

Community Supported Agriculture (CSA) Farmers During COVID-19: Lessons from Northern California

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Abstract

Community supported agriculture (CSA) is a values-based, direct-marketing farming model in which community members share in the risk, cost, and benefits of crop production in exchange for a regular share of the harvest. In the past decade, grocers and food delivery services emphasizing the sourcing of local food products have created a more competitive environment for California-based CSA farms. However, food supply chain disruptions and shelter-in-place mandates resulting from the COVID-19 pandemic led to unprecedented surges in CSA enrollment in 2020, leading many farmers to adopt the CSA model or absorb more members into their existing CSAs. In this thesis, I explore how farmers have used and adapted the CSA model amidst changing market conditions throughout the COVID-19 pandemic, and how CSA farms are faring as the pandemic wanes. The research consists of data collected through 13 semi-structured interviews and a survey with 29 respondents capturing the perspectives and experiences of CSA farm owners and managers in 15 Northern California counties.¹ Findings reveal innovative solutions undertaken by CSA farms to accommodate increased demand for CSA, a focus on increasing access for low-income populations, and a peak in CSA enrollment in August, 2020, followed by a general decline into August 2022. Farmers generally noted increased stress and anxiety tied to decision-making about how best to keep their employees healthy early in the pandemic; emotional exhaustion from absorbing the stress of customers, the effects of which had begun to subside when the research was conducted in 2023; and burnout from the compounding of challenging circumstances alongside the pandemic – wildfires, drought, inflation and the economic downturn, and the racial reckoning and social injustices – which remained as an issue for some study participants. CSA has been described as a form of a community economy because of its emphasis on care of the environment, social well-being, and ethical reciprocity. However, the pressure felt by CSA farmers to provide for their communities and resulting feelings of mental exhaustion and burnout suggest that there may be a misalignment with the community economy and CSA in its current form.

¹ The following counties are represented by farms participating in the study: Amador, Calaveras, Contra Costa, El Dorado, Mariposa, Marin, Napa, Nevada, Placer, Sacramento, San Mateo, Santa Clara, Solano, Sonoma, and Yolo.

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Table of Contents

Abstract	ii
Acknowledgements	iii
Introduction	1
Researcher Positionality Statement	2
Literature Review	4
Characteristics and Evolution of the CSA Model	5
Local Food Systems Consumer Trends During COVID-19 Pandemic	7
COVID-19 Pandemic Impacts on CSA Farmers	8
Mental Health of Farmers	12
Theoretical Review	13
The Community Economy	14
CSA Farmers and Capitalist Constraints	15
Methodology	18
Sampling Methodology	19
Survey Development and Analysis	20
Interview Development and Analysis	21
Findings	23
Characteristics of Participating CSA Farms	23
CSA Enrollment Trends During COVID-19	30
Farmer Responses to COVID-19 Pandemic	34
CSA Members and Customers	38
Farmer Experiences	40

<u>Food Access and Support Networks</u>	44
<u>Discussion</u>	46
<u>CSA as a Community Economy</u>	47
<u>Lessons Learned and Limitations</u>	53
<u>Future Directions</u>	54
<u>Conclusion</u>	56
<u>References</u>	58
<u>Appendix A</u>	64
<u>Appendix B</u>	66
<u>Appendix C</u>	84
<u>Appendix D</u>	85

Introduction

Community supported agriculture (CSA) is a direct-to-consumer marketing model in which community members typically pay farmers in advance for a regular “share” of the harvest, thereby sharing in the risks and benefits of crop production (Galt et al., 2019b; DeMuth, 1993). The CSA model provides the farmer with working capital and financial security at the beginning of the growing season, and eases the burden of marketing (DeMuth, 1993). It also serves to connect the surrounding community with the farmers that grow their food and grants members a consistent supply of seasonal produce, thus providing a mutually beneficial relationship between consumer and farmer (Galt, 2013; Mert-Cakal and Miele, 2021). In addition, CSA farms often use ecologically sustainable farming practices and shorten the supply chain from production to consumption (Altieri, 1995; Galt et al., 2019b). With its embeddedness in social and environmental values, the CSA model represents an alternative to conventional and industrial food chains (Mert-Cakal and Miele, 2021).

The CSA landscape has been changing over time with increased competition from conventional retailers emphasizing local food as part of their marketing tactics (Galt et. al, 2016). Retaining members is a significant concern for CSA farmers, particularly amid the increased commercialization of CSA-like models that are not farm-based (Galt et al., 2019a). CSA farms have adapted to these changes by offering more incentives for attracting new members such as pay-as-you-go, home delivery, and choice over the food items in their boxes. Woods et al. (2017) observe a shift from emphasis on the farmer to the consumer. According to the USDA, the number of farms selling fresh produce and other products through a CSA in the U.S. decreased from 12,617 in 2012 to 7,398 in 2015 to 7,244 in 2020 (USDA NASS, 2014; USDA NASS, 2016; USDA NASS, 2020).

However, with the onset of the COVID-19 pandemic in 2020, the fragility of the globalized food system was put into stark relief; supply chain disruptions alongside shelter-in-place mandates stemming from public health concerns led to food shortages and widespread panic-buying (Weersink et al., 2021). Populations already facing food insecurity became increasingly vulnerable and fear about contracting COVID-19 led many people to seek alternative ways of safely accessing fresh food (Mert-Cakal and

Miele, 2021). Local and regional food distribution systems stood in contrast to ruptured global food supply chains, and the CSA model emerged as an antidote to food access issues, leading to a surge in CSA enrollment during this time (Seo and Hudson, 2022; Danovich, 2020; Hiller, 2020). Given these changes, CSA farmers had to respond quickly to the spike in demand, and many farmers who didn't previously have CSA programs adopted the model as other market channels such as restaurants, farmers markets, and institutional food services disappeared nearly completely.

