



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

Toward a justice approach to emergency food assistance and food waste: Exploring pantry–urban gardener partnerships in California’s Santa Clara County

Christopher M. Bacon,^{a*} Ava Gleicher,^b Emma McCurry,^c and Christopher McNeil^d
Santa Clara University

Submitted September 2, 2022 / Revised August 11, November 11, November 28, 2023, and February 16, 2024 /
Accepted February 19, 2024 / Published online April 25, 2024


Citation: Bacon, C. M., Gleicher, A., McCurry, E., & McNeil, C. (2024). Toward a justice approach to emergency food assistance and food waste: Exploring pantry–urban gardener partnerships in California’s Santa Clara County. *Journal of Agriculture, Food Systems, and Community Development*, 13(3), 177–198.
<https://doi.org/10.5304/jafscd.2024.133.017>

Copyright © 2024 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license

Abstract

The 60,000 food pantries in the United States are well known for charity-based emergency food assistance and edible food recovery, serving 53 million people in 2022 (Feeding America, 2023a). Thousands of urban gardens emphasize vegetable production and food justice, but lack strong con-

nections to food pantries. We explore how food pantries and urban gardens could partner to transform pantries into distribution sites that also become food justice education and organizing spaces. To assess this potential, we engaged in participatory action research with a leading social services provider that offers programs supporting both organized urban gardeners and a large urban food pantry in San Jose, California. We conducted and analyzed 21 interviews with food pantry volunteers and urban gardeners affiliated with the same

^{a*} *Corresponding author:* Christopher M. Bacon, Associate Professor of Environmental Studies, Department of Environmental Studies and Sciences, Santa Clara University; 500 El Camino Real; Santa Clara, CA 95053 USA; +1-408-551-3082;  <https://orcid.org/0000-0002-2534-6900>; cbacon@scu.edu

^b Ava Gleicher, Department of Environmental Studies and Sciences, Santa Clara University; 500 El Camino Real; Santa Clara, CA 95053 USA; agleicher2@fordham.edu

^c Emma McCurry, Department of Bioengineering, Santa Clara University; 500 El Camino Real; Santa Clara, CA 95053 USA; emmamadison417@gmail.com

^d Christopher McNeil, Center for Food Innovation and Entrepreneurship, Santa Clara University; 500 El Camino Real; Santa Clara, CA 95053 USA;  <https://orcid.org/0000-0002-9146-6601>; tofumcneil@gmail.com

Funding Disclosure

Thanks to the financial support from SCU’s Environmental Justice and Common Good Initiative, College of Arts and Sciences, Provost’s Office, and the Ignatian Center for Jesuit Education and to CalEPA’s Environmental Justice Small Grants program (Grant # G21-EJ-056) for supporting follow-up actions currently underway. Funding for the vermicomposting and training activities was also provided by the California Environmental Protection Agency’s Small Grants Program.

Author Note

This project was approved by Santa Clara University’s institutional review board (IRB.).

agency, and eight interviews with other urban gardeners and food pantry staff from external organizations. We found that while both food pantry volunteers and urban gardeners expressed concerns about increasing healthy food access and reducing food waste, pantry volunteers were often unfamiliar with food justice and uncomfortable talking about race and culturally rooted food preferences. These findings were similar with the informants from external organizations. To support urban gardener and food pantry volunteer collaboration, we developed a food justice approach to emergency food assistance and food waste management in which both groups co-create onsite vermicomposting infrastructure and partner with a university to design a training program focused on diversity, justice, and systemic change.

Keywords

food justice, food waste, food sovereignty, composting, urban gardening, urban agriculture, food pantry, emergency food assistance, climate change

Introduction

The U.S. industrialized food systems left approximately 34 million people food insecure in 2021, a number generated by measuring food security as a household-level economic and social condition of limited or uncertain access to adequate food (Coleman-Jensen et al., 2021; U.S. Department of Agriculture Economic Research Service, 2023). Food insecurity numbers would likely be higher based on our preferred, internationally accepted food security definition, from the 1996 World Food Summit, stating that it exists “when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” Economic, racial, and ethnic disparities exacerbate food injustices in the U.S., as low-income residents and communities of color, including Black, Latinx, and Native American communities, are more likely to be food insecure than wealthy and White residents. (Economic Research Service, 2023; Giraud et al., 2021).

Food waste is a problem not only in and of itself but also linked to food insecurity and related

injustices. More than a third of total agricultural production is wasted, a quarter of which is edible “surplus” food that is recoverable and could have been redistributed to help address hunger (ReFED, 2023). Furthermore, studies show that higher-income households produce more consumer food waste (Bräutigam et al., 2014; Yu & Jaenicke, 2020), most of which goes to landfills, accounting for 24% of the municipal solid waste stream in the U.S. (Krause et al., 2023, p. 13). Decomposing food waste emits methane, a potent greenhouse gas that accelerates the global climate crisis and its associated injustices (Casey et al., 2021). Moreover, populations living near landfills, potentially exposed to more air and water pollution, have lower average incomes and are more likely to be people of color (Cannon, 2020).

Food justice is “the right of communities everywhere to produce, process, distribute, access, and eat good food regardless of race, class, gender, ethnicity, citizenship, ability, religion, or community” (Horst et al., 2017, p. 279). Food justice also involves struggle against racism, exploitation, and oppression, as well as engagement with the systemic work to address the root causes of inequalities (Alkon & Guthman, 2017; Hislop, 2014, p. 24). The challenges associated with severe food insecurity, food waste, and equity gaps, are compounded by the fact that many small-scale farmers, farmworkers, restaurant workers, and other food system participants suffer from hunger, poverty, and marginalization because of structural injustices in modern food production, distribution, and consumption systems (Alattar, 2021; Bacon et al., 2014; Jayaraman & De Master, 2020). While these systemic problems call for transformative responses (Anderson & Leach, 2019; Marya & Patel, 2021), most food security funding in the U.S. has focused on important medium-term food access and antipoverty supports for low-income citizens, such as the Supplemental Nutrition Assistance Program (SNAP), and addressing emergency food needs through programs, such as the Temporary Emergency Food Assistance Program, that support the rapidly expanding private food assistance networks (Fisher, 2017).

Food pantries are one of the most important sites of access to emergency food assistance, and

they also play a key role in reducing surplus food through edible food recovery to be distributed to populations in need. More than 60,000 U.S. food pantries served 53 million people in 2022 (Feeding America, 2023a). Most food pantries are charities, dependent upon donations from large food retailers, government grants, and partnerships with powerful national regional food banks (Bacon & Baker, 2017). They are largely private nonprofit organizations managed by a broad range of churches, social service agencies, schools, and other institutions. Although many have paid staff, they heavily rely on volunteer labor (Bruckner et al., 2021).

Despite the good intentions of the food pantry operators, most people that need access to the free food report feelings of stigma, as receiving food aid is too often characterized as socially unacceptable; it is associated with shame and embarrassment for recipients (de Souza, 2019; Tims et al., 2021). Sustained critiques of the mainstream charity-based approach to private emergency food assistance (Poppendieck, 1999; Williams, 2022) and the rise of local and alternative food systems have spurred a small, but growing, number of food banks and food pantries to explore ways to engage local food systems, and, in some cases, the broader food justice approach (Dixon, 2015; Vitiello et al., 2015). This study aims to contribute to this latter effort by analyzing partnerships to foster a food pantry's transition toward food justice and sustainable food waste management.

We used a community-based participatory action research case study, conducted in collaboration with a food pantry and organized urban gardeners in California's Silicon Valley, to identify strategies for how food pantries and urban gardens could partner to advance food justice. Our integrative work contributes to the literature about food justice approaches to emergency food assistance, food recovery/food waste management, and urban agriculture. We focus on the possibilities for transforming food pantries into food justice spaces that simultaneously help meet basic food needs, sustainably manage food waste, and address racism and the structural causes of hunger. Specifically, we examine ways for a pantry and organized network of urban gardeners to partner with each other and

leverage a community-university partnership to achieve these goals.

Our team of university researchers partnered with Sacred Heart Community Service (SHCS) to conduct this action-oriented study. Located in the City of San Jose, California, SHCS is the designated social service provider in for the County of Santa Clara. SHCS is a robust nonprofit organization that aims to meet the basic food, housing, immigration, and security needs of marginalized populations in the county, while also building power with the same residents in need through a community-organizing approach that also aims to address systemic racism, and change policies to create a more just and sustainable society (Sacred Heart Community Service, 2021). Santa Clara County, a major agricultural production center in the 19th and 20th century, is now the geographic center of Silicon Valley (Diekmann et al., 2013). While the study area focuses on Santa Clara County, it also includes San Mateo County as together they constitute the South Bay Area. Studies that take into account the high cost of housing estimated that one in five residents of Santa Clara County of 1,870,945 were living in poverty and about 200,000 were food insecure before the intersection of the COVID-19 pandemic and uneven development exacerbated the situation, doubling food pantry visits to 500,000 people per month (Second Harvest, 2021; University of California Cooperative Extension, 2021; U.S. Census Bureau, 2022). During the pandemic and as our partnership developed, SHCS and other groups rapidly expanded their operations to help meet resident needs. Our team partnered with SHCS's Food Pantry and their organized urban gardener network, La Mesa Verde (LMV), a network of low-income home gardeners that offers materials and training for backyard gardens, food justice education, and leadership development training. While the SHCS Pantry focuses largely on emergency food assistance, reaching an estimated 25,000 individuals annually, LMV emphasizes access to fresh, culturally relevant produce. Figure 1 compares the two programs.

