

**Garden to Table: Consumer Access of Urban Produce Among
Food Insecure Communities around Berkeley, California**

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ABSTRACT

In an effort to understand consumer demographics of urban farming networks within Berkeley, a research team and I conducted a cross sectional survey at the UC Gill Tract Farm Stand on March 8, 2020. We found that the Gill Tract was generally effective in grassroots organizing and reaching out to food insecure communities relative to its geographic location. The primary consumer motivations for attending the urban farm stand included environmental benefits, food quality, affordability, and social justice. In addition, most consumers believed they wasted little to no produce they gathered from the farm stand. More longitudinal studies at various urban farming sites are needed to gain a deeper understanding of consumer networks around Berkeley.

KEYWORDS

urban agriculture, UC Gill Tract, social justice, food insecurity, food sovereignty

INTRODUCTION

What does it mean to reclaim and decolonize land? What does connecting with the land mean? It is important to acknowledge the United States' complex and racialized agricultural history when making policies, conducting research, and working with urban land. In 19th and 20th-century United States, while land was given away to white Americans for free, African Americans were enslaved, Native Americans were killed, Chinese and Japanese Americans were excluded from land ownership, and Californios were disenfranchised from their ranches (Guthman 2008). Today, there is a significant racial disparity between the people involved in agricultural management compared to people doing most of the nation's agricultural labor (Romm 2002). For example, ninety-five percent of farms in the United States are owned by white people, many of which rely on migrant laborers from Latin America to function (USDA Census 2017, Holmes 2018). When shifting the lens from rural agriculture history to urban agriculture history, however, these racial relationships and power dynamics take on a different shape. Some urban gardens are predominantly white and have social missions to promote the distribution of locally grown, fresh organic produce (Bitten 2018). Other urban farms, like Black Earth Farms, have developed social missions recognizing that poverty and income disparity are on the rise as gentrification continues and housing costs increase, affecting immigrants and people of color. This project is an effort to explore the relationship between urban landscape and poverty, specifically through the lens of urban agriculture, to take a step towards healing historical wounds. I want to understand how historically disenfranchised communities can effectively heal their connection with the land after the traumatic events of the past and amidst the rising urbanization of the present. Due to limited resources, this research will primarily look into the community around Berkeley, California.

As human population grows at an exponential rate and people crowd cities, food insecurity is on the rise. This phenomena is especially prominent within the Bay Area, where gentrification and rising housing costs have created great income disparities. One in four Alameda County residents rely on food bank assistance to feed themselves and their families (Altfest et al 2014). At UC Berkeley, approximately 48 percent of undergraduates and 25 percent of graduate students are food insecure (Altman et al 2017). There is research connecting the development of food deserts -- an area with limited access to affordable and nutritious food -- within low income communities and its negative effect on local fruit and vegetable consumption (Alaimo et al 2008).

In response to this food insecurity, urban gardens with social missions have been on the rise. There is a plethora of research on the potential of urban agriculture to produce tons of food for communities across the globe (Clinton et al 2018). In addition to providing fresh and local food, urban agriculture has shown other benefits, which include transforming waste water and organic solid wastes into resources, converting idle land into intensive agricultural production, building and educating communities, and reducing urban heat island (Smit 1992). However, when studying agro-food ecosystems it is important not to conflate urban garden potential with empirical data or food access with actual distribution. For example, Berkeley is a high food access area, yet has relatively high rates of food insecurity (McKnight 2016). More research is needed on food distribution and the effectiveness of urban agriculture in reaching their social goals.

Urban garden systems around Berkeley are deeply rooted in social justice, and are often met with many social, economic and political challenges. Many social justice oriented urban gardens face the “unattainable trifecta” - the desire to mitigate food insecurity, provide fair paying jobs, and generate enough profit from produce without relying on outside donations (Siegener 2018). Their social missions are in tension with capitalist reality. Moreover, urban gardens often face challenges with leadership turnover and continuity (McDougall et al 2019). This is especially an issue within UC Berkeley campus gardens, where students go on summer and winter breaks and only stay on campus for an average of only four years. Furthermore, ownership of urban garden land raises political issues (Brown et al 2003). As cities are pressured to provide more housing, green space is often the first option for development. UC Berkeley Gill Tract, which was once allocated 10 acres to agricultural research in 2015, has been reduced to 2 acres of agricultural land today (McKnight 2016). Many other urban gardens throughout the United States have been completely lost due to land ownership conflict. One prominent example was the South Central Farm in Los Angeles, which used to be the largest urban farm in the nation. Restraints on social mobility - on where people can go, what they can do, and who they can be - function like spatial restraints, confining certain opportunities in order to expand others (Romm 2002). In order for urban gardens to reach their potential in mitigating food insecurity, it is critical to understand the consumers and target groups that social justice oriented urban farms aim to reach. There have been few studies quantifying how much urban produced food is reaching low income communities and very little empirical data on urban produce distribution flows.

The main objective of this study is to understand what barriers there are to sustaining an urban garden on UC Berkeley land, and how urban gardens can overcome those barriers to reach their social goals. More specifically, we will be looking through a consumer access perspective by (i) examining the amount of urban produce reaching food insecure communities, (ii) identifying consumer motivations for attending the urban farm stands (iii) unpacking consumer perception the personal urban produce wasted. This project involves collaboration with Berkeley Food Institute, UC Gill Tract, and Berkeley campus gardens to conduct surveys, interview consumers, and gather empirical data on urban gardens around Berkeley.

BACKGROUND

Berkeley Urban Agriculture

The UC Gill Tract was founded in 2013 out of the Occupy the Farm movement (Costanza 2015). This movement was an effort to protest land under development by the University. During the three weeks of protest, approximately 15,000 seedlings were planted over a 1-acre area. After negotiations, the University agreed to transfer 10 acres of Gill Tract to the College of Natural Resources for agricultural research until 2022. Just two miles away from campus, the farm's social mission today is to conduct collaborative community-driven research, education, and extension focused on ecological farming and food justice, and to foster equitable economies, a healthy environment, and increased resilience in vulnerable communities, both urban and rural (UC Gill Tract 2019). Ecological envisioning, research, and community participation in the garden are a crucial part in the survival of the UC Gill Tract (Hernandez 2018).