This study utilized mixed methods research to answer two main questions:

- 1) How have California farmers used and adapted the CSA model amidst changing market conditions throughout the COVID-19 pandemic?
- 2) How are California CSA farms faring as the pandemic wanes?

Sub-questions addressed in this study are as follows:

- What strategies have CSA farmers used to adapt to changing market conditions during the pandemic?
- What challenges and successes have CSA farmers faced amidst pandemic-induced changes?
- How have farmers innovated with different types of CSA models to meet the needs of their customers?
- How has the COVID-19 pandemic affected the trajectory of CSA programs? How has renewed interest in CSA programs changed as the pandemic wanes?

Data collection yielded survey responses from 29 farms and interviews with CSA managers and farm owners representing 13 farms across a sample of 20 Northern California counties. Participants shared how they were impacted by and responded to the COVID-19 pandemic and how enrollment has changed since spikes early in the pandemic.

Researcher Positionality Statement

I grew up in the suburbs of Newark, Delaware, a college town home to the University of Delaware, a land-grant university like the University of California, Davis. Delaware ranks number 1

nationally in the value of agricultural sales per farmland acre, mostly due to the high concentration of commercial broilers in the area, alongside a large amount of acreage in lima beans, corn, and soybeans (Hawks, 2019). Though I grew up in a state in which agriculture was a significant industry, I was largely disconnected from food production aside from my parents' annual vegetable garden in our backyard. At the University of Delaware, I majored in French Studies and Sociology, and it was not until my senior year that agriculture reached my radar in an environmental politics class in which I had to debate for the widespread use of organic farming. Through my research on the topic, I discovered the principles of organic agriculture resonated with me, sending me on a journey into sustainable farming. I spent several years as a farmer and educator in nonprofit spaces, helped run a CSA, and then decided to explore the for-profit farming industry in a position in sales and CSA management at Terra Firma Farm, a 200-acre organic farm in Winters, CA. The owners of Terra Firma Farm started their CSA program in 1994, making them an early adopter of CSA in the region. As was common with other CSA farms, they experienced a drop in enrollment in the decade leading to the pandemic with increasing competition from tech-funded food delivery companies and corporate aggregators.

When COVID-19 started appearing to be a public health emergency and shelter-in-place mandates were announced in California in March 2020, CSA enrollment at Terra Firma Farm and neighboring farms spiked abruptly (Ricker and Kardas-Nelson, 2020). All told, Terra Firma Farm's CSA grew from roughly 700 to 1,300 members in the course of about a month as we incrementally let people in from a growing wait list. While demand for CSA shares was at an all-time high, we were losing business from restaurants and institutional buyers. We had no way of knowing how long these changes would remain and took a cautious approach to adjusting the crop plan to accommodate the new influx of customers. Decision-making was speculative at best with unknowns about how long the quarantine would last and whether new CSA members would stick around. I remember this being a chaotic and stressful time. I received countless emails and calls from people who desperately wanted to join the CSA and had reasons why they deserved to jump the waitlist: immunocompromised or elderly family members, young children, or just outright fear of shopping at the grocery store. "Add-ons," or bulk orders in addition to the regular CSA box, skyrocketed, leading me to develop new systems for generating reports and labels within our CSA software management program. Demand from grocers and wholesale distributors also

skyrocketed leading up to shelter-in-place to the point where we sold everything and either did not have more crops in the field to offer or enough farm labor and time to harvest. At the same time, it was an incredibly rewarding time to work at the farm. CSA members were extremely grateful for the service we were offering; we received frequent heartfelt and gracious emails from CSA members expressing their gratitude for us keeping them fed and safe. Experiencing the pandemic as a CSA manager led me to question how COVID-19 impacted other CSA farms, how they adapted to changes throughout the pandemic, and how CSAs fared as vaccines became available, shelter-in-place mandates were lifted, and the pandemic waned.

My experience was unique from that of farmworkers, as I was not working in the field nor in the packing line. My socioeconomic status, identity, upbringing, and position at the farm as an office worker afforded me privileges distinguishing my experiences from those of farmworkers, who generally experienced a very different pandemic. Outside of the pandemic, farmworkers are vulnerable to food insecurity and lack of access to healthcare because of immigration status, low income, and unstable work (Public Policy Institute of California, 2023). The pandemic exacerbated these issues and crowded living conditions combined with “essential worker” status further created disproportionate health risks for farmworkers (Bade et al., 2021). It is important to distinguish the population that I focused on for this research. I targeted CSA farm owners and managers because of their involvement with administrative decisions and access to business information; they sometimes work in the field, but likely experienced the pandemic very differently from farmworkers.²

Literature Review

The literature review is divided into four sections: (1) characteristics and evolution of the CSA model; (2) local food systems consumer trends during COVID-19 pandemic; (3) COVID-19 pandemic impacts on CSA farmers; and (4) mental health of farmers. CSA farmers began innovating the CSA model prior to the pandemic, so I will begin by describing how the model has evolved overtime. In subsequent

² Notable research has been done to capture the experiences of farmworkers during COVID-19, such as the California Institute for Rural Studies COVID-19 Farmworker Study: <https://cirsinc.org/covid-19-farmworker-study/>

sections, I describe consumer trends in local food systems during the pandemic as well as documented impacts on CSA farmers to present the backdrop for my research. Then, I will discuss literature focused on the mental health of farmers both prior to and during the pandemic, a topic that emerged as a significant theme during the research.