Because of potential tensions between the SHCS Food Pantry and LMV—tensions that generally exist between mainstream charity-dependent emergency food assistance networks and urban

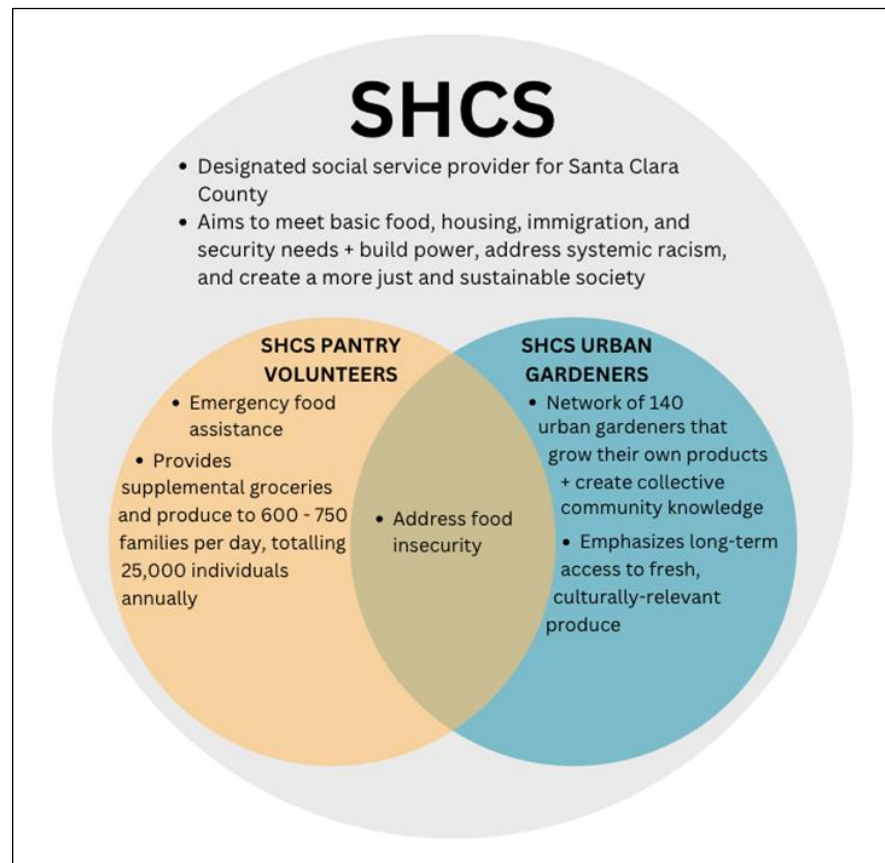
agriculture and food justice organizations (Gray et al., 2014)—our research team sought to understand several questions. Through our engagement with external pantries and urban gardeners, we sought to understand the extent to which qualitative differences identified between SHCS Pantry Volunteers and LMV Gardeners could be extrapolated to External Pantries and External Urban Gardeners in Silicon Valley. Our first question was, What are similarities and differences in the ways that SHCS-LMV Gardeners, SHCS Pantry Volunteers, External Pantry Staff, and External Urban Gardeners in the broader South Bay Area conceptualize and practice food justice? Second, What are the similarities and differences in the ways that they

approach food waste? The questions are designed to be action-oriented, centering the partnership between the research team and SHCS program staff. We explore how the SHCS Food Pantry could partner with SHCS-LMV Gardeners and leverage the community-university partnership to develop interventions that help transform the pantry into a food justice education and organizing space.

Literature Review

Our literature review begins with comparing mainstream and alternative food justice approaches to emergency food assistance. Then we discuss studies of urban gardens and food waste/recovery, highlighting each concept's interconnection with food justice and contending that these relationships remain underexplored, especially in relation to the potential role of food pantries. After explaining the food justice critique of emergency food assistance, we synthesize studies on urban agriculture and

Figure 1. Conceptual Diagram of Case Study Social Service Agency and Two Embedded Programs



food sovereignty with a focus on their roles in fostering food security, community, and autonomy. These terms are significant for food justice and systems change efforts and are relevant to this study, as we interviewed urban gardeners and pantry staff and volunteers about how they interpret their meaning. Next, we summarize several significant studies that analyze scale, environmental impact, and recent public policy developments related to food loss, waste, and recovery. The literature review offers important background for understanding trends of the mainstream emergency food assistance networks involved in these efforts and the potential of developing food justice approaches to food pantry food security and food waste management activities. For further analysis, we conducted a systematic search using bibliometric analysis and visualization software to assess co-occurrences and gaps among these terms, and to help generalize beyond this case.

Mainstream and Alternative Approaches to Emergency Food Assistance

Many agencies within the mainstream emergency food assistance system, working to connect food banks to food pantries, aim primarily at improving efficiency to meet rising demands under pressure from COVID, inflation, and gaps in government support. This approach relies on depending on an overburdened food system to produce “surplus” food, “while longer-term problems of hunger and environmental resource expenditure remain” (Cooks, 2021, p. 84). Mainstream food assistance programs generally measure success in tons of food distributed, individuals served, and food waste diverted from landfills, rely on corporate donations, and omit the community organizing and political work needed to address hunger’s root causes, such as poverty, racism, and structural food systems inequalities (Fisher, 2017). Although Feeding America’s national network of over 200 affiliated food banks that connect with over 50,000 pantries appears to be investing more resources into improving the quality, nutrition, and cultural appropriateness of food offered (Feeding America, 2023b), the vast majority of food banks and food pantries do not employ a food justice approach (Lohnes, 2021).

Fortunately, many community groups, farmers, and a small—but growing—number of policy-makers and food banks have developed a wide range of mutual-aid, community-based, and other alternatives that aim to address hunger, while also centering food and racial justice (Alkon & Guthman 2017; Fisher 2017; Hammelman et al., 2020; Spring et al., 2022; Vitiello et al., 2015). For example, Boston’s food solidarity economy movement consists of nonprofits, social enterprises, and cooperatives that produce, cook, distribute, consume, and compost through strategies that include sharing common land and kitchens and building intercultural and cross-class alliances (Loh & Agyeman, 2019). However, only a few food justice studies start their analysis with strategies that engage the mainstream food assistance and food recovery and waste management systems (Cloke et al., 2016; Lohnes, 2021). Research examining food pantries as spaces for advancing food justice, such as an analysis of how narrative strategies could help

transform pantry volunteers into advocates (Dixon, 2015), is rare, as are studies focused on pantry sustainability and innovation (Hecht & Neff, 2019; Sewald et al., 2018).

Urban Gardeners, Food Justice, and Food Sovereignty

In contrast to food waste studies, which often lack a food justice framework, researchers have documented how many farmers and advocates use urban agriculture to advance food justice, community, well-being, environmental sustainability, closer producer-consumer relations, and fresh produce access (Diekmann et al., 2020; Lin et al., 2015). Urban agriculture (UA) involves producing, distributing, and marketing food in cities and their edge regions, a wide diversity of activities that can include collective, individual, and rooftop gardening, intensive urban farms, community-supported agriculture, and food production in metropolitan greenbelts (Singer et al., 2020). While some forms of UA can address several barriers to food system equity and food justice by producing food that helps close equity gaps in food access and dietary diversity (Poulsen, 2017), UA generally does not produce sufficient food to eliminate food insecurity (Diekmann et al., 2020). Beyond food production, some forms of civic UA (an approach that prioritizes building more inclusive, locally based social relations, conserving local ecologies, and community engagement over profit maximization [Poulsen, 2017]), offer participants an opportunity to improve their health and develop new skills, cultivate community, support local environmental sustainability, and enhance cultural heritage (Guitart, 2012; Kingsley et al., 2022). Still, urban agriculture alone “cannot resolve many of the fundamental causes of food injustice” (Horst et al., 2017, pp. 277–278), especially because it is generally more accessible to wealthy White communities (Bellemare & Dusoruth, 2020).

A growing number of organized urban gardening efforts claim to be motivated by both food justice and food sovereignty (Block et al. 2012; Bowness & Whittman, 2021). Food sovereignty is the “right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to

define their own food and agriculture systems” (World Forum for Food Sovereignty, 2007, p. 1). This term emerges from a long tradition of farmer organizing in the Global South, and, like food justice, is also shaped through sustained engagement connecting farmers, social movement leaders, scholars, and, increasingly, policy makers (Marya & Patel, 2021). The concept emphasizes autonomy, self-determination, and self-governance (Patel, 2009). Noll and Murdock assert that movements rooted in food sovereignty view food not just as a commodity, but as something intertwined with identity, culture, politics, and place (2019, p. 4). As such, food sovereignty projects must be designed by those they serve and built upon existing community strengths, local ecologies, and partnerships. Although food sovereignty has strong roots among organized small-scale farmers and farm workers in the Global South, the ideas and practices also inform urban agriculture, gardening, and food justice in the Global North, including wealthy cities in the U.S., Canada, and Europe (Bowness & Whittman, 2021). For example, community members in a food swamp (an area characterized by an over-allocation of unhealthy food places like fast food restaurants, convenience stores, liquor stores, etc.) in Winnipeg, Canada built community and agency through the West Broadway Community Organization, which features programs such as “community gardens, Farmer’s Markets, good food boxes and local farm field trips” (Tursunova, 2020, p. 102). Like food justice movements, food sovereignty movements see fundamental structural changes as essential to reducing food and nutrition-related disparities, arguing that lasting food security is impossible without first building food sovereignty (Carney, 2012). With few exceptions, however—including a study proposing indicators for urban food sovereignty (García-Sempere et al., 2019)—in our targeted review we found very few urban food sovereignty studies that engaged food waste and edible food recovery.

Scholars have also used food justice frameworks to critique exclusivity and White leadership in some UA efforts (Hoover, 2013), critically examine the political-economic context and the types of human subjectivity produced within organized community garden projects (Pudup, 2008), and

demonstrate how some UA projects, including community gardens, can undermine the local food justice outcomes they claim to promote, as well as driving up property values and exacerbating gentrification (Alkon & Guthman, 2017; McClintock et al., 2018). In response, critical scholars and advocates continue to develop strategies to mitigate the unintended consequences that UA and food justice projects can produce (Alkon et al., 2019). Despite a few important recent studies (Furness & Gallaher, 2018; Tims et al., 2021), we found that studies examining partnerships between organized urban gardeners and mainstream emergency food assistance operations remain underdeveloped.

Food Waste, Food Recovery and Environmental Impacts

The significant scale of food losses and waste illustrates the inefficiencies, excessive environmental costs, and persistent injustices in the dominant food system. Globally, food loss and waste account for more than one-third of food produced (Food and Agriculture Organization of the United Nations [FAO], 2019). Food loss is more common in low-income countries and occurs when it becomes unfit for human consumption due to pests, extreme weather, or spoilage, while food waste, more common in higher-income countries, occurs when food is discarded that is still fit for human consumption (Hanson et al., 2016; United Nations Environment Programme, 2021). In the U.S., 91 million tons of surplus food or about 38% of total production, roughly equal to 141 billion meals, went unsold or uneaten in 2021 (ReFED, 2023). Of this, 36% was landfilled, 18% composted, 14% not harvested, and only 2% donated (ReFED 2023). Sectors contributing to food loss and waste include residential (48%), consumer-facing businesses (20%), farms (17%), and manufacturing (14%) (ReFED 2023). A prioritized set of strategies to reduce food loss and waste would emphasize prevention, edible food recovery and redistribution, composting and recycling, and improved coordination across ecosystems, farms, food banks, food pantries, restaurants, groceries, and government agencies (Broad Lieb et al., 2022; Mourad, 2016). The largest private emergency food assistance agencies in the U.S. have positioned them-

selves as leaders in developing strategies to address food loss and waste (Lohnes, 2021). Indeed, increasing food recovery and redistribution are a civic priority, not only to help alleviate food insecurity but to benefit the environment by diminishing climate change emissions associated with food decomposition in landfills and saving trillions of gallons of irrigation water.