In another form of resistance towards the University's push for development, the Guerilla Gardening Decal emerged. Guerilla gardening is the act of gardening on land that the gardeners do not have the legal rights to cultivate, such as abandoned sites, areas that are not being cared for or private property (Hyrse 2013). This student-led class manages various plots on the UC Berkeley campus, such as the Fannie Lou Gardens near the Hearst Field Annex, small site in front of Mulford Hall, and the Barker Gardens near Li Ka Shing, where the UC Berkeley Facilities Management may have neglected. Guerilla Gardening Decal leaders center their work on indigenous people's rights and practicing indigenous knowledge (Staff 2019). UC Berkeley

campus gardens foster coalitions aiming to create micro-scale food systems to address student food insecurity and promote ecological democracy (McKnight 2016, Staff 2019).

Food Pantries and Shelters in Berkeley

Understanding community access to urban produce is crucial to understanding how urban agriculture social missions are met and what target communities are being reached. One distribution site the UC Gill Tract Farm and other Berkeley campus gardens donate to is the Berkeley Food Pantry. Established in 2014, the pantry is a student-run organization aiming to mitigate food insecurity for students and community members. They serve nearly 7,000 students out of 42,000 on campus. Approximately 200-300 pounds of produce is purchased by student coordinators each week. The pantry also receives donations from farmers markets, like Berkeley Farmers' Market, the Alameda County Community Food Banks (Altman 2017).

The UC Gill Tract also distributes urban produce to the Women's Daytime Drop-In Center which was founded in 1987 to provide a safe space, warm meals, counseling and support to identify housing to any homeless woman and her children during the day (McKnight 2016). This center is active from Monday to Friday 8am to 4pm, when other homeless shelters are typically closed (Women's Daytime Drop-In Center 2019). Each month they serve 150 homeless women and children, providing clients with hygiene supplies, a telephone, computer, and mail access.

RESEARCH FRAMEWORK

Literature Review

Several studies have shown that urban agriculture reaps many community benefits. These agriculture benefits include, increasing fruit and vegetable intake amongst communities active in urban garden spaces (Alaimo 2008), improving food security (Clinton et al 2018), educating the public on sustainable agriculture (Brown 2003), and recycling rainwater runoff (Smit 1992). With the presence of food deserts in low income communities (Shannon 2014, Morland 2014), some research efforts have been made to pair local urban farms with corner stores in order to mitigate food insecurity and increase access to fresh produce (Gudzune et al.). Current research needs to

go beyond experimental pairing between urban producers and distributors, and instead should focus more on the current, routine relationships that already exist and how effective the distributors are reaching their desired consumers.

One important aspect to study from this urban farmer and food distributor relationship is the consumer preference of urban, local produce over conventional produce. Studies have shown that perceived “naturalness” of produce play a large role in a consumer preference for meats, poultry, fruits, and vegetables (Burnett 2011). Conventional consumer preference research uses “willingness-to-pay” to measure preference (Printezis 2017, Rozin 2005), however, this metric cannot be applied to freely distributed food pantry produce. Because travel time and access to a location is a major factor hindering people from accessing free food pantry and farm produce, I will be using “willingness-to-travel” to measure consumer preference (Burnett 2011).

Another important aspect of consumer food access to analyze is the amount of food wasted. There have been many studies on conventional food waste, but virtually nothing on urban food waste in households (Schanes et al. 2018). One reason for this research gap may be due to the inherent difficulty distinguishing between urban produce and conventional produce, both in general and in food waste. It’s also important to note that urban produce is not necessarily free of pesticides and fertilizers, or organic. Although the urban agricultural site in this study promotes organic produce, it is not the case for all produce grown within urban areas. Even then, pesticide use is not something humans can physically detect while looking at produce in the grocery store or pantries. The organic labels we see in grocery stores rely on trust in regulation and packaging. Conventional food waste research involves methodology which includes kitchen diaries, qualitative interviews, or analysis of curbside collection at waste management facilities (Lebersorger and Schneider 2011). Data collection through waste management facilities is the primary method food waste research, as it more objective and less bias than kitchen diaries or questionnaire surveys. However, when food reaches this level it is impossible to distinguish between urban produce and conventional produce. Therefore, due to limited resources, this research will use a survey to assess consumer perception of personal urban produce food waste.

Theory and Key Concepts

My research will be grounded on three main concepts: environmental justice, ecological democracy, and the sociological imagination. I will use the definition of environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (Romm 2002). The social missions of the UC Gill Tract, Guerilla Gardening Decal, and many urban farms are grounded in environmental justice, aiming to provide equitable food access and heal our relationships with the land. Furthermore, this research aims to contribute to ecological democracy -- a landscape architecture concept in which design is informed by an understanding of social relationships and ecological processes within the local and global contexts. By understanding the social needs of low-income communities of color, we can make city planning decisions to better support these communities and mitigate food insecurity. Finally, it is necessary to have sociological imagination moving forward. Social imagination is the interplay between individual level problems and larger sociological issues that exist; through education we can develop sociological imagination to see issues that may be invisible before. The Berkeley Food Pantry, Women's Daytime Drop In Center, Guerilla Gardening Decal, and UC Gill Tract are relatively newly established organizations arisen from sociological imagination to address long standing issues of food insecurity, uplifting low income communities of color, and healing the historic traumas of marginalized people on this Native American land.

Methodology

Because I am studying a community of urban farmers and consumers, I will take an ethnographic approach in my research to better understand urban agroecosystems.

Survey. In person interviews are to be conducted on site at the UC Gill Tract Farm Stand.

Interviews. In order to understand overall organizational challenges, food waste, and consumption, I will have extensive interviews with urban garden leaders, food pantry distributors, and farmers market organizers. I will be utilizing the snowball sampling method to identify

research subjects who are leaders in urban agriculture and food pantry spaces and using a similar method to Dimitri et al 2016 to code social mission themes.

METHODS

Study Area

This study took place on March 8, 2020 from 2pm to 5pm at the UC Gill Tract Farm Stand where our research team distributed cross-sectional consumer surveys. Willing participants were recruited for an hour-long phone interview to expand upon their experience at the stand. These phone interviews were completed a few weeks after initial contact with the participants. An ethnographic, social practice approach is used to collect and analyze the qualitative data.