Characteristics and Evolution of the CSA Model

Community supported agriculture (CSA) is an alternative agricultural marketing model that has garnered interest among food systems scholars. Discourse around CSA centers on its utility as a values-based economic model and its continuing evolution as farmers adapt to changing market conditions.

Lyson (2004, p. 87) defines CSA as “consist[ing] of a group of individuals or families who commit resources (money and/or labor) to a farmer and become, in essence, shareholders of the farm.” CSA is an important model of direct agricultural marketing, which shortens the distance between producer and consumer and emphasizes “local” in contrast to global and industrial food systems (Hinrichs, 2000; Kloppenburg, 1996). A key characteristic associated with CSA is its social embeddedness, with a focus on social ties, community, reciprocity, and education, aligning it with the proposition of decommodifying food (Hinrichs, 2000). In some cases, CSA farmers offer opportunities that extend beyond a transactional relationship with members, including u-pick days, Pizza Nights, on-farm work trade, and children’s activities. CSA members may know the producer and often opt in to support agriculture that is socially and environmentally beneficial. CSA is also considered a moral economy based on well-being, trust, and reciprocity, and embedded in social, environmental, and local values (Mert-Cakal and Miele, 2021; Kloppenburg et al., 1996; Hinrichs, 2000). In a study of CSA farmers in the Central Valley of California, a commonly expressed sentiment was that while profits from the CSA may be modest, farmers also value the non-monetary forms of compensation: living healthfully, raising family on the farm, and enjoying the personal rewards of their work (Galt et al., 2011).

Further, CSA is often identified as an alternative food network (AFN) and form of civic agriculture due to its association with sustainable food production and direct-to-consumer consumption pathway, standing in contrast with conventional and industrialized agriculture (Lyson, 2004; Galt, 2013; Mert-Cakal and Miele, 2021). Social, political, and environmental concerns are often cited as motivators for people joining CSA programs (Goland, 2002; Hayden & Buck, 2012; Lang, 2005; Wells & Gradwell, 2001). Lyson

(2004) describes civic agriculture as the localization of agriculture and food production, which he argues strengthens community identity and economic development by shortening the distance between production and consumption. He argues that all CSAs are committed to building a more local and just food system, strengthening the local economy and preserving farmland. In a report on Central Valley CSA farmers, Galt et al. (2011) note a marked commitment to agrobiodiversity and ecological farming practices. However, CSA farms are not always *certified* organic. In a survey of 495 CSA producers across the U.S., Woods et al. (2017) found that 27.2% of respondents used production methods that were certified organic; 59% according to organic standards but not certified; 12.4% organic along with conventional methods; and 1.4% primarily conventional growing techniques.

In a survey with 205 CSA producers across 9 states in the Eastern and Midwestern regions of the U.S., Woods et al. (2009) found that 87% of respondents marketed products through another sales channel outside of their CSA and tended to have diverse market channels (p. 1). Similarly, a study surveying 111 CSA farms showed respondents utilizing three to four different market outlets on average (Galt et al., 2016). Galt et al. (2011) found that CSA farmers tend to sell through other direct marketing channels such as farmers markets, farm stands, and u-picks, and may also rely on wholesale outlets. However, small farmers tended to be more reliant on CSA as a marketing channel.

The CSA continues to evolve from its basic conception as a model with emphasis on sustainable agriculture and risk-sharing with its stakeholders. Woods et al. (2017) note CSA innovations marking its evolution, including institutional wellness programs; multi-farm schemes; season extension technologies; and incorporation of value-added products and flexibility with scheduling and payments. They also outline a typology of CSA, consisting of: (1) traditional single farm models, (2) cooperatives/multi-farm CSAs, (3) low-income consumer-targeted CSAs, (4) multi-farm innovations targeting unique consumer segments with a health and wellness marketing partner, (5) CSAs associated with urban market innovations, and (6) for-profit food hub concept that utilizes a CSA aggregation and distribution model (Woods et al. 2017, p. 5). These diverse models, while embodying direct-to-consumer principles, represent the divergence from the traditional CSA model and expansion of what can be labeled “CSA.” As a result of the expansion and growing diversity of the model – food hub-based, multi-farm, and non-farm – it can be difficult to gather an accurate number of CSAs. Galt’s (2011) study mapping CSAs across California and the U.S. notes the

inconsistency in CSA counts across various agencies, public and private. My research touches on the continuing evolution of the traditional CSA model, sometimes in response to the market changes and customer preferences brought about by the pandemic.

Further, Woods et al. (2017) have observed a shift in the CSA from emphasizing the needs of the farmer to those of the customer. A customer-centric paradigm stands in contrast to the original conception of the CSA, which was meant to represent an economic partnership of mutual support in which the members share the risk and benefits of food production (DeMuth, 1993). While CSA managers use the CSA as a way to access consumers interested in local food, Woods et al. (2017) argue that because of the increasing diversity of CSAs and the way that other businesses are using local food as a marketing tactic, farmers should pay more attention to how they can differentiate themselves.

Local Food Systems Consumer Trends During COVID-19 Pandemic

At the onset of the pandemic, consumer preferences for locally-grown food, grocery store pick-up, and delivery options increased due to public concern about virus transmission and food shortages (Bachman et al., 2021; Schmidt et al., 2020; Severon, 2020). Although some grocery stores imposed precautionary measures for preventing the spread of the virus, many customers were still concerned about contracting the virus and limited trips to the grocery store (Danovich, 2020). Online local foods sales in the U.S. increased by 360% between April and May 2020 due both to increases in the number of orders and dollars spent per order (Thilmany et al., 2020). Researchers from the University of Vermont and John Hopkins University conducted an online survey with 3,219 Vermontans between March 29th and April 12th, 2020 to understand how local food systems and food security were affected by the COVID-19 pandemic (Belarmino et al., 2020). Survey respondents described the benefits of local food production – health, economic, and safety – also expressing concern about local farm viability during and after the pandemic. Those purchasing from local farms were more likely to be food secure. Survey respondents describe their trust in CSA farms to provide them with safely-handled produce and expressed the crisis as an opportunity to transition to a local food economy to build resilience against future disasters and pandemics.