Government policy can play an important role in setting goals, offering incentives, adjusting regulations, and supporting food loss and waste prevention and recovery (Broad Lieb et al., 2022). The federal government recently set a goal of reducing food loss and waste by 50% by 2030, and in 2016 California passed S.B. 1383, which aims to reduce the amount of organic material—largely food waste—entering landfills by 75% by 2025 (CalRecycle, n.d.). S.B. 1383 also aims to recover 20% of disposed food for human consumption, suggesting that food pantries could experience an influx of recovered food (Chiarella et al., 2023). These policies will significantly increase food recovery flowing to pantries. While most of the recovered food should be useful for meeting the increasing demand for emergency food assistance, the quality of the recovered food is inconsistent, and pantries will likely generate more food waste even as S.B. 1383 extends to regulate pantries. This will further spur pantries to invest in food waste management strategies, such as on-site composting.

Systematic Search: Food Pantries, Food Justice, Food Waste, and Urban Agriculture

To complement the targeted literature review, we conducted a systematic search for keywords using the Web of Science Core Collection to download titles and abstracts from articles published in the last decade. The search yielded 1,408 peer-reviewed articles. The data was imported into VOSviewer,¹ a program for bibliographic mapping that clusters key terms in the literature by frequency counts and relationships of the words in titles and abstracts, to generate a visual representation of their connectedness. The structure of co-occurrence suggests strengths and gaps in relationships among concepts of interest. We selected the 200 most relevant

terms according to the VOSviewer relevance score, and hand-removed terms related to research methods and words commonly used in academic writing (e.g., lens, critique, baseline).

The result shown in Figure 2 is a representation of our search that illustrates the gaps in the literature linking food pantries, urban gardens, and food justice (e.g., the fact that each is essentially about food, illustrated in the figure by the terms “vegetable” and “fruit”). However, beyond these shared terms, food pantries, urban gardening, and food justice are each largely relegated to their own sphere, suggesting that each approach to shifting the food system is siloed. The physical distance between clusters of interrelated terms is represented in Figure 2 in blue, green, and red. The red cluster contains terms like “food pantry,” “assistance,” “food stamps” and “food bank” (e.g., charity-based food assistance), while the more interconnected blue and green clusters contain terms like “diversity,” “innovation,” “movement,” “equity,” and “sovereignty” (e.g., food justice/food system change and urban gardening, respectively). We contend that the lack of connections between the red cluster and blue/green clusters represents a lost opportunity to develop a food justice approach to food pantries.

Methods

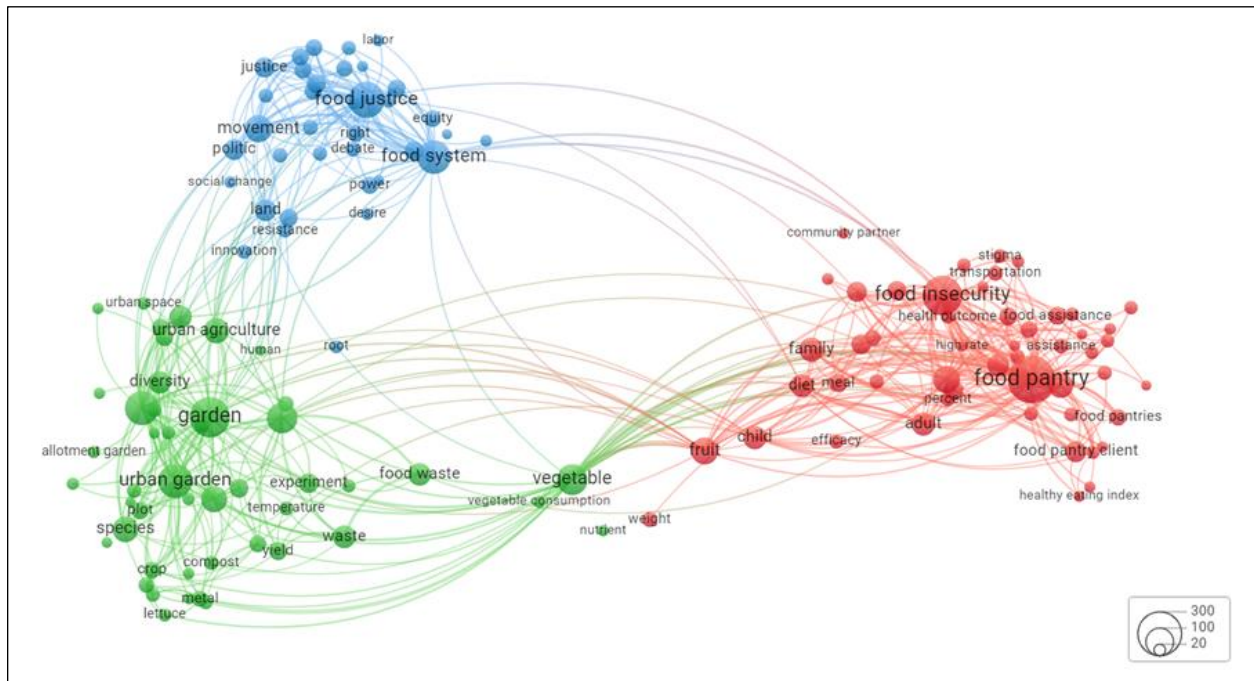
After sharing additional details about the key community-based partner organization and our study area, we explain our community-based participatory action research approach and describe how we used mixed methods to answer the research questions.

Community-Based Partner and Study Location

Sacred Heart Community Service (SHCS) aims to help fill basic needs gaps by providing essential services to low-income residents, ranging from support for utility bills, housing, and immigrant rights, to emergency food assistance through the SHCS Pantry, which served over 25,000 people in 2021. As part of their mission to increase food security and self-sufficiency, SHCS includes the SHCS-LMV Garden, which started as an independent

¹ <https://www.vosviewer.com/>

Figure 2. Visualization of Key Terms in Existing Literature on Food Justice, Food Pantries, and Urban Gardening, from Web of Science and Displayed Using VOSviewer*



Note: Interact with Figure 2 data online at https://app.vosviewer.com/?json=https://drive.google.com/uc?id=1_M1eVv_rvMVUX-esHvM_oBwHaDmGV060

* Note on figure production: Using Web of Science, we searched the literature using the following query: All Fields: “food pantry” OR “food pantries” OR “food justice” OR “urban gardening” OR “urban garden” OR “food waste” AND Publication Date: 2013-01-01 to 2023-04-01.

grassroots organization in 2009 (Gray et al., 2014; Diekmann et al., 2020). The SHCS-LMV Garden currently serves about 180 urban backyard gardeners, recruits 50–75 new gardeners annually, and includes a 600-household alumni network. (There are hundreds of community gardens in the Bay Area, including 42 reported by the San Francisco Recreation and Park Department and 20 reported by the City of San Jose (City of San Jose, n.d.; San Francisco Recreation & Parks, n.d.). The SHCS-LMV Gardeners network features frequent workshops where members learn about food justice and food security through examples and case studies, urban agriculture policies, organic agriculture, and how to employ these concepts practically in their lives and gardening practices (Gray et al., 2014). These workshops are often interactive and community-based, allowing SHCS-LMV Gardeners to meet their fellow community members—learning, growing, and developing a food justice framework together, organizing and creating power in their

shared interests and community connections. In contrast, the SHCS Pantry Volunteers had not participated in educational workshops that engage food justice, nor do they have a similar learning and organizing space within SHCS.

Our study area, Santa Clara County (SCC), is home to a racially and ethnically diverse population that in 2022 was 41.4% Asian, 28.30% White, 24.70% Hispanic or Latino, 2.9% African American, 1.20% American Indian and Alaska Native, and 4.3% indicating that they were of two or more races (for the U.S. Census, Hispanics may be of any race, so they also are included in both the two or more race and Hispanic or Latino categories; U.S. Census, 2022). The county is also characterized by a high median household income of US\$140,000, home value of US\$1,013,000, and very high rents (Data USA, 2022). In addition to being among the most affluent regions in the world, Silicon Valley, the majority of which is within the jurisdiction of the county of Santa

Clara, but also includes the smaller San Mateo and San Francisco Counties, also has some of the U.S.A.'s highest levels of inequality (Pellow & Park, 2002; Bacon & Baker, 2017). The poverty rate using the Federal Poverty line, is only about 5%, but by the Self-Sufficiency Standard, which defines the amount of income necessary to meet basic needs without public subsidies or private and/or informal assistance, the rate stands at 28% (Joint Venture, 2023). As with other indicators of wealth and human health, there are troubling racial and ethnic and economic disparities in hunger across the Bay Area, which were exacerbated during COVID-19; a UCSF study found a sharp rise in food insecurity among Latinx households during the first part of pandemic (Escobar et al., 2021).