Data Collection

We used Qualtrics to design a ten-minute survey to distribute to everyone gathering food at the Farm Stand. We printed out surveys for accessibility of consumers at the farm stand. To quantify the amount of urban produce reaching food insecure communities, the survey included a list of questions regarding whether or not a participant was able to afford the food they needed within the past 12 months. To assess income level, the survey included a chart with household size and household income and consumers would mark whether or not they made above the income listed (Figure 2, Appendix A). Ethnicity, gender, and frequency of visiting the farm stand were self-reported.

To identify consumer motivation for attending the urban farm stand, participants were asked to mark choices from a list that included environmental benefits, food quality, health benefits, social interaction, social justice, affordability, convenience, and food selection. In addition, the survey includes questions on travel time, mode of transportation, and zip codes of the participants going to the farm stand (Appendix A).

In addition, survey participants are asked how much of the produce they take from the farm stand goes to waste. For this question they are given a multiple choice of “None of it,” “Some of it,” “All of it” or they may choose not to answer.

Long term UC Gill Tract consumers who experienced food insecurity were selected for extensive one-hour interviews to gather their input on their experience at the Gill Tract Farm, discuss any improvements they would like to see at the farm, and assess how urban agricultural spaces can better suit their needs.

Data Analysis

To visualize data on the amount of urban produce reaching food insecure communities around Berkeley I will develop pie charts, bar graphs, and histograms. These charts will be used to compare income, ethnicity, gender, and other demographic characteristics of the consumers as well. I expect to see a high percentage of consumers who experience food insecurity at the UC Gill Tract Farm Stand.

I will use similar visualization techniques to analyze consumer motivations for attending the farm stand and determine average travel time to get to the farm stand. In addition, I will be geocoding data from the survey participants to map out where consumers are coming from. I expect to see a “halo effect,” in which consumers may associate urban produce with organic, “natural” crops (Printezis et al.).

I will display a bar graph to identify personal perception of urban produce waste. I expect consumers to think they waste very little to no food from the farm stand.

RESULTS

Our research team was able to gather surveys from the UC Gill Tract Farm Stand on Sunday March 8, 2020 from 2pm-5pm. A fellow researcher and I distributed surveys right at the farm stand as consumers browsed the produce. We were able to collect a total of 26 responses. Almost everyone who collected produce from the stand volunteered to fill out the surveys we printed out, with the exception of a couple families that were in a rush.

A diverse handful of attendees attended the Gill Tract farm stand

As shown in figure 1 below, consumers at the UC farm stand on March 8, 2020 identified as Asian, Black, Indigenous, Pacific Islander, Xicano, or White. A majority of consumers, 13 out of 26, identified as White. As shown by the pie graph, 48% of attendees identified as female and 26% identified as male. 19% of identified as Trans or Nonbinary, which is a relatively large amount.

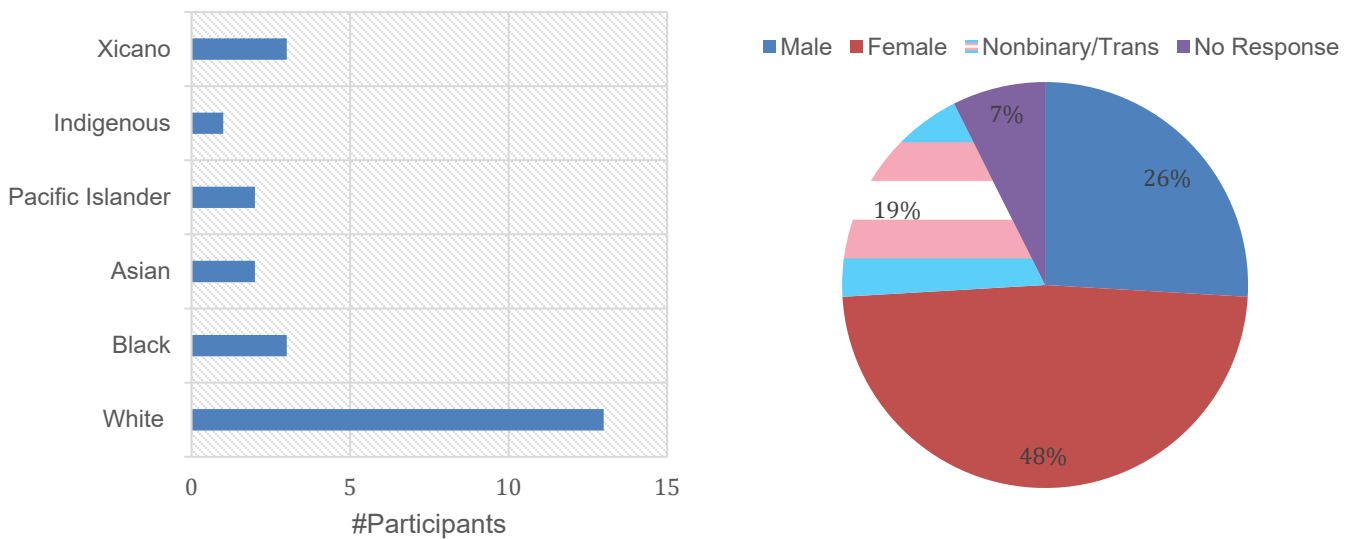


Figure 1. Ethnicities of Consumers at Farm Stand (left) and Gender Demographics of Consumers at Farm Stand (right). Participants self-reported their ethnicity and gender identity.

9 out of 26, or 35%, of consumers, reported to be low income. Out of the 9 people who were low income, only 5 experienced food insecurity. Moreover, 4 people who were above the low-income threshold, reported experiencing food insecurity as well. The pie charts show 67% of the low-income consumers were White, 22% were Black and 11% were Xicano.

Table 1. Low income household thresholds used in Farm Stand Survey. U.S. Census Data used to determine thresholds and overall survey designed by FFAR Team.