Several reports in the early part of the pandemic convey the large influx of new customers signing up for CSA programs, with many selling out completely (Bachman et al., 2021; Ricker and Kardas-

Nelson, 2020). The surge in CSA sales was reported in interviews with several farms in Northern California (Ricker and Kardas-Nelson, 2020). According to the USDA Economic Research Service, 43.1% of farms selling through farm store/CSA outlets reported greater sales in this area in 2020 compared to 2019 (Whitt et al., 2021). In a study of direct-to-consumer farms, Durant et al. (2022) found that CSAs were the second-most-added market channels during the early part of the pandemic, from March to December 2020. Trends on the consumer side suggest continued interest in CSAs throughout most of 2020. A nationwide survey of 5,000 consumers revealed that 35% bought food from a farm or food enterprise new to them in April 2020, and 3% tried a CSA or direct from producer outlet (Thilmany and Edmondson, 2020). Of those that bought food from a new venue, 34% were still purchasing a CSA or direct from producer in September 2020.

However, there are indications of declining interest in the CSA as the pandemic progressed. In a national survey of 5,000 consumers, Rossi (2022) found that the weekly expenditure for direct from producer (which includes CSA) decreased by 8% from October 2020 to October 2021. Similarly, Seo & Hudson (2022) conducted an online survey about cooking and shopping preferences with 804 respondents in November 2021, and the results indicate that while in-home consumption increased since the pandemic started, most respondents said that they would not continue new food consumption habits formed during the pandemic. Yet, in 2021, CSA farms surveyed nationwide reported optimism about a sustained interest in CSAs and local food purchasing, with many experiencing continued success filling their CSA membership (CSA-IN, 2021). King et al. (2021) question whether pandemic-induced food behaviors leading to increased use of local food systems outlets like CSAs represent a long-term trend or short-term reaction to a crisis. My research helps answer the question of how CSA enrollment has changed since the start of the pandemic and how it is trending as the pandemic wanes.

COVID-19 Pandemic Impacts on CSA Farmers

Across literature published on CSAs and local and food systems during COVID-19, there is a common theme that identifies the pandemic as an opportunity to transform unjust global food systems (Altieri & Nicholls, 2020; Mert-Cakal & Miele, 2020; Lioutas & Charatsari, 2021; Loker & Francis, 2020; Thilmany et al., 2021). Diversified farm operations were shown to be more resilient in the face of the pandemic. In a survey of 218 Flemish farmers, Coopmans et al. (2021) found that farmers specializing in

one crop and doing early cultivation were more impacted by the pandemic than diversified farms or those who could still make changes to their crop plan. They add that the resilience of various actors within the agri-food system varied based on their ability to negotiate prices, adjust production processes, and maintain or reorient sales. Similarly, Durant et al. (2022) found that farmers with a greater diversity of crops and livestock reported being able to respond to the pandemic and were more likely to experience no change or an increase in profitability in comparison to those farmers with lower crop and livestock diversity.

Amid increased demand for local food during the pandemic, many farmers were able to pivot quickly and respond to changing market conditions with demand-driven innovations (Thilmany et al., 2020). A nimble response on the part of local and regional food systems has been attributed to short supply chains and connected multi-stakeholder networks. Demand-driven innovations used by CSA farmers during the pandemic CSA include offering add-ons and home delivery, and utilizing online platforms (CSA-IN, 2021; Thilmany et al., 2020). Despite CSA memberships spiking during the beginning of the pandemic, Durant et al. (2022) found that, early in the pandemic, a higher percentage of direct-market farms experienced decreased profitability (43%) compared to those who experienced increased profitability (30%). Such trends could be attributed to increased labor to deliver boxes safely, heightened sanitation and safety protocols, and higher online technology expenses, (CSA-IN, 2021) all contributing to a greater investment of time in operational logistics when diversifying market channels (Durant et al., 2022). This idea is supported by a case study with three farming operations, finding that while direct market farmers may receive a premium price for direct rather than wholesale channels, the cost of marketing and production may mean that they are not actually profitable (Hardesty & Leff, 2010). Notably, my research explores the changes in CSA enrollment while also examining the challenges for farmers in quickly adapting the CSA model in a moment of crisis.

Direct-to-consumer farmers and ranchers have increasingly used web-based technologies to market and sell their products, and the pandemic accelerated that trend (Pesci et al., 2023). CSA farmers surveyed by the CSA Innovation Network³ shared that online sales platforms increased overall farm sales

³ The CSA Innovation Network is a national community of practice composed of farmers and farmer support organizations dedicated to unifying and strengthening the CSA movement (CSA-IN, 2023).

(CSA-IN, 2021). From a survey conducted with 364 California-based farmers in 2020, Durant et al. (2022) found direct market farmers increasing their use of online sales and marketing were more resilient to impacts from the pandemic. The increase between March and December 2020 was “positively and significantly associated with farmers’ increase in overall profitability, lower concerns about the pandemic’s impacts on their farms, and a greater ability to respond to the disruptions of the pandemic” (Pesci et al., 2023, p. 2). However, Pesci et al. (2023) found that while having an online presence was associated with increased farm sales and profitability, using online sales was associated with increased gross farm sales but not profitability. Findings from Pesci et al. (2023) suggest that, due to the high costs associated with setting up and operating an online sales platform, farmers with bigger operations and more financial resources were more likely to access those platforms. A lack of knowledge or interest in online technology; access to broadband and reliable internet; and/or financial resources may have prevented them from utilizing it during the pandemic.