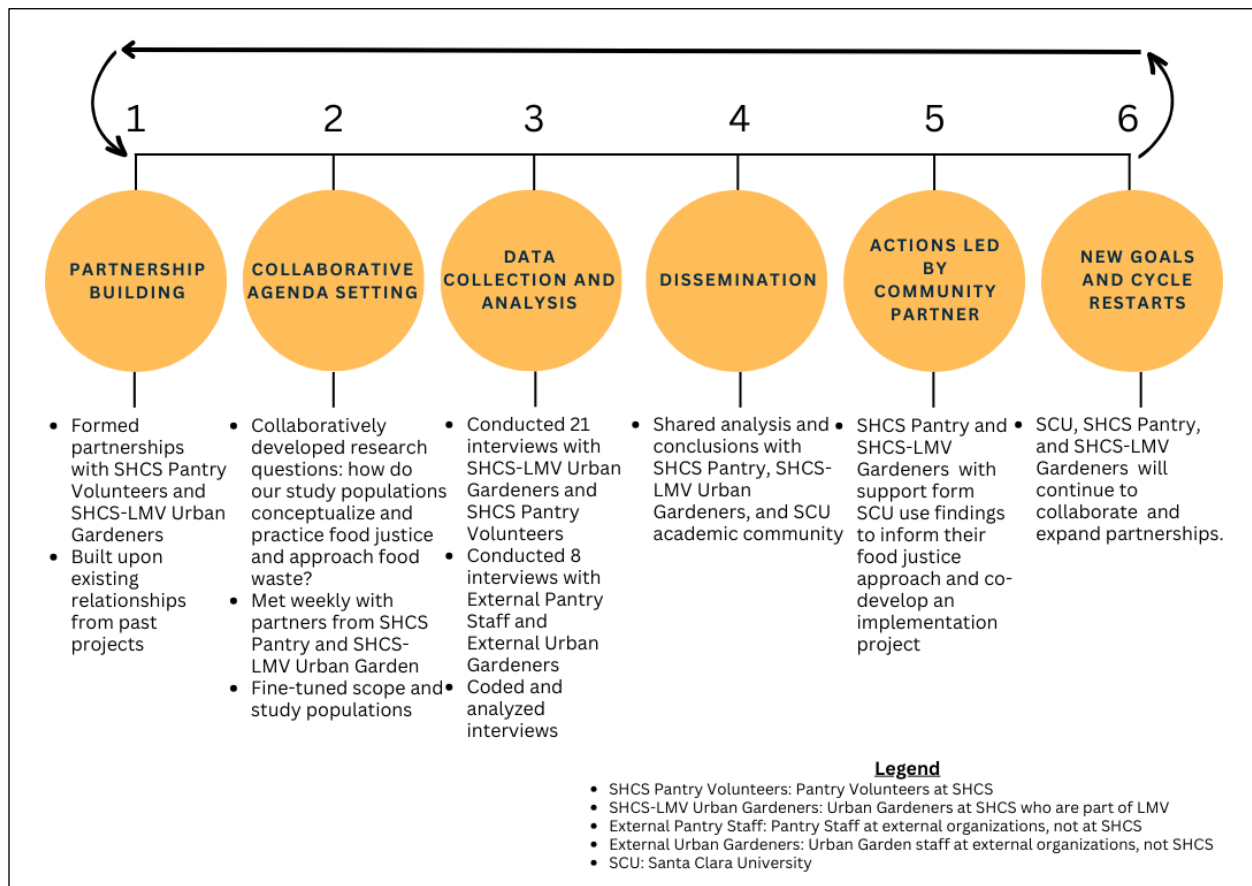
Community-Based Participatory Action Research Project

This research is informed by a community-based participatory action research (CB-PAR) approach, which starts with establishing a community-university partnership that recognizes power and resource-access inequalities, commits to reciprocity, and negotiates mutual goals for a project (e.g., program improvement and student learning) (Maiter et al., 2008). It is also an exploratory case study (Yin, 2012) about the starting points, process, and potential benefits emerging from a partnership linking a food pantry, urban gardening network, and university (Porter, 2018). This sort of collaboration challenges traditional top-down models of knowledge production, while encouraging researchers to include diverse perspectives (Tremblay, 2018). CB-PAR and allied action research approaches are particularly useful for research involving marginalized populations and community-based food justice organizations, as they emphasize tangible improvements while creating respectful and mutually beneficial relationships between researchers and community-based partners (Porter, 2018). Like other forms of participatory research, CB-PAR is challenging in practice, but we have worked to listen deeply, show up for SHCS and SHCS-LMV events, and support student interns working directly for the program. These additional steps underscore why CB-PAR

takes more time than applied work and requires ongoing critical reflection and dialogue to help the research team remain accountable to partners (Mendez et al., 2017; Tremblay, 2018).

CB-PAR projects traditionally operate in a cyclical and iterative manner, as shown by Figure 3, which presents our study activities within a CB-PAR cycle (Balazs & Morello-Frosch, 2013). First, partnership with the SHCS-LMV Garden and the SHCS Pantry emerged from a decade of collaboration with Santa Clara University. The lead author has worked with SHCS-LMV since 2012 through a range of activities, including partnering with them as community-based mentors for multiple 11-week intensive interdisciplinary undergraduate student projects addressing food justice themes as part of a Environmental Studies and Sciences capstone class, co-organizing a workshop in March of 2020 that helped launch a South Bay Area coalition of food justice organizations, and through many volunteer days with LMV Hardeners and in the Pantry. Next, we collected and analyzed data with a shared agenda in mind and disseminated the information to our community-based partners. Following analysis and dissemination, the SHCS-LMV program and SHCS Pantry plan to utilize the data and materials to inform training and change strategies within the SHCS Pantry and support the cross-training effort linking SHCS-LMV Gardeners and SHCS Pantry Volunteers and staff. Then the cycle will restart (Figure 3).

To address the aforementioned research questions, our team collaborated with the SHCS-LMV Garden and SHCS Pantry to design a semi-structured interview guide (Merriam & Tisdell, 2015). The guide included several brief short-answer questions and longer open-ended questions about experiences at SHCS Pantry and with the SHCS-LMV Garden program. After the introductions and informed consent process, the questions also addressed experiences with food pantries and/or urban agriculture, duration and type of engagement with SHCS, current and past experiences with food waste reduction activities, interpretations and definitions of food justice, and perspectives about the extent to which interviewees see relationships linking food justice, racial justice, and food waste. We were especially interested in under-

Figure 3. Diagram of Community-Based Participatory Action Research (CB-PAR) Cycle and Project Activities

Source: Updated and modified to include project-specific activities from Balazs & Morello-Frosch, 2013.

standing how their past experiences and cultural identities influence their approaches to food justice and engagement with SHCS. After the interviews with SHCS Pantry Volunteers and SHCS-LMV Gardeners, we sent a short demographic survey, asking standardized questions modeled after the U.S. Census about racial and ethnic identity, as well as gender and income. We did not send the demographic survey to External Pantry Staff or External Gardeners: we interviewed only one person per organization and wanted to avoid deductive disclosure, which could be possible in the case of smaller organizations with few employees.

We conducted the research in two phases. We interviewed 13 SHCS-LMV Gardeners and eight SHCS Pantry Volunteers, totaling 21 interviews. We worked with the SHCS coordinators and managers for LMV and the Pantry to help recruit

participants for this convenience sample who had been involved with LMV for at least three years and had been regular Pantry volunteers for at least one year. We then relied on suggestions from staff members at the SHCS Pantry and SHCS-LMV Garden to recruit interviewees at five External Food Pantries and three External Urban Gardens in the South Bay, totaling eight interviews at the organization level. We interviewed at the individual level (with SHCS Pantry Volunteers and SHCS-LMV Gardeners) and organizational level (with External Pantry Staff and External Urban Gardeners) to understand whether our first phase of results at the individual level were particularized to SHCS or whether they could be extrapolated to pantries and urban gardens more generally. All interviews were conducted one-on-one. Table 1 compares demographic data across the SHCS

research participants: more Pantry Volunteers self-identified as White or Asian/Pacific Islander and tended to have higher household incomes than the SHCS-LMV Gardeners, who were largely Hispanic/Latino, White, or multiracial, and tended to have lower household incomes.

Our research team conducted interviews May–September 2021 and February–April 2022. SHCS Pantry and SHCS-LMV Garden staff helped recruit all interview participants: they suggested External Pantries and External Urban Gardens, and SHCS-LMV Gardeners and SHCS Pantry Volunteers based on those that had been involved with the respective organization longer. We contacted interviewees via email to link them with the members of the research team. Our team conducted these 25- to 75-minute interviews on Zoom in both Spanish and English depending on interviewee preference. We recorded, transcribed, translated, and then anonymized the transcripts. We identified the interview transcripts by respondent affiliation to SHCS

(Pantry vs. Gardeners) and organization (SHCS/SHCS-LMV or External).

Following Saldaña (2013), we used an inductive coding process that began with reading transcripts and identifying the most frequently occurring codes. After most key ideas started repeating, we concluded that we had reached a saturation point at the individual level with SHCS. Given the relatively small sample, we used documents and spreadsheets to coordinate the coding process across the team members. We identified quotes that illustrated major themes and findings. We shared preliminary findings with SHCS and LMV staff and received feedback before presenting these findings.

Finally, after the manuscript entered the review process, we began co-implementing the food justice workshops with SHCS Pantry Volunteers and SHCS-LMV Gardeners. Our research team took detailed notes during them and asked several SHCS Pantry Volunteers and SHCS-LMV Gardeners to submit testimonies about their experiences with food justice, food waste, and food security in the context of the workshops. Although we did not code this transcript as part of the analysis, we cite a testimony in our discussion, as an update to this work and an illustration of the efforts and challenges to integrate approaches across these areas.

Results

We begin by showing a comparative analysis of the different interpretations of food justice that emerged from our analysis of interview transcripts with both SCHC food pantry volunteers and SHCS gardeners (Table 2), and then assess the degree that these findings hold for the interviews conducted with external pantry staff and external urban gardeners (Table 3). We continue by developing a similar analysis contrasting how these same four groups approach food waste.

Contrasting Definitions of Food Justice: SHCS Pantry Volunteers and Gardeners

Four of the eight SHCS Pantry Volunteers were unfamiliar with food justice or could not provide a meaningful definition—or any definition—of the term. Those who could provide a definition agreed

Table 1. Sacred Heart Community Service-La Mesa Verde (SHCS-LMV) Gardeners' and Pantry Volunteers' Demographic Data

| | SHCS-LMV Gardeners (n = 13) | SHCS Pantry Volunteers (n = 8) |
|--|-----------------------------------|--------------------------------------|
| Gender | | |
| Male | 3 | 5 |
| Female | 10 | 3 |
| Race/Ethnicity | | |
| White | 4 | 5 |
| Asian/Pacific Islander | 0 | 3 |
| Hispanic or Latino | 7 | 0 |
| Multiracial | 2 | 0 |
| Household Income in Past 12 Months (US\$) | | |
| \$5,000–\$34,999 | 4 | 0 |
| \$35,000–\$49,999 | 4 | 0 |
| \$50,000–\$99,999 | 2 | 2 |
| \$100,000–\$149,999 | 0 | 2 |
| \$150,000–\$199,999 | 0 | 2 |
| Over \$200,000 | 1 | 1 |
| Other | 2 | 1 |

Sources: 2021 and 2022 interviews.

upon a simplistic one: everyone should have access to nutritious food. An Asian/Pacific Islander female SHCS Pantry Volunteer added more nuance, noting that everyone should have access to nutritious food “not based on their economic, racial or demographic area, region or part of the world.” Overall, SHCS Pantry Volunteers either had a limited understanding of food justice or were not at all familiar with the concept.