Household Size	Household Monthly Income
1	\$2658
2	\$3592
3	\$4,525
4	\$5,458
5	\$6,392
6	\$7,325
7	\$8,258
8	\$9,192

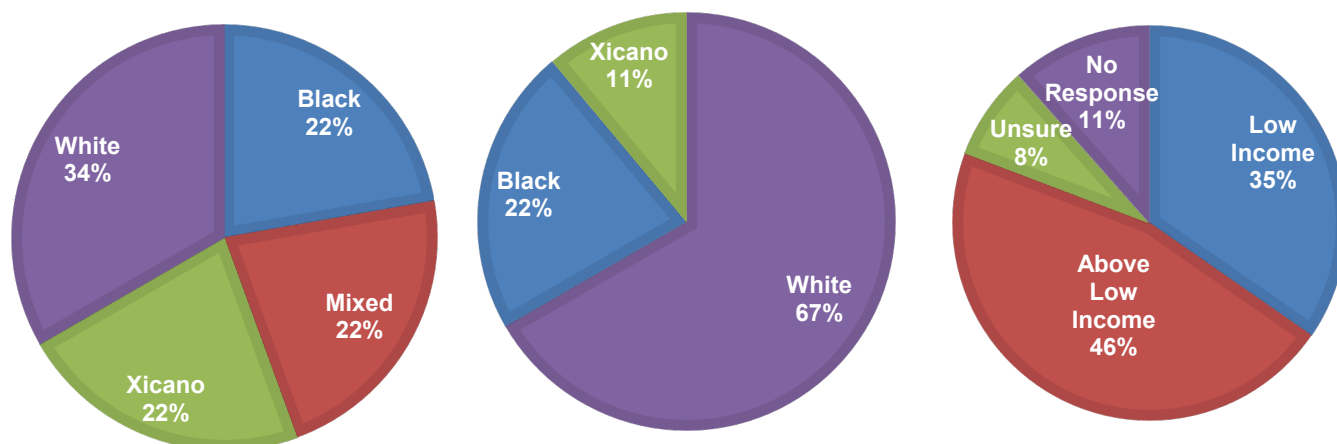


Figure 2. Ethnicities of Food Insecure Consumers (left), Ethnicities of Low-Income Consumers (middle), General Income of Consumers (right).

Most participants were willing to travel 10 to 30 minutes to the UC Gill Tract farm stand for its environmental benefits, food quality, and affordability of urban produce.

The “halo effect,” which is the conflation of urban grown produce with organic crops, is reinforced at the Gill Tract, since the urban farm does not use conventional pesticides, fungicides, or GMOs (Printezis et al), Consumers are generally attracted to these values and thus 18 participants marked food quality and environmental benefits as reasons for coming to the farm stand as shown in the bar graph below. The second most popular reasons were social justice and

affordability, which each had a total of 16 responses each. The least common reasons for coming to the farm stand were food selection, with four responses, and convenience, with eight responses.

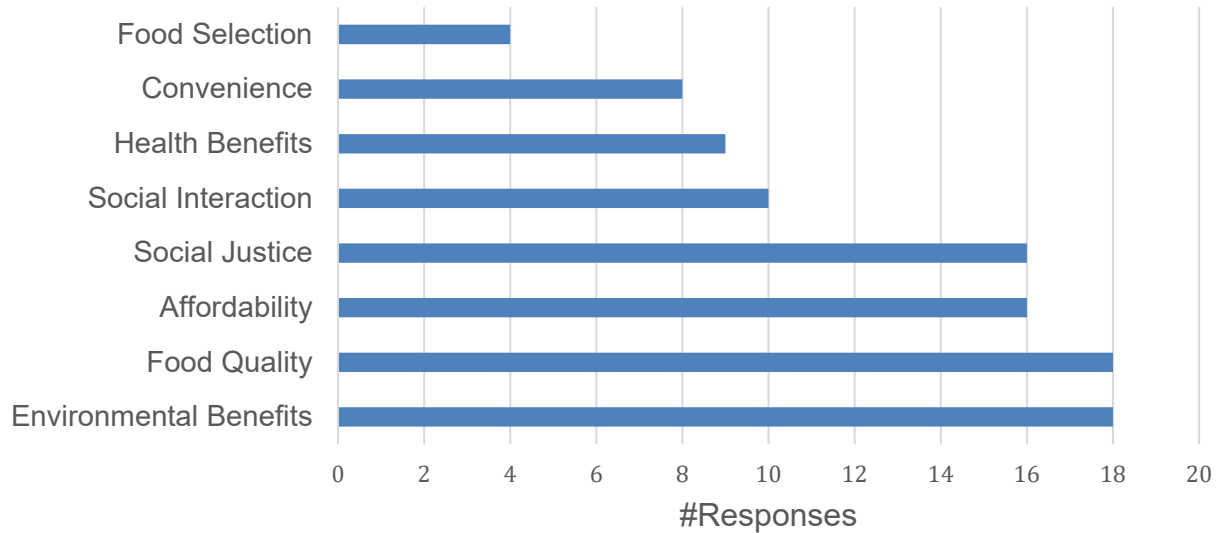


Figure 3. Reasons for coming to the urban farm stand.

The maps below display zip codes from each of the survey participants the UC Gill Tract Farm Stand (Figure 4). On March 8, 2020 people had come from all over Alameda county. The Sogorea Te Land Trust event may be the cause behind this wide geographic distribution of participants. The most common zip codes among all participants were 94704 and 94707. However, many of these people were coming to the farm for the first time. Long term participants came from the zip codes 94804, 94706, 94707, 94703 and 94602.