Additionally, sanitation and safety protocols represent another adaptation undertaken by CSA farmers. The CSA Innovation Network reported increased sanitation and safety protocols implemented by farmers, staff, and CSA members picking up at their sites, including social distancing, face masks, handwashing, and sanitizing stations (CSA-IN, 2021).

In regards to facilitating food access for low-income populations, a survey of 70 CSA farms demonstrated that 21% were authorized to accept SNAP and 57% were interested in accepting it (CSA-IN, 2021). Additionally, the pandemic triggered increased emergency funding and pandemic assistance from the U.S. government, such as the Coronavirus Food Assistance Program, though it was often difficult for small, diversified farmers to access this funding (Ramgopal and Lehren, 2020). Larger farms tended to be more resilient to the impacts of the pandemic and received the bulk of pandemic assistance (Hamann, 2021; Ramgopal and Lehren, 2020; Whitt et al., 2021), while small-scale, diversified farms were less likely to qualify for federal pandemic relief funds (Durant et al., 2022). Findings from CSA-IN (2021) indicate that government funding was funneled to emergency models that acted as aggregator-distributors of food as a response to the pandemic rather than farm-based CSA programs, and many small- to mid-scale farms and equity-based programs missed out on those opportunities. For example, the first round of CFAP (Coronavirus Food Assistance Program), which provided direct payments to

farmers who incurred losses during the pandemic, largely excluded many small-scale specialty crop growers, and instead seemed to favor commodity growers (Hamann, 2021). Small farmers faced language barriers and inexperience filling out necessary paperwork, in addition to lack of exposure to USDA Farm Service Agency offices, where they had to go to file paperwork (Hamann, 2021). According to Tom Vilsack, United States Secretary of Agriculture, 99% of CFAP-1 went to white farmers, and 1% went to socially disadvantaged farmers⁴ (Hamann, 2021). Additionally, CFAP-1 offered payments to farmers based on the national average price decline of a crop or commodity, which was often extremely low, alongside limited commodity eligibility (National Sustainable Agriculture Coalition, 2020). In response to these inequities and disparities, revisions were made for the second round of CFAP funding, and some farmer support organizations like the Community Alliance with Family Farmers (CAFF) in California were allotted funds to provide outreach and technical assistance to socially disadvantaged farmers. CAFF and other community organizations started emergency funds that directly benefited farmers and food access programs (CSA-IN, 2021; Hamann, 2021).

Also part of CFAP, the Farmers to Families Food Box Program was designed to purchase and distribute produce, dairy, and meat to food-insecure families (Broad Lieb and Beckmann, 2021). Farms were subcontracted by awardees, typically nonprofit organizations charged with aggregating, packing, and distributing farm boxes to communities in need. The program initially supported many small and mid-scale farms in early rounds of funding, but subsequently disproportionately excluded those farms from participation by prioritizing the lowest bid for subcontractors and imposing food safety audit requirements.

With the increase in demand for CSAs during the pandemic, alongside opportunities for funding, it is notable that inter-CSA collaboration and networking can be a strategy for farmers to improve membership retention and reduce their workload (Galt et al., 2019b). According to the CSA-IN (2021), this approach was used widely as more farms pivoted to CSA models during the pandemic, citing “an increase in resource-sharing and mutual aid, amongst farmers, support organizations and community members” (CSA-IN, 2021, para. 6) and “an amplification of knowledge and best practices through grower gatherings, webinars, calls, and online forums” (CSA-IN, 2021, para. 6). During the pandemic, national

⁴ The California Department of Food and Agriculture (2023) defines socially disadvantaged farmers as “groups [that] have been subjected to racial, ethnic or gender prejudice because of their identity as members of a group without regard to their individual qualities.”

and regional farm networks and technical assistance providers facilitated farmer-to-farmer discussions about challenges and opportunities for CSA farmers, and shared information about emergency food assistance and aggregation opportunities (CSA-IN, 2021). The topics of pandemic relief funding, mutual aid, and emergency food assistance programs emerge as common themes throughout my research, influencing the ways that farmers were able to contribute to food access throughout the pandemic.

Mental Health of Farmers

The COVID-19 pandemic has resulted in poor mental health for many; the American Psychological Association (Pappas, 2020) reported that in August 2020, 78% of Americans cited the coronavirus as a significant source of stress in their lives. On a global level, studies point to the range of mental health conditions related to the pandemic, including loneliness, anxiety, stress, insomnia, denial, anger, post-traumatic stress disorder, psychological distress, and depression (Galea et al., 2020; Torales et al., 2020; Xiong et al., 2020). Farmers represent a unique subset of the population who experience mental health challenges and disproportionate rates of suicides when compared with other occupations (Perdue, 2018; Zieminski and Friedman, 2023). An extensive review of literature from 1979 to 2017 examines elevated levels of stress, anxiety, depression, and burnout in farming populations, and identifies uncertainty as a major stressor (Hagen et al., 2021). Stressors include uncertainty about weather due to climate change and unstable financial conditions linked to input costs and market prices, as well as loneliness, isolation, and high rates of injury. Extensive research demonstrates that farmers have experienced exacerbated challenges to their mental health and emotional well-being during the pandemic, noting high rates of anxiety and stress among the farming population.

In a study outlining the perceptions, experiences, and responses of diversified farmers in the Great Plains during the COVID-19 pandemic, almost half (47%) of surveyed farm managers (n=53) reported their anxiety increased as a result of the pandemic, with multiple citing the “anxiety of the unknown” (Ebel et al., 2022, p. 9). The most frequently mentioned concerns of respondents during the pandemic involved financial issues, supply chain disruptions, anxiety about family and loved ones, personal health concerns, how to implement social distancing in farm work, and concerns about the negative impacts of the pandemic on society as a whole.