SHCS-LMV Gardeners were all familiar with food justice; each contributed nuanced and diverse definitions. SHCS-LMV Gardeners’ reflections on food justice yielded three significant themes. Four SHCS-LMV Gardeners emphasized food justice as a *right*, which none of the SHCS Pantry Volunteers mentioned. Four Gardeners cited gardening and access to land as part of their definitions of food justice. For these members, food justice expands

Table 2. Sacred Heart Community Service (SHCS) Pantry Volunteers’ and SHCS-La Mesa Verde (LMV) Gardeners’ Definitions of Food Justice

| | Definitions of Food Justice |
|-------------------------------|--|
| SHCS Pantry Volunteers | <ul style="list-style-type: none"> • “I think people should be able to have sufficient food to live comfortably. ... That doesn’t necessarily mean that they have to have filet mignon every day, but it does mean they should have sufficient food to meet basic nutritional needs.” (White male) • “I don’t think I can give that a really good answer ... because I haven’t heard or read anything about it.” (White male) • “Equal access to good food. ... I haven’t been a victim of not being able to get food.” (White male) • “I’m not sure I would know how to define that. Maybe food that was of, you know, average to good quality, you know, so that people are able to consume it.” (Asian/Pacific Islander female) |
| SHCS-LMV Gardeners | <ul style="list-style-type: none"> • “I mean, it’s food for all, right?” (White female) • “We all have the right to have these affordable foods.” (Latinx female) • “I didn’t know this concept of food justice until I became a part of [the SHCS-LMV Garden]. The first time they showed it in a workshop, to me it was very eye-opening how even the produce that comes from the soil is very politicized.” (Latinx female) • “Food justice would be like we could all have the opportunity to grow our own vegetables.” (Latinx female) • “That’s a big thing, you know, keeping accessibility to food, the quality of food, the quality of food being equal to all.” (Latinx female) • “It’s about talking about justice. It’s talking about rights and laws so for me food justice also includes workers. From the workers to the consumer. And it is a process.” (Multiracial female) |

Table 3. External Pantry Staffs’ and External Urban Gardeners’ Definitions of Food Justice

| | Definitions of Food Justice |
|---------------------------------|---|
| External Pantry Staff | <ul style="list-style-type: none"> • “I don’t really know the movement well. I think we do a lot of what the stuff that I read is talking about, but I’m not so familiar with it.” • “I would define [food justice] like just dignity. Feasible for us is dignity. Dignity because people in need can be provided with dignity that food that they need.” • “Food justice? ... Really, the first time I heard that term was in your email.” • “Food justice is food insecurity in simple terms.” • “So, I’m tangentially familiar with the idea of food justice. I’m not an expert.” |
| External Urban Gardeners | <ul style="list-style-type: none"> • “I would define food justice as providing equity and access to everybody. ... Food justice means that every human being, for the sake of being a human being has the right to safe, secure, and nutritious food, and we are all responsible in making sure that that is upheld.” • “I think it has to do with not just accessibility to food, but sustainability within that and also sovereignty over food systems and in communities.” • “I feel like food sovereignty takes [food justice] a step further, which I really like in the sense that you are sovereign in this. ... And beyond just picking like your own vegetables, but maybe it’s that you have a say in how your food system is structured.” |

Sources: 2021 and 2022 interviews.

beyond access to food to include sovereignty over what is grown and eaten. Third, SHCS-LMV Gardeners noted the importance of high quality, organic, culturally relevant food for food justice, beyond mere access to food. Two SHCS-LMV Gardeners' definitions of food justice that included both food *production* and food *consumption* (Table 2). Both Gardeners noted inequality in food production systems; one White LMV-SHCS Gardener said, "I think farm workers are just treated so bad. Like, we do not respect—at all—the work that they do. They're not compensated well... They're mistreated. They're overworked. They're exposed to a lot of hazards in their work. And, I mean, everybody eats the food that, you know, that they provide and they're just exploited."

Contrasting Definitions of Food Justice: External Pantry Staff and External Urban Gardeners

We found that these contrasting definitions of food justice were similar across other food pantries and urban gardens in the South Bay Area. External Urban Gardeners generally had more nuanced definitions of food justice than External Pantry Staff. External Pantry Staff from three of the five external food pantries were unfamiliar or only slightly familiar with food justice. Of the remaining two External Pantry Staff in the study, one reflected on the importance of dignity in food justice: "I would define [food justice] like just dignity. Dignity because people in need can be provided with dignity [by ensuring they have access to] food that they need." The second External Pantry Staff member conflated food justice and food security, defining the two synonymously. Still, this interviewee acknowledged that "everybody has the right to be able to—and this is a little more social economics than just food itself—but be able to have a livable wage where they can actually, you know, buy food. ... Nobody should go hungry."

Each External Urban Gardener provided a nuanced definition of food justice. One reflected, "I would define food justice as providing equity and access to everybody. ... Food justice means that every human being, for the sake of being a human being, has the right to safe, secure, and nutritious food, and we are all responsible in

making sure that that is upheld." The other two External Urban Gardeners challenged the limitations of food justice and instead emphasized food sovereignty, acknowledging the importance of community member autonomy and having a role in constructing their food systems. For them food sovereignty can be expansive: "I feel like food sovereignty takes [food justice] a step further, which I really like in the sense that you are sovereign in this. ... And beyond just like picking like your own vegetables, but maybe it's that you have a say in how your food system is structured."

Importantly, the language that External Pantry Staff and External Urban Gardeners utilized when talking about food justice differed significantly based on organization type. External Urban Gardeners tended to center and integrate community needs and voices, whereas External Pantry Staff were more focused on "educating" the community. For example, an External Urban Gardener reflected, "We are actively trying to improve on—especially in the work that we do—making sure that we're not coming at this from, like, a savior mindset, and also that we are, you know, really rooting this in community." Staff from this urban garden take time to ask their clients what produce they are eating and enjoying, what produce they dislike and are wasting, and how the urban garden may better serve them and their community. These approaches are distinct.

Contrasting Approaches to Food Waste: SHCS-LMV Gardeners and SHCS Pantry Volunteers

In their own homes and practices, most SHCS-LMV Gardeners and SHCS Pantry Volunteers made conscious efforts to reduce food waste. Four SHCS Pantry Volunteers mentioned trying to eat everything, and avoiding food waste through various strategies. For example, an Asian/Pacific Islander female SHCS Pantry Volunteer mentioned what her family calls "eating for the cause": strategically placing food close to spoiling in a certain area in the fridge and upcycling leftovers. "So like, for instance, if I did a batch of rice or something—today is Thursday I made it on Monday—it's not going to last much longer through the weekend, so I will make something like fried rice or I'll serve it

like tonight.” And two SHCS Pantry Volunteers emphasized buying food consciously. One White male reflected, “We try to not buy stuff, so we don’t generate waste. That’s number one. ... The basic thing is just not—not producing the waste to begin with. ... We don’t go to Costco and buy 50 pounds of potatoes and watch them rot.” Other strategies employed include freezing food, composting, and eating beyond satiety.

SHCS-LMV Gardener approaches differed from SHCS Pantry Volunteer approaches in that many more SHCS-LMV Gardeners compost their food waste and emphasize a passion for reducing food waste, beyond that of SHCS Pantry Volunteers. A White/Mexican female SHCS-LMV Gardener cited the “power of soil and the Earth and how much that it’s alive and really the source of where everything begins.” For her, SHCS-LMV Garden workshops underscored “how important composting is,” leading to “a snowball effect [in spreading knowledge and enthusiasm] about food waste.” Most SHCS-LMV Gardeners feel similarly: a Latinx female SHCS-LMV Gardener noted that they will peel potatoes and save the peels for compost. A Latinx male SHCS-LMV Gardener emphasized, “All the waste we have here at home, we use. I like to have garden beds with soil where my crops are. There I am burying the waste under the ground so that it remains good, this compost, for good working soil.”

Comparing Approaches to Food Waste: External Urban Gardeners and External Pantry Staff

As with these individual approaches, all the External Pantries and External Urban Gardens in this study have strategies for reducing or mitigating food waste (Table 4). Two External Pantries compost food waste, whether on-site or via industrial composting off-site. One External Pantry gives away pre-cooked food to churches or other community centers in the area. Interestingly, two of the External Pantries tailored their services for the specific needs of the community, thereby reducing food waste. One

External Pantry Staff member noted, “For example, this community, these folks, they just want protein. They don’t want the starch. They don’t want the veggie, so I can understand that dynamic a little bit too. So that gives us a little more ability to figure something out... We do more veggies in one place—we offer more, we offer less, and kind of work on that angle.”

External Urban Gardens utilized a variety of different strategies to manage and reduce food waste, such as instructing their clients to only take what they’ll eat, composting, ordering produce carefully and thoughtfully, and adjusting the price of produce in response to availability. At one External Urban Garden, if they have a surplus of produce, they “slash the price in half, and make sure that if [they] have more of it, that it can go out to folks at a cheaper rate, so maybe they’ll buy more.” An External Urban Gardener described the value of their donation-based system: “Because we

Table 4. Strategies for Reducing Food Waste

| | Strategies for Reducing Food Waste |
|---------------------------------|---|
| SHCS Pantry Volunteers | <ul style="list-style-type: none"> • Buying consciously • Repurposing leftovers • Composting • Freezing food • Eating beyond satiety |
| SHCS-LMV Gardeners | <ul style="list-style-type: none"> • Buying consciously • Repurposing leftovers • Composting • Cooking at home • Let food waste break down in piles • Worm composting • Sharing excess produce with fellow gardeners |
| External Pantry Staff | <ul style="list-style-type: none"> • Considering what foods clients can physically open and utilize • Sharing with churches and other local community organizations • Redistributing food from grocery stores • Composting on-site • Composting off-site |
| External Urban Gardeners | <ul style="list-style-type: none"> • Donation-based system • Ordering produce carefully and thoughtfully • Decreasing the price of surplus produce • Removing unwanted produce from clients’ boxes • Adding additional produce to clients’ boxes • Utilizing feedback from the community • Composting on-site • Teaching clients how to compost at home |

Source: 2021 and 2022 Interviews.

have a donation-based system, we are kind of able to offer more to folks, maybe, than they would normally take based on like a price restriction...we want it to get into the hands of the community, so I think anyone who is coming to our farm stand is able to like walk away with—really—as much as they need, not just as much as they can afford.”