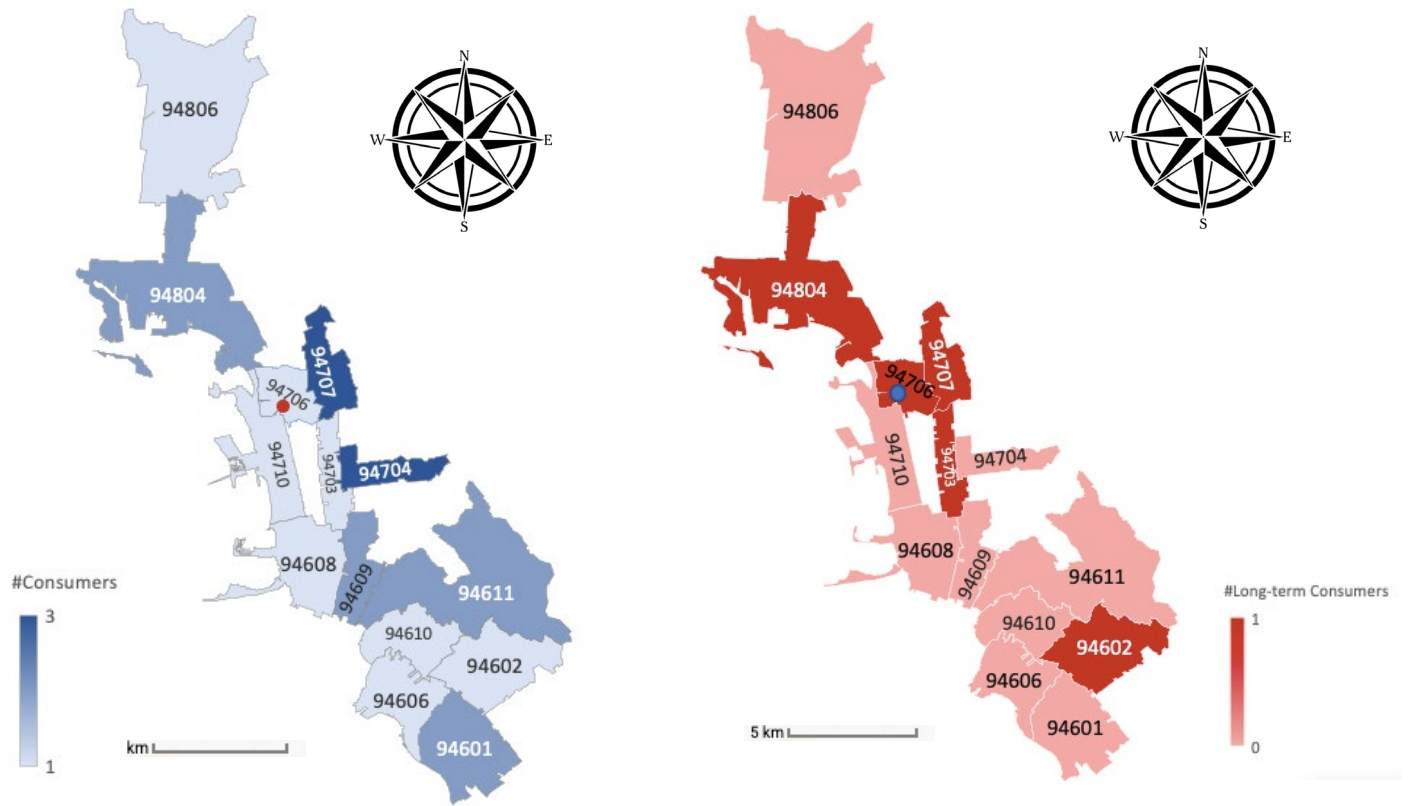


Figure 4. Zip Codes of UC Gill Tract Consumers (left), Zip Codes of Long-Term UC Gill Tract Consumers (right).

In fact, 52% of the participants were visiting the farm for the first time (Figure 5). Long term participants made up only 30% of the consumers at the Farm Stand.

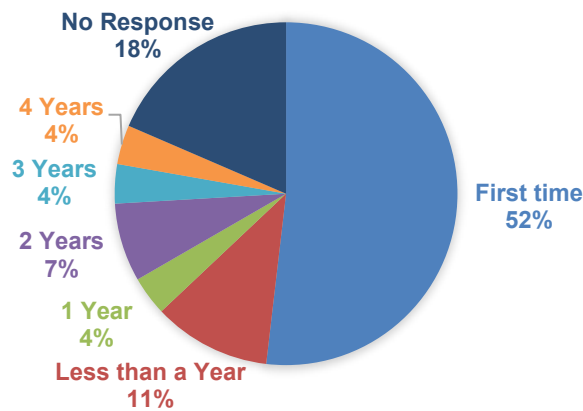


Figure 5. Responses to "How Long Have You Been Visiting the Farm Stand?"

The bar graph below on the left shows that 20 out of 26 total survey participants traveled by car. Other means of transportation like biking, taking the bus, or BART were less popular. The pie chart below on the right shows that a 45% of consumers were willing to travel 10-30 minutes to the Farm Stand. The second most frequent travel time was less than 10 minutes. One individual was willing to travel more than hour to the Gill Tract, but their primary motivation was to attend the Sogorea Te Land Trust ceremony and it was their first time at the Farm Stand.

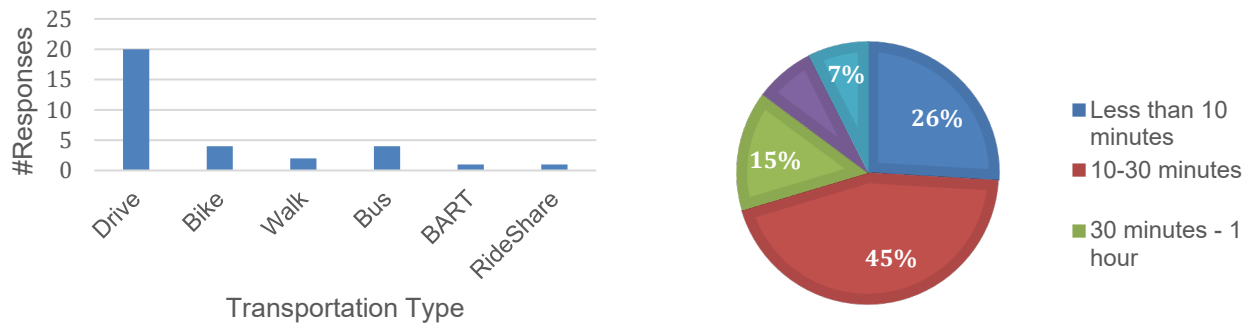


Figure 6. Mode of Transportation to Farm Stand (left), Travel Time to Farm Stand (right).

No long-term consumers were willing to travel more than an hour to the Gill Tract for urban produce. As shown by the graph below on the left, three out of seven long term participants travelled 10 to 30 minutes to get to the Farm Stand. Among the five individuals who are long term participants that also experience food insecurity, two people travelled 10 to 30 minutes and two people travelled 30 to 60 minutes, as shown by the graph below on the right.

