gardens have the protection needed from the policy side in regards to land use. Challenges over land rights, as in the case of the community garden Proyecto Jardín, show an unjust treatment of working class people who are attempting to expand their food options in their neighborhood by growing their own food.

It is important that community gardens also know their rights as tenants.

Organizations that work with gardens should hold tenants rights workshops with a focus on community garden land to prevent the displacement of community gardens and the push out of the garden by the landowner. Another approach to solving the land rights issue could come from the community side in the form of a community or neighborhood land trust. Under the protection of a land trust such as the Los Angeles Neighborhood Land Trust, community gardeners would have a secure and stable ownership of the land that would provide long-term stewardship for the space (L.A. Neighborhood Land Trust, 2002).

Community gardens should receive basic resources like water at a reasonable rate and have a just right to the land through fair lease agreements. To address these issues I recommend the LADWP keep pay rates for community gardens at or below the current rate of \$1.32 per unit and that the City ensure the rates stay affordable by writing it into legislation. *To address the instability of community garden land, I recommend that all new gardens form on land through a neighborhood land trust and that existing gardens pursue ways to transition to gaining autonomy of the land through a land trust.* The City should support neighborhood land trusts technically and financially and establish formal relationships between city agencies and land trusts for future pursuits of grant funding and land acquisition.

An example of a community garden not included in this research, whose land is owned and operated by the Los Angeles Neighborhood Land Trust is the West Athens Victory Garden in an unincorporated area of Los Angeles County. Under the land trust the garden was able to open on blighted property that had fallen into tax default. The funds for purchasing the land were provided by a donation from Los Angeles County. The space is

now open as a community garden and according the Land Trust is providing access to healthy fresh foods and a safe space to exercise to the community, which was previously lacking in both (Los Angeles Neighborhood Land Trust, 2016). There are several other examples of land that had fallen into tax-default and using the help of donations to convert the land into community gardens or parks under the Los Angeles Neighborhood Land Trust. Additionally the Land Trust works closely with community members to identify neighborhood needs through out the process of acquiring land and opening a park or garden. According to the Land Trust, they implement a management approach that ensures long-term community involvement and proper maintenance and stewardship.

Promoting Community Gardens as Spaces for Equity and Education

Drawing from the term *sweat equity*, brought up in an expert interview, the relationship between food insecure community gardeners and their use of their garden as a healthy food source requires a shift in perspective around the inputs gardeners add to their garden. A broader use of the term and idea of sweat equity would help in the recognition of community gardens as valuable spaces by planners and policymakers. While community gardeners in food insecure communities do not have the means to put in money into their plots, they have put in time, labor, and effort. *If policy makers and city officials can assess sweat equity the way they do financial wealth there would be more of an inclination to protect community garden land because it would be seen as much more valuable.*

Addressing the Rising Food Insecurity in L.A. County

For individuals to consistently be able to feed themselves and their family their budget must be able to cover the cost of living and the cost of food. There are several

programs in place that aim to relieve the burden of buying food from household budgets and to ensure that costs of other expenses such as rent are not competing or compromised for healthy food. Compromising food for other costs of living is an important indicator of food insecurity. Strategies to improve these indicators of food insecurity in LA County include changes at the federal, state, and local levels.

One step to decreasing the rising rate of food insecurity in L.A. County is by improving participation in food assistance programs. Policy makers can reduce the burden on low-income people's budgets by improving access to nutrition assistance programs such as CalFresh, Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), school breakfasts and lunches, and child nutrition (L.A. Department of Public Health, 2015). In addition, assistance with enrollment in these programs and others should be put in place.

Another recommendation to reduce food insecurity in Los Angeles County is to take further measures to reduce food waste and redistribute food that otherwise would be wasted to people in need. Non-governmental organizations in the L.A. area such as Food Forward, LA Kitchen, and Urban Harvester are some examples of the ongoing effort to address food insecurity by diverting food waste. These organizations organize the collection of excess fresh foods for donation, which is a process called *gleaning*. Additionally, private businesses and food retailers in Los Angeles should be encouraged to follow the example of the Surplus Food Ordinance, which requires edible food from City facilities and events to be donated to local food pantries. It is important that excess food that is still fresh and edible be redistributed to individuals, families, and households that are facing difficulty meeting their healthy food needs.