SHCS-LMV Gardener approaches to food waste and connections to the land are stronger than those of SHCS Pantry Volunteers. For many of the Latinx SHCS-LMV Gardeners, their feelings stem from experiences in different countries, and, relatedly, to the wastefulness that they perceive in aspects of mainstream American culture. But their feelings are ingrained and bolstered as well by the food justice framework that the SHCS-LMV Garden employs and develops through educational workshops for members. Most SHCS Pantry Volunteers had not considered a food justice framework—including a food justice approach to food waste—because they had never heard of such an approach.

Discussion

This research has revealed differences in the conceptualization and operationalization of food justice and food waste management strategies through analysis of interviews conducted with SHCS Pantry Volunteers and SHCS-LMV Gardeners, as well as interviews with External Pantry Staff and External Urban Gardens. From our literature review, we expected to find that SHCS-LMV Gardeners and External Urban Gardeners had developed more sophisticated and multidimensional understandings of food justice, in comparison to SHCS Pantry Volunteers and External Pantry Staff who are more influenced by a charity and direct service-oriented strategy. We did not initially expect to find meaningful differences among how the different groups approached food waste.

Consistent with our expectations—and based on the SHCS-LMV Gardeners’ exposure to food justice through the LMV curriculum and through their own lived experiences—we found that SHCS-LMV Gardeners have a more robust understanding of food justice than SHCS Pantry Volunteers. Moreover, SHCS-LMV Gardeners were comfortable talking about food as a right, addressing distrib-

utive and procedural justice, and analyzing the structural causes of hunger and food waste. SHCS-LMV Gardeners likewise were comfortable talking about race and ethnicity. They acknowledged that neighborhood access to food differs depending on the racial makeup of the neighborhood. They contrasted the wastefulness of American vs. Latin American cultures, and they emphasized a lack of health education in lower-income, less White neighborhoods. On the other hand, SHCS Pantry Volunteers, who had not been privy to the LMV curriculum, were largely unfamiliar with food justice. We suspect that SHCS Pantry Volunteer unfamiliarity with food justice, and their watered-down approaches to food waste, could be due to lack of education in food justice, satisfaction with a charity approach, higher average incomes, or other White privileges that could also influence their contributions to inflicting stigma upon food insecure populations and within emergency food assistance environments (de Soza, 2019). More broadly, External Urban Gardeners from various urban gardens throughout Silicon Valley had similar nuanced and complex understandings of food justice compared to SHCS-LMV Gardeners, and more than half of External Pantry Staff were unfamiliar or only slightly familiar with food justice based on their positionality in the emergency food assistance network.

Similarly for food waste, nearly all individuals and organizations have strategies for food waste reduction, but SHCS-LMV Gardeners and External Urban Gardeners were far more knowledgeable about food waste and likely to employ time-consuming and varied waste reduction strategies, ranging from prevention to composting. SHCS-LMV Gardeners and SHCS Pantry Volunteers noted consciously buying food and repurposing leftovers, but SHCS-LMV Gardeners take waste reduction a step further by composting and intentionally sharing produce with family, friends, and other urban gardeners. Likewise, while some External Pantries compost or consider feedback from clients, these strategies were far more common among External Urban Gardeners. External Urban Gardeners reported additional, innovative strategies, such as teaching clients how to compost at home, changing produce in food boxes, and

using donation-based systems, allowing them to reduce food waste more effectively at their organizations.

To what extent are the contrasting approaches to food justice and food waste of urban gardeners versus food pantry volunteers that we found in this Bay Area study generalizable to other places? While we do not know for certain, one way to begin answering this question is through our keyword search of the Web of Science and the VOSviewer visualization displayed in Figure 2. The visualization showed relatively strong connections linking terms, such as “urban gardening,” “composting,” and “food waste,” all of which were grouped together, as well as several studies bridging the cluster of urban gardening studies with the cluster that included food justice, a relationship we found in this study. Figure 2 also shows a dearth of studies linking food justice and food waste or food justice and food pantries, which is also consistent with our findings. Overall, the literature on these topics remains broadly segmented with only a handful of studies linking urban gardens to food pantries and often without a food justice approach, suggesting the need for more integrated research and implementation strategies.

Partner-Led Action Emerging From CB-PAR Methodology

When SHCS staff and the university-based research team negotiated this partnership within a broader CB-PAR framework, (Figure 3) the proposed action step focused on co-developing an educational and infrastructure intervention to contribute to transforming the SHCS Pantry into a food justice space and to support the urban garden by developing an on-site worm composting operation at the pantry. As in many CB-PAR partnerships, the local organization rather than the university is the leader for the critical action step (Juris et al., 2021). SHCS partnered with Santa Clara University to serve as the lead agency in a successful application for a CalEPA Environmental Justice grant (US\$50,000). First, our research team shared with SHCS staff preliminary findings” SHCS Pantry Volunteers’ and SHCS-LMV Gardeners’ differing demographics, approaches to food justice, and approaches to food waste. After consulting

with the food justice literature and setting up a system to track food waste in the SHCS pantry, SHCS staff and our research team have begun to co-create a training curriculum that aims to build on diverse experiences and combine them with best practices from the literature to develop a food justice approach to their food assistance work and establish an onsite vermicomposting program that diverts food waste from landfills and supports urban gardening.

The planned sequence of workshops includes: (1) two community-build days to install worm composting containers at the pantry and train participants in home composting; (2) diversity, equity, inclusion, and justice (DEIJ) and Sacred Heart’s approach to basic needs, antiracism, and structural change; (3) food justice testimonies and dialogue; (4) climate change, food waste, and food system transformation; (5) a community and food pantry compost and plant distribution celebration. The workshops start and conclude with hands-on community-building and include engaging a recently developed system that tracks the SHCS Pantry food waste. Importantly, the proposed times for the workshops intersect with when SHCS Pantry Volunteers are scheduled for their regular food distribution shifts and SHCS-LMV members are available.

SHCS-LMV Gardeners who experience food insecurity and visit the SHCS Food Pantry offer an especially valuable perspective for establishing a relationship between the SHCS Pantry and LMV. In a recent storytelling workshop that we co-organized as part of the workshop series, an elderly female Mexican immigrant, SHCS-LMV Gardener, and occasional Pantry visitor offered her testimony:

When we have excess food, we freeze it, distribute it, or eat it. In my country, Mexico, with my parents and grandparents, food waste did not exist. ... They taught me that food is not thrown away, much less is wasted and that we should eat everything we have for the day, whether it is a little or a lot. At that time, we ate what we had, because we had no other options. When I came to this country, I found a lot of delicious “junk food” that could now

be eaten, and this gave me diabetes. Fortunately, my husband and I had health insurance with Kaiser. A Hispanic nurse taught me the food pyramid, portions, and healthy eating.

When I received food boxes, sometimes [the SHCS Pantry and also Salvation Army Pantry] would include things that were not healthy for me to eat, as a diabetic, or I wouldn't know how to cook it. For example, they would include a lot of pumpkins, and so I would give some to my neighbors, or I would give them to Americans, who would use it to make pie ...

My ancestors didn't care about food security because there was hardly anything to eat. That's why I became an urban gardener. In my opinion, food justice is having options to eat healthy and share with the family. I believe that one way to not waste food is to know the portions, to have options for fruits, vegetables, and groceries that each family in their own culture likes to cook, eat, and enjoy. This way they won't throw it in the trash, because we like to enjoy our own food.

Her testimony underscores many of the themes SHCS-LMV Gardeners and External Urban Gardens reflected on throughout our research. It shows not only the way that she interprets relationships between food security, food waste, and food justice in a coherent and compelling way that may not strictly follow the accepted academic definitions for these terms, but it also contributes a culturally rooted food justice approach to food waste. Interestingly, this testimony does not mention rights-based (Horst et al., 2017) or explicitly anti-racist notions of food justice. It focuses more on the power of solidarity, sharing food, and access to culturally relevant food for all (Loh & Agyeman, 2019).

Drawing on this testimony and one author's participant observation with the respondent during the last two years, we find that this SHCS-LMV Gardener (and several others) explain their experience with confidence and without stigma regarding periodic food pantry visits. This is important, as stigma and shame among food pantry visitors are common (Bruckner et al., 2021; de Soza, 2019).

This narrative also shows a level of empowerment which is possibly attributable—at least in part—to several years of participation in SHCS-LMV's leadership program. Another study that interviewed senior food pantry clients, some of whom were also involved in a food security-focused community garden, found that accessing the food from the garden offered participants destigmatized “socially acceptable” food access, as compared to perceptions of stigma when accessing free food through other food assistance programs (Tims et al. 2021). However, in the case of SHCS-LMV Gardeners, they felt comfortable accessing the SHCS Pantry, as well as growing and sharing their own food.

In addition, External Pantry Staff expressed interest in implementing a similar curriculum in their own pantries. Following the SHCS and LMV implementation of the workshop curriculum, SHCS will produce playbooks for other pantries to use in developing their own food justice approaches to emergency assistance and waste. Therefore, we contend that this study is broadly relevant to tens of thousands of food pantries as well as other anti-hunger organizations, food recovery organizations, food waste reduction strategists, advocates, and policy makers working to develop a stronger food justice approach to emergency food assistance and food waste recovery and management in ways that integrate urban agriculture and build food sovereignty.

Conclusion

Our analysis of the interviews found similarities in the way that organized urban gardeners, including both SHCS-LMV Gardeners and the External Urban Gardeners engaged food justice and food waste compared to the SHCS Pantry Volunteers and External Pantry Staff. SHCS Pantry Volunteers' definitions of food justice were generally one-dimensional and less nuanced than SHCS-LMV Gardeners' definitions, which cited gardening and access to land as part of their definitions, and noted the importance of high quality, organic, culturally relevant food. SHCS Pantry Volunteers' comparably less nuanced definitions may be attributed to a higher percentage of White SHCS Pantry Volunteer interviewees than among SHCS-LMV Gardeners, as well as the Gardeners' expo-

sure to food justice trainings and advocacy work through LMV; however, in our comparison of common themes in the interviews, we found similar patterns in understandings among the External Pantries and External Urban Gardens.