A study of the pandemic's impacts on the mental health of farmers in the United Kingdom, comprised of surveys with 207 farmers and 22 in-depth interviews with individuals providing mental health support to farmers, outlines underlying drivers of poor mental health, including decreased social contact and loneliness, issues with the general public on private land, moving online for social events, relationship and financial issues, illness, and government inspections (Rose et al., 2022). According to the surveys with farmers, 67% of farmers felt more stressed as a result of the pandemic, 63% felt more anxious, 38% felt more depressed, and 12% felt more suicidal. At the same time, farmers reported positive impacts from the pandemic, including being able to continue business as usual, more recognition and value as "essential workers" from the general public, and improved community cohesion in rural areas. Younger farmer survey respondents reported a more negative impact from the lack of social contact during the pandemic, while female respondents reported higher levels of stress and anxiety, which Rose et al. (2022) attribute to often disproportionate increases in childcare responsibilities placed on women.

Further, Scheyett et al. (2023) find that several variables contribute to farmers' level of concern about emotional impacts of the COVID-19 pandemic, including income levels, health, and uncertainty about the future impact of the pandemic on their income and how to access mental health resources. They also found that high-income, field-crop producing farmers were at higher risk for distress and concern about the emotional impacts of COVID-19 due to their dependence on highly complex supply chains. The authors propose these findings can help mental health providers start a conversation about targeted strategies for supporting building resilience for farmers most vulnerable to future crises. Originally overlooked in my research, mental health and its impact on CSA farmers emerged as a striking theme early in the research process. Interviews with California CSA farmers point to the importance of continued focus on the toll that health and climate emergencies take on farmers alongside an already stress and anxiety-inducing profession.

Theoretical Review

As detailed above, CSA is often described as a values-based marketing model for farmers, with an emphasis on its environmental, social, and community benefits. Literature exploring alternative

economies cites CSA as an example of a “community economy,” which prioritizes community care over the accumulation of surplus capital for the individual capitalist.

The Community Economy

Gibson-Graham (2003) engage in discourse around diverse economies as a way to deconstruct the hegemony of capitalocentrism, imploring readers to transform their thinking into a realm of “economic imaginary.” Gibson-Graham (2003) argue that as a society, we give more power to capitalism when it is perceived as the dominant ideology and struggle to see alternatives outside of capitalism. Rather than being constrained by capitalism, Gibson-Graham (2008) proposes that we begin to explore alternative economies to make them more visible as everyday realities. They provide examples of non-market transactions and unpaid housework, which make up 30-50% of economic activities worldwide (as cited by Ironmonger, 1996), and are often overlooked as economic activities. Gibson-Graham (2008) note that these overlooked economic activities account for more hours worked and/or more value produced than capitalist enterprise, arguing that these marginal economic activities have, in actuality, a significant global impact. Further, they cite the contributions to diverse economies from geographers such as Timothy Mitchell, who argues that the economy should be viewed as a project rather than a “transcendental given,” or an obdurate, unmoving structure (Gibson-Graham, 2008, p. 620). As such, Gibson-Graham (2008, p. 623) and other geographers such as Mitchell and Doreen Massey seek to give credibility to new worlds, or “those diverse practices that satisfy needs, regulate consumption, generate surplus, and maintain and expand the commons.” They define this as a community economy, an ethical approach that prioritizes care of the community and environment over the production of surplus capital for the nonproducer or individual capitalist.

When defining the community economy, Gibson-Graham (2006) argue against the notion that “community” implies localism or is necessarily composed of people with a common identity. Instead, there is a “being-in-common” in which all economic practices are actually made up of social interactions and interdependence among both human and non-human actors. Further, they push against the idea of the community economy as an alternative to the “real economy,” which would perpetuate the belief that capitalism is the baseline economic system against which everything must be compared. Instead, they frame the economy as a site of decision and re-politicization, in which people have the agency to choose

and discuss how the economy can operate with regards to distribution of social surplus and expansion of the commons.

Gibson-Graham (2006) specifically refer to farmshare models that provide a greater value of return to the farmer than going through a middle-man, thus helping them stay in business and increasing their standard of living. In other words, CSA farmers sell their crop directly to the end consumers and are not subject to the economic constraints of aggregator-distributors, who may demand a lower price in order to generate their own capital surplus. Additionally, they describe CSA as a globally local activity that places “care of the environment, landscapes and ways of life at the center of economic activity” (Gibson-Graham, 2008, p. 617). As mentioned previously, CSA farmers tend to use agroecological practices related to the way that they farm (e.g., crop rotation, cover cropping, rotational grazing, minimal tillage) and the nature of the typical CSA, which distributes shares within the immediate region, creates shorter supply chains that may reduce transportation distances and use of fuel. Along these same lines, Gibson-Graham et al. (2017) speak to what they view as a developing marketplace of social connections and negotiations, specifically pointing to the CSA model as an example of ethical reciprocity.

Among many definitions of the community economy throughout the work of Gibson-Graham and other geographers studying the topic of diverse and alternative economies, the following offers particular characteristics of the concept:

1) Surplus is produced in safe and fair working conditions (and we recognize this as part of the conditions of survival, discussed above); 2) the decision making about surplus is democratic and involves those who produced the surplus; and 3) the surplus is distributed in ways that contribute to social and ecological well-being (Gibson-Graham et al., 2017, pp. 13-14).