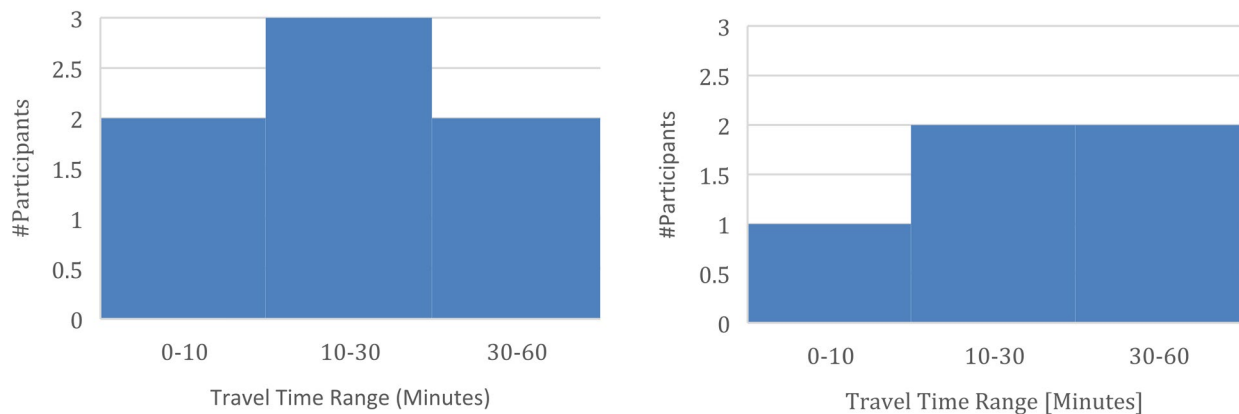


Figure 7. Travel Time among Long Term Participants (left), Travel Time among Food Insecure Long Term Participants.

Consumers of urban produce generally believe they waste little to no food they gather from the stand.

Five out of eight long term farm stand consumers reported they wasted none of the produce they gathered from the farm stand (Figure 8). Nine out of fourteen first time consumers believed they would waste none of the food they gathered from the farm stand.

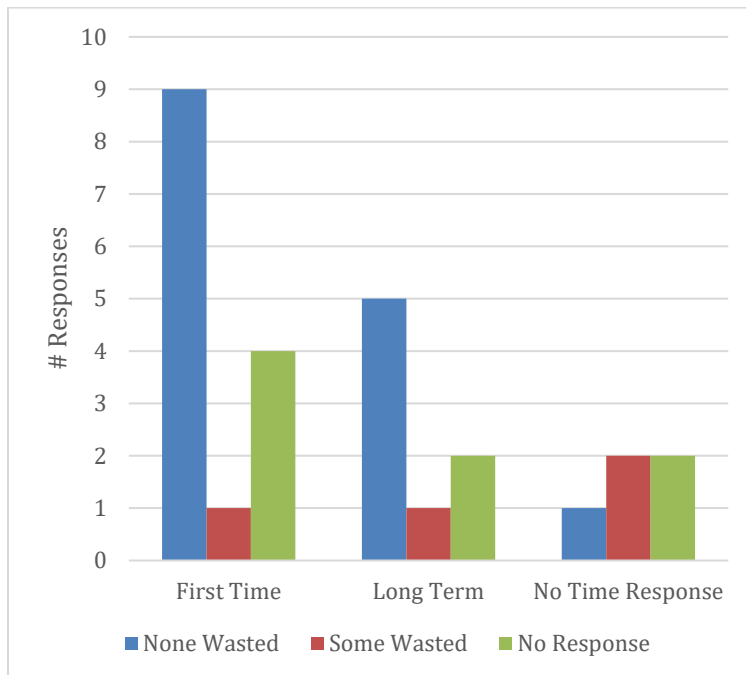


Figure 8. Perception of Personal Urban Produce Food Waste.

DISCUSSION

Data on consumer access and distribution are vital to reaching the environmental and social goals of urban farms. By understanding the consumers' demand, urban farming spaces such as the UC Gill Tract can better serve their target communities. The objective of this study was to conduct surveys to better understand consumer demographics of urban farm stands and perceived amount of urban produce food waste and use. We found the UC Gill Tract Farm Stand reached only a handful of low-income participants, and among those only a few experienced food insecurity. Due to the COVID-19 pandemic, data collection had to come to a halt, and thus the surveys were limited to one UC Gill Tract Farm. In this discussion, we will analyze the potential reasons behind these unexpected demographic results, compare the motivations for coming to the farm, deconstruct the perception of little to no urban food waste, and discuss the impacts of the experimental limitations.

UC Gill Tract Farm Stand is effective at reaching food insecure communities and people of color in large part due to grassroots organizing.

As stated in our results, only 9 out of 26 consumers accessing the UC Gill Tract Farm Stand were low income. This is about 34% of the consumers attending the farm stand. This may initially seem like a small handful, but according the UC census data, the low-income rate of Alameda County is roughly 9% ("U.S. Census Bureau QuickFacts: Alameda County, California" n.d.) Thus relatively, the Farm Stand is effective in reaching out to the local low-income communities. This makes sense, since the farm stand urban produce is distributed for free, asking consumers to donate only what they can afford.

Some consumers who had a higher income also experienced food insecurity. Given the high housing costs and living expenses of the Bay Area, this is not surprising. However, some of the participants who were below the low-income threshold did not report experiencing food insecurity. Food stamp programs, like Cal Fresh, which help communities pay for groceries may be the reason why some of these participants did not report experiencing food insecurity. For all participants, however, there may be an additional stigma associated with admitting food insecurity as a provider for a household (Schanes et al. 2018). From onsite observation, a majority of the people accessing the farm stand were parents and brought their families.

Overall, there was a relatively diverse group of folks accessing the UC Gill Tract Farm stand. Among the Farm Stand participants on this March 8, 2020, 8% identified as Asian, 11% identified as Black, 4% identified as Indigenous, 8% identified as Pacific Islander, 50% identified as White, and 11% identified as Xicano (Figure 9). According to the US Census predictions of Alameda County for 2018, 31% residents are Asian, 11% are Black, 1% are American Indian or Alaskan Native, 1% are Native Hawaiian or other Pacific Islander, 49% are White, 22% are Hispanic or Latino. These comparisons show that the Gill Tract Farm Stand was effective at reaching Black, Indigenous, Pacific Islander, and White communities, but had relatively low numbers of Asian and Xicano consumers. The high percentage of Indigenous folks can be attributed to the fact there was a Sogorea Te' Land Trust event that day to honor the indigenous land which attracted people from all over Alameda County and beyond. Moreover, UC Gill Tract's coalition and ongoing collaboration with Black Earth Farms perhaps contributes to the significant number of Black consumers entering and engaging with the space. Thus, coalitions among grassroots urban farming groups are crucial for proper outreach. More of this organizing is needed to include communities that are being less represented. For example, Asian American farming community is currently rather small, so it was predictable to see very few participants at the Farm Stand relative to census data ("U.S. Census Bureau QuickFacts: Alameda County, California" n.d.). However, Asian Americans, especially Southeast Asians, experience high rates of food insecurity (Becerra et al. 2018) Today urban farming is more crucial and relevant than ever to bring back this community's food sovereignty.