The CB-PAR process is necessarily a work in progress. We have not yet proven that it is possible to change the large-scale food pantry into a space for food justice or to unleash the potential of composting food waste. However, these dual problems are intrinsic to the current emergency food assistance network and the lessons learned here are potentially useful for the more than 60,000 U.S. food pantries that should play a more important role in developing transformative strategies to meet basic food needs and reduce food waste today, while simultaneously developing a food justice approach to reduce hunger and food waste in the long-term.

If food pantries are to become educational and organizing spaces that advance food justice, pantry staff, volunteers, and partner organizations will need to assume new roles (Dixon, 2015). We argue that food pantries are important places to create “ethical and political response to welfare in the meantime,” building from “the austere conditions of the here and now,” (Cloke et al., 2016, p. 705), advocating for increased public support to secure a right to food, and moving toward more transformative alternatives to the dominant global system and charity-based emergency assistance.

Urban gardeners, many of whom already emphasize food justice through their organized networks (Dickmann et al., 2020; Horst et al., 2017), are key allies in this work, but few have relationships with pantries that reach beyond supplying fresh produce (Furness & Gallaher, 2018). We argue that community-university partnerships that include both organized groups of civic urban gardeners and food pantries are a useful starting point for developing educational programs as well as infrastructure investment plans to close the food waste loop through local composting efforts. These partnerships could help connect gardeners, pantry staff, volunteers and visitors as crucial parts of an expanding food justice coalition addressing root causes of food insecurity.

Acknowledgments

We are very grateful to all of the Sacred Heart staff involved in this project, especially Fernando Fernandez Levia, Sofia Rocha, Veronica Suarez Hernandez, and Roberto Gil, as well as the Pantry Volunteers and LMV gardeners. Thanks also to Maria Eugenia Flores Gomez for research insights and student researchers including Isabelle Solorzano, Paulina Ursua Garcia, Wanyu “Mary” Xiang, Daniela Serrano, Ayla Flanagan, and Jane Walker. We are also grateful for helpful comments and suggestions from three anonymous reviewers, copy editors, and the journal’s editor.

References

- Alattar, M. A. (2021). Eating inequity: The injustice that brings us our food. *Journal of Agriculture, Food Systems, and Community Development*, 10(3), 17–30. <https://doi.org/10.5304/jafscd.2021.103.003>
- Alkon, A. H., Cadji, Y. J., & Moore, F. (2019). Subverting the new narrative: Food, gentrification and resistance in Oakland, California. *Agriculture and Human Values*, 36(4), 793–804. <https://doi.org/10.1007/s10460-019-09954-x>
- Alkon, A. H., & Guthman, J. (2017). Introduction. In A. H. Alkon & J. Guthman (Eds.), *The new food activism: Opposition, cooperation, and collective action* (pp. 1–27). University of California Press.
- Bacon, C. M., & Baker, G. A. (2017). The rise of food banks and the challenge of matching food assistance with potential need: Towards a spatially specific, rapid assessment approach. *Agriculture and Human Values*, 34(4), 899–919. <https://doi.org/10.1007/s10460-017-9783-y>
- Bacon, C. M., Sundstrom, W. A., Gómez, M. E. F., Méndez, V. E., Santos, R., Goldoftas, B., & Dougherty, I. (2014). Explaining the ‘hungry farmer paradox’: Smallholders and fair trade cooperatives navigate seasonality and change in Nicaragua’s corn and coffee markets. *Global Environmental Change*, 25, 133–149. <https://doi.org/10.1016/j.gloenvcha.2014.02.005>
- Balazs, C. L., & Morello-Frosch, R. (2013). The three R’s: How community-based participatory research strengthens the rigor, relevance and reach of science. *Environmental Justice*, 6(1), 9–16. <https://doi.org/10.1089/env.2012.0017>

- Bellemare, M. F., & Duseroth, V. (2020). Who participates in urban agriculture? An empirical analysis. *Applied Economic Perspectives and Policy*, 43(1), 430–442. <https://doi.org/10.1002/aep.13072>
- Block, D. R., Chávez, N., Allen, E., & Ramirez, D. (2012). Food sovereignty, urban food access, and food activism: Contemplating the connections through examples from Chicago. *Agriculture and Human Values*, 29(2), 203–215. <https://doi.org/10.1007/s10460-011-9336-8>
- Bowness E., & Wittman, H. (2021). Bringing the city to the country? Responsibility, privilege and urban agrarianism in Metro Vancouver. *The Journal of Peasant Studies*, 48(6), 1141–1166. <https://doi.org/10.1080/03066150.2020.1803842>
- Bräutigam, K.-R., Jörisen, J., & Priefer, C. (2014). The extent of food waste generation across EU-27: Different calculation methods and the reliability of their results. *Waste Management & Research*, 32(8), 683–694. <https://doi.org/10.1177/0734242X14545374>
- Broad Leib, E. M., Beckmann, J. S., Ardura, A., DeBodeau, S., Oto, T., Becker, J., & Hanel, N. (2022). *Opportunities to reduce food waste in the 2023 Farm Bill*. Harvard Law School Food Law & Policy Clinic, National Resources Defense Council, ReFED, World Wildlife Fund. <https://chlp.org/wp-content/uploads/2022/04/2023-Farm-Bill-Food-Waste.pdf>
- Bruckner, H. K., Westbrook, M., Loberg, L., Teig, E., & Schaeffbauer, C. (2021). “Free” food with a side of shame? Combating stigma in emergency food assistance programs in the quest for food justice. *Geoforum*, 123, 99–106. <https://doi.org/10.1016/j.geoforum.2021.04.021>
- CalRecycle. (n.d.). *California’s short-lived climate pollutant reduction strategy*. Retrieved February 2024 from <https://calrecycle.ca.gov/organics/slcp/>
- Cannon, C. (2020). Examining rural environmental injustice: An analysis of ruralness, class, race, and gender on the presence of landfills across the United States. *Journal of Rural and Community Development*, 15(1), 89–114. <https://journals.brandou.ca/jrcd/article/view/1737/407>
- Carney, M. (2012). “Food security” and “food sovereignty”: What frameworks are best suited for social equity in food systems? *Journal of Agriculture, Food Systems, and Community Development*, 2(2), 71–87. <https://doi.org/10.5304/jafscd.2012.022.004>
- Casey, J. A., Cushing, L., Depsky, N., & Morello-Frosch, R. (2021). Climate justice and California’s methane superemitters: Environmental equity assessment of community proximity and exposure intensity. *Environmental Science & Technology*, 55(21), 14746–14757. <https://doi.org/10.1021/acs.est.1c04328>
- Chiarella, C., Lamoureux, Y., Pires, A.A.F., Surls, R., Bennaton, R., Kim, J. V. S., Grady, S., Ramos, T. M., Koundinya, V., & DiCaprio, E. (2023). A preliminary assessment of food policy obstacles in California’s produce recovery networks. *Agriculture and Human Values*, 40(3), 1239–1258. <https://doi.org/10.1007/s10460-022-10407-1>
- City of San Jose. (n.d.). *Community gardening*.
- Cloke, P., May, J., & Williams, A. 2016. The geographies of food banks in the meantime. *Progress in Human Geography*, 41(6), 703–726. <https://doi.org/10.1177/0309132516655881>
- Coleman-Jensen, A., Rabbitt, M. P., Gregory, C. A., & Singh, A. (2021). *Household Food Security in the United States in 2020* [ERS ERR-298]. U.S. Department of Agriculture, Economic Research Service. <https://www.ers.usda.gov/webdocs/publications/102076/err-298.pdf>
- Cooks, L. (2021). Food rescue networks and the food system. *Gastronomica*, 21(1), 83–85. <https://doi.org/10.1525/gfc.2021.21.1.83>
- Data USA. (2022). *Santa Clara County, CA*. <https://datausa.io/profile/geo/santa-clara-county-ca/>
- de Souza, R. (2019). *Feeding the other: Whiteness, privilege, and neoliberal stigma in food pantries*. MIT Press
- Diekmann, L., Algert, S., Gray, L., Hutcheson, J., Scheer, J., & Sponsler Clements, S. (2013). *Santa Clara County Food System Assessment: A practical tool for food system change*. Santa Clara County Food System Alliance, Ag Innovations Network.
- Diekmann, L. O., Gray, L. C., & Baker, G. A. (2020). Growing ‘good food’: Urban gardens, culturally acceptable produce and food security. *Renewable Agriculture and Food Systems*, 35(2), 169–181. <https://doi.org/10.1017/S1742170518000388>