This imagining of this community economy implies a cooperative model that benefits the producers of the surplus (workers), their livelihood and well-being, as well as the health of the environment. While Gibson-Graham identifies CSA as an example of community economy, the experiences of CSA farmers suggests that the CSA model may still be enmeshed in a capitalist economy.

CSA Farmers and Capitalist Constraints

While the original conception of the CSA is defined by embeddedness in social, environmental, and community values, and built on a foundation of shared risk of crop production between farmer and consumer (Kloppenborg et al., 1996; Hinrichs, 2000), the farmer is nonetheless faced with the constraints of a capitalist political economy, which can put them at risk for sacrificing the very values that underpin

the CSA model (Ostrom, 1997; Galt, 2013; Galt et al., 2016, Galt et al., 2019b). Several scholars explore the tension between CSA as a values-embedded economic model and one that is constrained by market conditions, speaking to competitive pressures, farmer self-exploitation, and profitability. Hinrichs (2000) speaks to the tension between embeddedness and the role of marketness and instrumentalism with the economics of the CSA model. As is explained by sociologist Fred Block (1990), marketness reflects the importance of price in a transaction; the lower the level of marketness, the higher the importance of social relations and values as opposed to price. Instrumentalism is connected to individual motivation; high instrumentalism implies the prioritization of economic goals, whereas low instrumentalism encapsulates non-economic goals, including relational ties, spirituality and morality. Hinrichs (2000) argues that the CSA share does not exist completely outside of marketness and instrumentalism, since the farmer must price the share to cover living wages, capital improvements, and supplies to operate the farm. Additionally, CSA members are generally aware of acceptable pricing through farmers markets and local grocery stores and thus hold farmers to that standard for the value of the share (Hinrichs, 2000).

In a study of four different CSA farms in the Minneapolis and St. Paul region, Cone and Kakaliouras (1995) conclude that in order for a CSA farm to be successful, they need a core group of CSA members knowledgeable of and committed to the needs of the farmer. A core group usually consists of long-term members dedicated to the longevity of the farm, for example, re-subscribing after a bad harvest year or contributing when the farm experiences financial hardship. On the other hand, meeting the expectations of CSA members interested in predictability and specific quantities and varieties of produce requires extensive planning and can be operationally challenging for farmers (Hinrichs, 2000). While there may be a core group of CSA members heavily involved and committed to the farm, Hinrichs finds many are more invested in the consumer than community aspect of CSA, with responsibility of the community dimension resting with the CSA farmers (Ostrom, 1997; Hinrichs, 2000). As Hinrichs (2000, p. 300) explains:

This raises the question of social ties that are unbalanced, absent of the reciprocity implicit in the community ideal. Given the considerable gap between the income levels of CSA farmers and most of the CSA members they feed (Ostrom, 1997), the edifice of shared community" may, in some cases, rest on somewhat shaky ground.

These scholars thus point to the imbalance in reciprocity that may occur in CSA programs, which contrasts with the notion that social and community values are inherently embedded in CSA. The imbalance in reciprocity between farms and their consumers is a theme that runs deep in the experiences of CSA farmers in Northern California, which will be discussed later in this thesis.

Furthermore, competitive market pressure is identified as a factor that can lead to the subordination of social and ecological values as well as farmer self-exploitation. Due to the prominence of local and organic food enterprises in California and California having the largest number of CSAs of any state in the U.S (Galt, 2011), California CSA farmers are likely to experience high levels of competition from other market outlets enshrined in similar values. Perceived or real competition may lead to farmers taking actions that compromise the values attached to the CSA model, such as more intensive food production that damages the land or lowering worker wages to cut back on costs (Galt et al., 2016). Additionally, a perception of increasing competition may lead farmers to cut back on non-capitalist endeavors viewed as non-essential that would redistribute surplus capital to the community, such as excess produce donations to food banks or produce gleaning opportunities.

Using political economic theory, Galt et al. (2016) theorize that the perception of competition alongside decreasing profit will cause CSA farmers to invest less in their workers, land, communities, and/or themselves; and/or spend less of their energy on building community, thereby detaching from the social values central to the CSA model. Out of 111 CSA farms surveyed in 2011, Galt et al. (2016) found that the majority of farmers noted either competitive pressures preventing their CSA from being as profitable as they would like or their CSA not being profitable for other reasons. Of the market channels that CSA farmers reported participating in, the CSA is the second least likely to be profitable. Results from survey analysis conducted by Galt et al. (2016) showed that farmers had an overall negative assessment of their own compensation and financial security including health insurance and retirement. Additionally, research from Galt et al. (2016) demonstrates that farmers perceiving high levels of competition are less likely to feel supported by and engaged in shared risk with their membership, as well as covering their production costs. To deal with competitive pressures, CSA farmers are more likely to engage in self-exploitation and sacrifice the original socially-embedded values of the CSA such as shared risk and farmer-member relationships rather than exploit the environment by straying from agroecological growing

commitments. Overall, those farms facing the most competition are least likely to have a core group of CSA members and share risk with CSA members, in addition to having steady or declining membership and shorter minimum payment periods.

Similarly, Galt (2013) argues that direct market farmers are susceptible to self-exploitation when they sacrifice their business' profit for the sake of CSA members, for example, when they price their CSA shares too low to adequately cover their own labor. In turn, the CSA member does not absorb the true cost of the food provided by the farmer, and this farmer self-exploitation can lead to lower work satisfaction and burnout. Overall, the tendency of CSA farms to be constrained by capitalist endeavors while also trying to remain grounded in the social and environmental values presents a complex question about whether and how it is possible for farmers to operate a CSA as a true community economy.