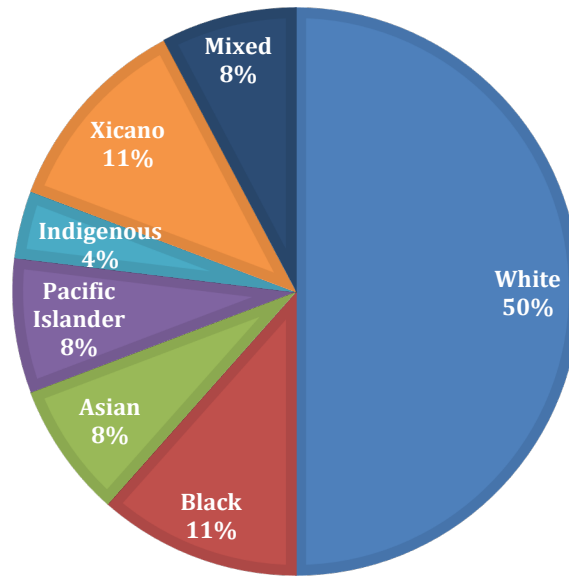


Figure 9. Ethnicities of Consumers at UC Gill Tract Farm Stand.

In America, geography is racialized (Hoover 2013). The UC Gill Tract is in a predominantly White neighborhood, hence the demographic results of the participants. How much more impact can these social justice urban farms have when they are built in areas that are predominantly “Black,” “Xicano,” or “Asian”? Many survey participants suggest having more urban farms like the Gill Tract throughout the Bay Area and beyond. Expansion of urban farms in accessible geographic locations is a vital step in radically reshaping the way food is produced, distributed, and consumed and reclaiming food sovereignty for marginalized communities.

Primary consumer motivations for coming to the farm are environmental benefits, food quality, affordability and social justice

Environmental Benefits

After informal discussion with a few of the Gill Tract volunteers, I found it is quite common for folks to be coming to the Farm Stand for the first time every week. In general, the people who accessed the stand left very positive comments for the urban farm and the community surrounding it. Most participants found the urban farm space and volunteers very welcoming. When asked to expand upon their reason for coming to the farm stand during follow-up phone interviews, long-

term farm stand consumers stated they value locally grown and organic produce. One interviewee was primarily driven by environmental benefits as he was very conscious of where his food came from and avoided produce that was shipped from thousands of miles away due to the carbon emissions associated with that. It's interesting to note that even though environmental benefit was among the top motivations for coming to the farm, 20 out of 26 consumers travelled to the farm stand by car. Most phone interviewees were unaware of the AC Transit Bus Stop that is right by the urban farm. Cars are still the most convenient mode of travel, and because of this people who value the environment will continue to drive, despite their carbon emissions. This discrepancy in environmental value and means of travel among Gill Tract emphasizes the need for more efficient, faster public transportation systems. In addition, there needs to be more awareness of the public transportation systems that already exist around the Gill Tract Farm Stand.

Food quality

Survey results displayed that food quality was a common reason for coming to Farm Stand. Moreover, every phone interviewee claimed that the vegetables from the Gill Tract tasted better than conventional produce. The urban farm heavily advertises its organic practices and local values, so these results are predictable. The only problem consumers seemed to have with the Farm Stand was the limited urban produce selection. Because the Gill Tract Farm Stand is volunteer run and donation based, it's understandably difficult to grow all the in season crops that regular consumers at the Farm Stand may want. When long term, regular consumers at the Farm Stand were asked how much of the urban produce contributed to their weekly grocery intake, they estimated an average of 20%. One interviewee stated that all her fresh greens come from the Farm Stand. Thus, with limited land space it may not be possible for social justice oriented urban farms to grow an industrial scale amount produce. However, urban farms like the Gill Tract serve a crucial role in providing a limited amount of fresh greens to local communities. The UC Gill Tract Farm Stand may not be large, but it is an irreplaceable resource for those involved.

Affordability

The UC Gill Tract requests consumers to donate only as much as they can afford for the produce, they take from the Farm Stand. The affordability of the produce aligns with the Gill Tract's vision for food sovereignty and mitigating food insecurity for vulnerable communities in need. However, these social justice goals are often in tension with capitalist realities (Brown et al. 2003). Volunteers are needed every week to run the Farm Stand and as a result of no one available, sometimes the Farm Stand is unexpectedly closed. In order to consistently distribute affordable urban produce, local farming education, a consistent volunteer base, and constant income of grant money is needed.

Social Justice

Urban farms like the Gill Tract play an important role in decolonizing land and bringing together folks to pay respects to the indigenous communities that continue to fight for their sovereignty of the land today. These spaces struggle as the Bay Area and other places across the nation become increasingly gentrified. Most interviewees stated urban farms like the Gill Tract are especially needed now during the COVID-19 pandemic, as large industrial scale farm scales produce less and continue to exploit undocumented food service workers.

Farm stand consumers are confident in producing little to no urban food waste, but more case studies are needed to analyze the accuracy of these claims.

A majority of the consumers at the farm stand believed they waste little to no urban produce. Folks who accessed the farm for the first time, claimed that they would waste none of the produce and had more confidence than long term consumers about using all the produce they gathered from the stand. This consumer perception is similar to previous studies on self-reported food waste (Wahlen 2017). The stigma associated with wasting food, especially from the urban farm may contribute to the high level of confidence consumers have in reporting little to no food waste. Whether or not this confidence is followed through at home is unknown, especially for the

first-time consumers at the urban farm stand. To compare these results to conventional food waste, more longitudinal observational research and case studies are needed with long term consumers.