- Dixon, B. A. (2015). Rewriting the call to charity: From food shelf volunteer to food justice advocate. *Journal of Agriculture, Food Systems, and Community Development*, 5(2), 71–79. <https://doi.org/10.5304/jafscd.2015.052.010>
- Escobar, M., Mendez, A. D., Encinas, M. R., Villagomez, S., & Wojcicki, J. M. (2021). High food insecurity in Latinx families and associated COVID-19 infection in the Greater Bay Area, California. *BMC Nutrition*, 7, Article 23. <https://doi.org/10.1186/s40795-021-00419-1>
- Feeding America. (2023a) Latest food bank survey finds majority of food banks reporting increased demand. <https://www.feedingamerica.org/about-us/press-room/latest-food-bank-survey-finds-majority-food-banks-reporting-increased-demand>
- Feeding America. (2023b). *Connecting health and food access*. <https://www.feedingamerica.org/our-work/nutrition-health>
- Fisher, A. (2017). *Big hunger: The unholy alliance between corporate America and anti-hunger groups*. MIT Press.
- Food and Agriculture Organization of the United Nations [FAO]. (2019). *The state of food and agriculture 2019: Moving forward on food loss and waste reduction*. <https://www.fao.org/documents/card/en?details=ca6030en>
- Furness, W. W., & Gallaher, C. M. (2018). Food access, food security and community gardens in Rockford, IL. *Local Environment*, 23(4), 414–430. <https://doi.org/10.1080/13549839.2018.1426561>
- García-Sempere, A., Morales, H., Hidalgo, M., Ferguson, B. G., Rosset, P., & Nazar-Beutelspacher, A. (2019). Food sovereignty in the city?: A methodological proposal for evaluating food sovereignty in urban settings. *Agroecology and Sustainable Food Systems*, 43(10), 1145–1173. <https://doi.org/10.1080/21683565.2019.1578719>
- Giraud, E. G., El-Sayed, S., & Opejin, A. (2021). Gardening for food well-being in the COVID-19 era. *Sustainability*, 13(17), 9687. <https://doi.org/10.3390/su13179687>
- Gray, L., Guzman, P., Glowa, K. M., & Drevno, A. G. (2014). Can home gardens scale up into movements for social change? The role of home gardens in providing food security and community change in San Jose, California. *Local Environment*, 19(2), 187–203. <https://doi.org/10.1080/13549839.2013.792048>
- Guitart, D., Pickering, C., & Byrne, J. (2012). Past results and future directions in urban community gardens research. *Urban Forestry & Urban Greening*, 11(4), 364–373. <https://doi.org/10.1016/j.ufug.2012.06.007>
- Hammelman, C., Levkoe, C. Z., Agyeman, J., Kharod, S., Moragues Faus, A., Munoz, E., Oliva, J., & Wilson, A. (2020). Integrated food systems governance: Scaling equitable and transformative food initiatives through scholar-activist engagement. *Journal of Agriculture, Food Systems, and Community Development*, 9(2), 71–86. <https://doi.org/10.5304/jafscd.2020.092.003>
- Hanson, C., Lipinski, B., Robertson, K., Dias, D., Gavilan, I., Gréverath, P., Ritter, S., Fonseca, J., van Otterdijke, R., Timmermans, T., Lomax, J., O'Connor, C., Dawe, A., Swannell, R., Berger, V., Reddy, M., & Somogyi, D. (2016). *Food loss and waste accounting and reporting standard*. World Resources Institute. https://files.wri.org/d8/s3fs-public/FLW_Standard_final_2016.pdf
- Hecht, A. A., & Neff, R. A. (2019). Food rescue intervention evaluations: A systematic review. *Sustainability*, 11(23), Article 6718. <https://doi.org/10.3390/su11236718>
- Hislop, R. S. (2014). *Reaping equity: A survey of food justice organizations in the U.S.A.* [Master's Thesis, University of California, Davis] (Publication 1590830). ProQuest. <https://pqdtopen.proquest.com/doc/1695282787.html?FMT=ABS>
- Hoover, B. (2013). White spaces in black and Latino places: Urban agriculture and food sovereignty. *Journal of Agriculture, Food Systems, and Community Development*, 3(4), 109–115. <https://doi.org/10.5304/jafscd.2013.034.014>
- Horst, M., McClintock, N., & Hoey, L. (2017) The intersection of planning, urban agriculture, and food justice: A review of the literature. *Journal of the American Planning Association*, 83(3), 277–295. <https://doi.org/10.1080/01944363.2017.1322914>
- Jayaraman, S., & De Master, K. (Eds.) (2020). *Bite back: People taking on corporate food and winning*. University of California Press.
- Joint Venture Silicon Valley. (2023). *Silicon Valley Index: People, economy, society, place, governance*. Institute for Regional Studies. <https://jointventure.org/images/stories/pdf/index2023.pdf>

- Juris, J., Scrivano, R. M., Speidel, E., Bailey, L., & Jarrott, S. E. (2021). The development of a satellite food pantry through community-based participatory action research. *International Journal of Research on Service-Learning and Community Engagement*, 9(1), Article 6. <https://doi.org/10.37333/001c.31304>
- Kingsley, J., Diekmann, L., Egerer, M. H., Lin, B. B., Ossola, A., & Marsh, P. (2022). Experiences of gardening during the early stages of the COVID-19 pandemic. *Health & Place*, 76, Article 102854. <https://doi.org/10.1016/j.healthplace.2022.102854>
- Krause, M., Kenny, S., Stephenson, J., & Singleton, A. (2023). Quantifying methane emissions from landfilled food waste. U.S. Environmental Protection Agency. https://www.epa.gov/system/files/documents/2023-10/food-waste-landfill-methane-10-8-23-final_508-compliant.pdf
- Lin, B. B., Philpott, S. M., & Jha, S. (2015). The future of urban agriculture and biodiversity-ecosystem services: Challenges and next steps. *Basic and Applied Ecology*, 16(3), 189–201. <https://doi.org/10.1016/j.baec.2015.01.005>
- Loh, P., & Agyeman, J. (2019). Urban food sharing and the emerging Boston food solidarity economy. *Geoforum*, 99, 213–222. <https://doi.org/10.1016/j.geoforum.2018.08.017>
- Lohnes, J. D. (2021). Regulating surplus: Charity and the legal geographies of food waste enclosure. *Agriculture and Human Values*, 38(2), 351–363. <https://doi.org/10.1007/s10460-020-10150-5>
- Maiter, S., Simich, L., Jacobson, N., & Wise, J. (2008). Reciprocity: An ethic for community-based participatory action research. *Action Research*, 6(3), 305–325. <https://doi.org/10.1177/1476750307083720>
- Marya, R., & Patel, R. (2021) *Inflamed: Deep medicine and the anatomy of injustice*. Farrar, Straus and Giroux.
- McClintock, N., Miewald, C., & McCann, E. (2018). The politics of urban agriculture: Sustainability, governance, and contestation. In K. Ward, A. E. G. Jonas, B. Miller, & D. Wilson (Eds.), *The Routledge Handbook on Spaces of Urban Politics* (pp. 361–374). Routledge.
- Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation* (4th ed.). Jossey-Bass.
- Mourad, M. (2016). Recycling, recovering and preventing “food waste”: Competing solutions for food systems sustainability in the United States and France. *Journal of Cleaner Production*, 126, 461–477. <https://doi.org/10.1016/j.jclepro.2016.03.084>
- Noll, S., & Murdock, E. G. (2020). Whose justice is it anyway? Mitigating the tensions between food security and food sovereignty. *Journal of Agricultural and Environmental Ethics*, 33(1), 1–14. <https://doi.org/10.1007/s10806-019-09809-9>
- Patel, R. (2009). Food sovereignty. *The Journal of Peasant Studies*, 36(3), 663–706. <https://doi.org/10.1080/03066150903143079>
- Pellow, D., & Park, L. S.-H. (2002). *The Silicon Valley of dreams: Environmental injustice, immigrant workers, and the high-tech global economy*. NYU Press.
- Porter, C. M. (2018). Triple-rigorous storytelling: A PI’s reflections on devising case study methods with five community-based food justice organizations. *Journal of Agriculture, Food Systems, and Community Development*, 8(A), 37–61. <https://doi.org/10.5304/jafscd.2018.08A.008>
- Poulsen, M. N. (2017). Cultivating citizenship, equity, and social inclusion? Putting civic agriculture into practice through urban farming. *Agriculture and Human Values*, 34(1), 135–148. <https://doi.org/10.1007/s10460-016-9699-y>
- Practical Answers. (2020). *How to make vermicomposting*. <https://answers.practicalaction.org/our-resources/item/how-to-make-vermicomposting/>
- Pudup, M. B. (2008). It takes a garden: Cultivating citizen-subjects in organized garden projects. *Geoforum*, 39(3), 1228–1240. <https://doi.org/10.1016/j.geoforum.2007.06.012>
- ReFED. (2023). *Insights Engine: Food Waste Monitor*. <https://refed.org/>
- Sacred Heart Community Service. (2022). *Report 2020–2021*. <https://static1.squarespace.com/static/60c6c5e5586f0c2b0071eef5/t/61c39ad76dca2c1c42764742/1640209128997/SHCS-Annual-Report-2021.pdf>
- San Francisco Recreation & Parks. (n.d.). *Community Gardens*. <https://sfrecpark.org/1403/Community-Gardens>
- Second Harvest of Silicon Valley. (2021). *Responding to COVID-19: Give what matters* [Video]. YouTube. www.youtube.com/watch?v=ampanT7hZTA&feature=youtu.be

- Spring, C., Garthwaite, K., & Fisher, A. (2022). Containing hunger, contesting injustice? Exploring the transnational growth of foodbanking—and counter-responses—before and during the COVID-19 pandemic. *Food Ethics*, 7, Article 6. <https://doi.org/10.1007/s41055-022-00099-y>
- Tims, K., Haggerty, M., Jemison, J., Ladenheim, M., Mullis, S., & Damon, E. (2021). Gardening for change: Community giving gardens and senior food insecurity. *Journal of Agriculture, Food Systems, and Community Development*, 10(4), 85–101. <https://doi.org/10.5304/jafscd.2021.104.030>
- Tursunova, Z., Ramraj, C., Fulford, S., Cyr, M., & Thompson, S. (2020). Pathways towards food sovereignty: Reconnecting individuals, food, nature and community in the inner city in Winnipeg, Manitoba. *Canadian Journal of Urban Research*, 29(2), 102–116.
- United Nations Environment Programme. (2021). *Food Waste Index Report 2021*. <https://wedocs.unep.org/20.500.11822/35280>
- U.S. Census Bureau. (2022). *QuickFacts: Santa Clara County, CA; Santa Clara City, CA*. <https://www.census.gov/quickfacts/fact/table/santaclaracountycalifornia,santaclaracitycalifornia/PST045222>
- U.S. Department of Agriculture Economic Research Service. (2023). *Food and consumers*. <https://www.ers.usda.gov/covid-19/food-and-consumers/>
- U.S. Environmental Protection Agency. (n.d.). *Composting at Home*. <https://www.epa.gov/recycle/composting-home>
- University of California Cooperative Extension. (2021). *County of Santa Clara Food System Workplan: An assessment and roadmap for the development of a comprehensive Food, Restaurants, Agriculture, and Health Access Initiative*. UCCE, County of Santa Clara Department of Agriculture and Environmental Management, University of California Natural Resources. <https://sustainability.sccgov.org/sites/g/files/exjcpb976/files/documents/Food%20Systems%20Workplan.pdf>
- van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523–538. <https://doi.org/10.1007/s11192-009-0146-3>
- Vitiello, D., Grisso, J. A., Whiteside, K. L., & Fischman, R. (2015). From commodity surplus to food justice: Food banks and local agriculture in the United States. *Agriculture and Human Values*, 32(3), 419–430. <https://doi.org/10.1007/s10460-014-9563-x>
- Williams, M. J. (2022). Care-full food justice. *Geoforum*, 137, 42–51. <https://doi.org/10.1016/j.geoforum.2022.10.008>
- World Forum for Food Sovereignty. (2007). *Declaration of Nyéléni*. <https://nyeleni.org/IMG/pdf/DeclNyeleni-en.pdf>
- Yu, Y., & Jaenicke, E. C. (2020). Estimating food waste as household production inefficiency. *American Journal of Agricultural Economics*, 102(2), 525–547. <https://doi.org/10.1002/ajae.12036>