Lastly, the City of L.A. should reevaluate the recent new minimum wage passed to better meet the needs of minimum wage earning adults with children. With data put together by the L.A. Times, it is shown that with the new minimum wage of \$15 an hour ², a household with one adult will make enough to earn a living wage in L.A. County. Contrastingly one adult with one or more children or two adults with two or more children will not earn a living wage. Minimum wage earning families and minimum wage earning single-family households especially require a greater household income to better meet their basic needs including, childcare, transportation, housing costs, and food.

Limitations and Areas for Future Research

A limitation of this research is the small sample size, due the difficulty scheduling times to distribute surveys where several gardeners would be present in the garden. It can be difficult to coordinate when gardeners will be at gardens since many have full time jobs and make it to the garden whenever they can find the time. Convenience sampling was used in the study because both survey and interview respondents elected to participate in the study following being asked by the researcher. It should be noted that because a convenience sample was used, the generalizability of the results is unclear.

In regards to the survey, some questions might have led gardeners to answer in a certain way. For example, the question asking gardeners to rate their consumption of healthy produce before and after joining the garden might have led gardeners to respond in a way that indicated a positive change after joining the garden. Unless respondents kept a food log, it would be hard to answer this question without respondent bias.

² It should be noted that the \$15 dollar minimum wage would not be implemented until 2020 and is not adjusted for inflation.

My recommendations for future research on the relationship between community gardens and food insecurity are to use community garden meetings as times to collect data, because this is when the most gardeners are present in one place. Additionally it would be very valuable to analyze pre and post survey data for new community gardeners, and then several months after participating. Additionally pre and post data on food insecurity and perceptions on access to healthy food could be collected before and after a community garden is opened in one specific food insecure community. For future research I would also recommend using a survey to ask what programs meant to alleviate food insecurity, such as federal food assistance programs, are used by community gardeners who are food insecure. Further research on this relationship is vital for policy changes and for community gardens to receive grants funding to continue programming that keeps their garden sustainable as a source of fresh fruits and vegetables.

Conclusion

This research has shown that community gardens present a way for food insecure people to transform their food options and thus transform their health. The lack of healthy food options disproportionately affects communities of color, which makes this disparity a racial justice issue. Community gardens create communities of support so that people can transform their healthy food options. Community gardening in food insecure communities represents a solution to the disparity in access and resources, and serves as the light for where Los Angeles needs to go with its food policy. Time spent collecting data in community gardens has demonstrated that creating the kind of systemic change that is represented in successful thriving community gardens takes time and can also be difficult and fraught with conflict. Despite this, I have seen first hand the collective energy that

community gardening can bring into communities. Growing healthy food as a community in an area where there were few or no healthy food sources is a new paradigm of cooperation and coexistence that can bring people together. Community gardens in food insecure areas represent resiliency, empowerment, autonomy, and strength. As one community gardener from Proyecto Jardín said, “It’s a space for us, for all of the community, different types of people and races. It is the place indispensable for us to plant good things and plant love too.”

Appendix 1: Community Gardener Survey

Survey: Community Gardening and Food

Please do NOT list your name on this survey.

Please try to answer as honestly as possible.

1) Age:

2) I identify my gender as...

- Man
- Woman
- Trans
- Prefer not to disclose

3) I identify my race/ethnicity as...

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Hispanic or Latino | <input checked="" type="checkbox"/> Black or African American | <input checked="" type="checkbox"/> White |
| <input checked="" type="checkbox"/> American Indian or Alaska Native | <input checked="" type="checkbox"/> Native Hawaiian or Other Pacific Islander | <input checked="" type="checkbox"/> Multiracial |
| <input checked="" type="checkbox"/> Asian | | <input checked="" type="checkbox"/> Other _____ |
| | | <input checked="" type="checkbox"/> Prefer not to disclose |

4) I identify my marital status as...

- | | |
|---|---|
| <input checked="" type="checkbox"/> Married | <input checked="" type="checkbox"/> Divorced |
| <input checked="" type="checkbox"/> Single | <input checked="" type="checkbox"/> Other _____ |

5) Do you have children?

- No
- Yes, number of children _____

6) How many people NOT including yourself live in your household? _____

7) What is the highest degree or level of education you have completed?