Limitations

Due to the COVID-19 outbreak, data collection had to come to an early halt, and we were not allowed to collect anymore in person surveys for the safety of the community. Thus, the sample size is really small which may lead to statistical error.

Future Directions

Surveys at more urban produce distribution sites beyond UC Gill Tract would help better gauge the urban produce consumers in Berkeley. More in depth interviews with long term consumers may help gain a deeper understanding of the needs of local communities. More longitudinal studies with long term urban farm stand consumers are needed to gain more insight on accessibility and utilization of these resources. With more consumer knowledge, urban farms can become closer to their social goals of building community and food sovereignty for vulnerable communities.

Conclusion

Through this research we learned that engagement in UC Gill Tract Farm Stand is influenced by the accessibility of the farm, grassroots organizing, its geographic location, and its core values to provide local, organic produce and to decolonize indigenous land. Among social justice oriented urban farms in the Bay Area, more coalition building, and publicity is needed to protect and preserve these sites. The journey to food sovereignty may be long, but positive change for local communities in need can be made possible one urban farm at a time.

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APPENDIX A: FARM STAND SURVEY

Food Access Survey - Farm Stand Intercept

Q1 Invitation to Participate in Food Access Research Project

Dear Farm Stand Participant,

The Berkeley Food Institute seeks to better understand your experience accessing food from farm stands in order to strengthen food access in the East Bay and beyond.

The survey will take approximately 5 min to complete, and participation is completely voluntary. You have the right to decline to participate or stop the survey at any time without penalty. Any information gathered about you will be handled as confidentially as possible. At no point will your name or specific details be shared with anyone outside the research team unless explicit permission is given. If information from this research is published, your name and other personal information will not be used. There are no immediate direct benefits to you for participating in this survey, however we hope to produce policy relevant materials to meaningfully address food access challenges in your community.

If you have any questions about this research project, please contact Jennifer Sowerwine (jsowerwi@berkeley.edu) or Charisma Acey (charisma.acey@berkeley.edu). Should you have any concerns over your rights as a research subject, please contact the Office for the Protection of Human Subjects at UC Berkeley- subjects@berkeley.edu.

Statement by Person Agreeing to Participate in this Survey If you agree to take part in the research, please click on the “agree” button below and request a printed copy of the consent form from the researcher

Agree (1)

Disagree (2)

Q41 How long have you been coming to this farm stand? (Please describe)

Q24 How did you first hear about this farm stand? (Please describe)

Q25 Why do you come to the farm stand? (Please select top three)

- Affordability (4)
- Health benefits (5)
- Convenience (6)
- Environmental benefits (7)
- Social interaction (8)
- Social justice (9)
- Food selection (11)
- Food quality (13)
- Other (please describe) (12) _____

Q26 How do you get to the farm stand? (Check all that apply)

- Walk (1)
- Bike (2)
- Drive (3)
- Bus (4)
- BART (7)
- Ride Share (5)
- Other (please describe) (6) _____

Q28 How long does it take you to get to the farm stand? (Select one)

- Less than 10 minutes (1)
- 10-30 minutes (2)
- 30 minutes - 1 hour (3)
- More than 1 hour (4)

Q29 How often do you come to the farm stand to pick up food? (Select one)

- Multiple times each week (1)
- Once each week (3)
- Every other week (7)
- Once each month (4)
- Once every few months (5)
- Other (please describe) (6) _____

Q30 What do you typically do with the produce you get from the farm stand? (Select all that apply)

- Eat it myself or with my family (1)
- Share it with others (2)
- Deliver it to a shelter or food pantry (3)
- Other (please describe) (4) _____

Q42 How much of the food you receive from the farm stand goes to waste? (Select one)

- None of it (1)
- Some of it (2)
- Most of it (3)
- All of it (4)
- I don't know (5)

Q31 In addition to the farm stand, where else do you get fresh fruits and vegetables? (Select all that apply)

- Grocery store (1)
- Food Bank or food pantry (2)
- Farmers' Market (3)
- CSA box (Community Supported Agriculture delivery box) (4)
- Corner store (5)
- Other (please describe) (6) _____

Q43 How much of your fresh produce comes from the farm stand? (Select one)

- A little (1)
- Some (2)
- A lot (3)
- All of it (4)
- Other (5) _____

Q32 We'd like to collect some demographic information about who utilizes the farm stand. The following questions are about your identity and household income. This information will not be shared and will not affect your ability to participate in the farm stand.

What is your zip code? (Please describe)

Q33 What is your gender identity? (Please describe)

Q34 What is your racial/ethnic identity? (Please describe)

Does your household make more in monthly income than the amounts displayed below, based on household size? (Please select one)

Household Size	Household Monthly Income
1	\$2658
2	\$3592
3	\$4,525
4	\$5,458
5	\$6,392
6	\$7,325
7	\$8,258
8	\$9,192

Yes, I make more than the amount listed based on my household size (1)

No, I make less than the amount listed based on my household size (2)

Don't know (please describe) (3) _____

Q36 These next questions are about the food eaten in your household in the last 12 months, and whether you were able to afford the food you need.

Please select the response that best reflects your household's experience.

	Always True (1)	True (2)	Sometimes True (2)	Rarely True (3)	Never True (4)	Don't Know (5)
Within the past 12 months I/we worried whether our food would run out before we got money to buy more (2)						
Within the past 12 months the food I/we bought didn't last and we didn't have money to get more (3)						
I/we couldn't afford to eat balanced meals (4)						

Q37 Which of these statements best describes the food eaten in your household in the last 12 months? (Select one)

- Enough of the kinds of food we want to eat (1)
- Enough but not always the kinds of food we want (2)
- Sometimes not enough to eat (3)
- Often not enough to eat (4)
- Don't know (5)

Q38 Is there any additional information you'd like to share with us about your experience with the farm stand and/or accessing fresh, nutritious produce?

Q39

Would you be open to us following up with you to learn more about your experience with farm stands and food access? (Select all that apply)

- Open to interview (phone or in-person) (1)
- Open to focus group (in-person group discussion) (2)
- Not interested (3)

Q40 Please share your contact information below.

Name (1) _____

Phone Number (2) _____

Email Address (3) _____

Figure A1: Farm Stand Intercept Survey. This was designed by the FFAR Research Team. Survey printouts were distributed at the Farm Stand on Sunday March 8, 2020 from 2pm-5pm.