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> 12 th grade or less | <input checked="" type="checkbox"/> Associate or technical degree | <input checked="" type="checkbox"/> Graduate degree/professiona |
| <input checked="" type="checkbox"/> High School diploma | <input checked="" type="checkbox"/> Bachelor's degree | |
| <input checked="" type="checkbox"/> Some college, no degree | | |

8) What category best describes your annual household income?

- | | |
|--|--|
| <input checked="" type="checkbox"/> Under \$24,999 | <input checked="" type="checkbox"/> \$60,000 to 79,000 |
| <input checked="" type="checkbox"/> \$25,000 to \$39,999 | <input checked="" type="checkbox"/> \$80,000 or more |
| <input checked="" type="checkbox"/> \$40,000 to 59,999 | |

9) What community garden are you a member of?

10) How long have you been a member of your community garden?

- I'm new
- Under 6 months
- 7-12 months
- A year
- 2 years
- Over 2 years

11) Did you have any garden/farming/food growing experience prior to joining?

- Yes No

11a) If yes, how many years?

- Under 5
- 5-10
- Over 10

12) How often do you visit the garden to work in the garden?

- Less than once a month
- Once a month
- 2-4 times a month,
- Once a week
- Multiple times a week

13) How often do you visit the garden for social/community events?

- Less than once a month
- Once a month
- 2-4 times a month,
- Once a week
- Multiple times a week

14) Do you see the garden as supplementing your food needs?

- Yes
- No
- Sometimes

15) What are your favorite thing(s) about participating in your community garden?

(Choose 3)

- | | | |
|--|--|---|
| <input type="checkbox"/> Meeting friends and neighbors | <input type="checkbox"/> It is good exercise | <input type="checkbox"/> Other (Please explain) _____ |
| <input type="checkbox"/> Being outside | <input type="checkbox"/> Eating food from the garden | _____ |
| <input type="checkbox"/> Learning about gardening | | |

16) How often do you use produce from the garden in the meals you eat at home?

- Less than once a month
- Once a month
- 2-4 times a month,
- Once a week
- Multiple times a week

17) How would you rank your intake of fresh produce before joining the garden?

- Never
- Every other month

- Once a month, Once a week Everyday
 A couple times a month Multiple times a week

18) Where do you currently get your fruit and vegetables? (Check all that apply)

Grocery Store, name of store(s) _____

- Farmers Market
 Food Bank
 Community garden
 Street vendor(s)
 Community supported agriculture (CSA)
 From my neighbors
 I grow my own
 I don't eat any fruits and vegetables
 Other, please describe

19a) If yes, do you use WIC/EBT for your fruit and vegetables?

- Yes
 No

20) In the last 12 months, did you or any other adults in your household ever have to cut the size of your meals or skip meals because there wasn't enough money for food?

- Yes No

20a) If yes, how often did this happen?

- Almost every month
 Some months but not every month
 Only one or two months

21) In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?

- Yes No

22) In the last 12 months were you ever hungry but didn't eat because you could not afford enough food?

- Yes No

The following are two statements people have made about their food situation. For these statements, please tell me whether the statement was often sometimes, or never true for you (or the members of your household) in the last 12 months:

23) The food that was bought just didn't last, we didn't have money to get more.

- Often
 Sometimes
 Never

24) We couldn't afford to eat balanced meals.

- Often
- Sometimes
- Never

25) Is there any thing else you would like the researcher to know about your experience with the community garden?

26) Is there anything else you would like the researcher to know about your experience with access to enough healthy food?

Appendix 2: Community Gardener Expert Interview Script

How do you identify your race or ethnicity?

What is the name of the organization(s) you work for?

How long have you been working with [insert name of organization]?

What is your role within [insert name of organization]?

Now I am going to ask you questions about your experience in the community gardening field. Let me know at anytime if you would like me to better explain the question, or repeat the question.

- Please briefly describe the work of your organization overall and in relation to community gardens.
- Do you feel community gardens play a role in addressing food insecurity in communities with limited access to food?
 - Please explain why or why not.
- In your experience, what factors influence a community gardens success in providing fresh produce to the community in which they are located?
 - What factors limit success?
- What recourses is your organization able to provide to aid in the success of gardens being a food source?
- What are your organizations roles, if any, in helping gardens decide what to grow in their garden?
- If this question applies to your work, can you describe differences in a community or in communities overall before and after implementing a garden?
- Have you seen evidence that community gardens are a pathway to food security?
- What are the ways a community garden can be a path way to food security?

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