Methodology

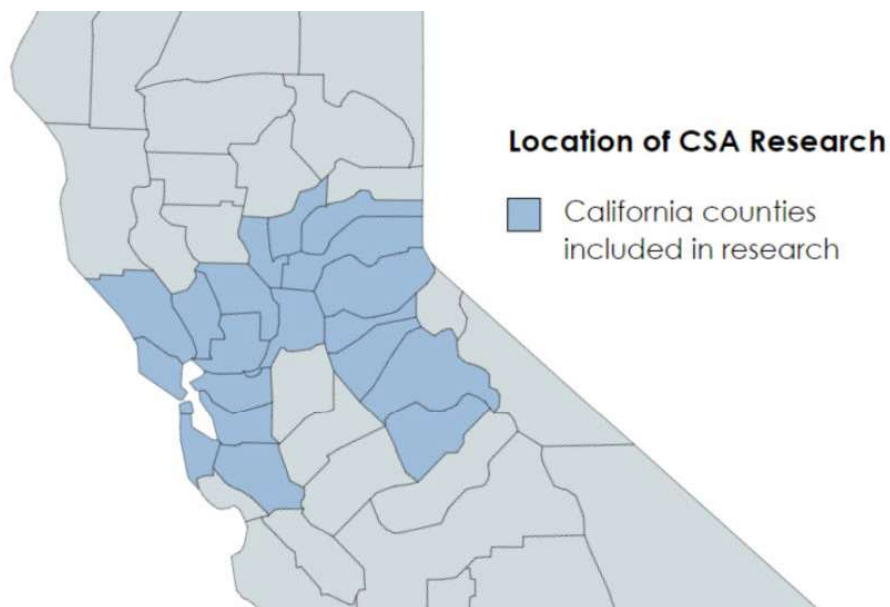
Using a concurrent mixed methods approach, I collected data through surveys and semi-structured interviews at the same time (Creswell, 2009). Three categories were used as sample inclusion criteria: (1) the participant must be a CSA farm owner, CSA manager, or employee knowledgeable about the CSA program; (2) the farm is located in any of 20 counties (Figure 1); and (3) food products offered must include fresh vegetables, fruits and/or herbs.⁵ The 20 counties were chosen as part of a three-region focus in Northern California: Sacramento Valley, Greater Bay Area, and Sierra Foothills. I chose to focus on these regions because of the variance in growing regions, my familiarity with farms in those regions, as well as their proximity to Davis. I identified the 20 specific counties based on online resources defining the boundaries of those three regions. My approach used non-probability sampling as I was interested in learning from a group of CSA farmers that could maximize my understanding of their experience of the COVID-19 pandemic (Onwuegbuzie and Collins, 2007). While I used purposeful

⁵ The research focuses on CSA programs offering produce (vegetables, fruit, and/or herbs). Meat-only and grain-only CSAs were excluded since the nuances of their experiences may be disparate from produce CSAs.

sampling by focusing on specific growing regions that also included farms with which I had familiarity, an element of convenience sampling was present in selecting specific regions due to their proximity to Davis (Onwuegbuzie and Collins, 2007; Palinkas et al., 2015; Etikan et al., 2016). However, this decision was also related to concerns over travel safety due to the pandemic.

Figure 1

Counties Included in Sample



Sampling Methodology

A preliminary list of California CSA farms was created from four online farm directories: (1) California Certified Organic Farmers, (2) Local Harvest, (3) California Department of Food and Agriculture registered CSA farms, and (4) Community Alliance with Family Farmers California Farm Directory. Once I compiled the list of all California CSA farms from this search, I narrowed the list to the 20 counties selected for this study. I found this information either through the online farm directory listing or by conducting a Google Search of the farm to determine in which county they are located. Next, I eliminated any farms that did not offer fruits, vegetables, and/or herbs in their CSAs. Meat- or grain-only CSA farms were eliminated, but if the farm offered a mix of produce and meat, they were included in the population. Once I completed all of these steps, a sample of 109 farms appeared to be eligible for the study based on

information I found online.⁶ Out of those 109 farms, I was able to find contact information for 97 farms from information available online (i.e., websites, directories, social media).

Survey Development and Analysis

I conducted an online survey of Northern California CSA farmers to understand how they have been impacted by and responded to the COVID-19 pandemic. The survey was designed and administered through Qualtrics and was available in English. The survey gathered information on race and ethnicity of farmers; farm characteristics (e.g. acreage, land tenure); CSA characteristics (e.g., type of CSA, products offered), CSA changes across the pandemic (e.g., number of CSA members, gross sales), impacts from the pandemic (e.g., challenges), and strategies to adapt to the pandemic. The questions focused on farmer and CSA manager experiences of the pandemic from March 2020 up to the time they completed the survey, between February and May, 2023. Respondents were asked to provide their farm's name at the end of the survey so that I could check that there was only one response for each farm. Survey respondents were also asked to provide their email address at the end of the survey if they were interested in either/or: (a) receiving a \$10 gift card as a thank you for completing the survey, and (b) receiving updates on the research. As a result, survey responses were not anonymous, but were kept confidential; farm names and email addresses were removed from the data prior to analysis and data files were kept in a secure, encrypted device. The survey was approved by the University of California, Davis Institutional Review Board. Survey questions were reviewed for face and content validity by members of the Galt Research Team and CSA Innovation Network. Three CSA farms (two farm owners and one CSA manager) did a pilot test of the survey to establish the reliability of the survey questions. The survey instrument is included at the end of the thesis in Appendix B.

Participants were first contacted by email on February 18, 2023 and invited to complete the online survey. Three additional reminder emails were sent between April 3, April 22, and May 8, 2023 (Dillman, 1991). The survey was closed on May 20, 2023. I contacted 97 farms by e-mail to request their participation in the survey. Four farms responded by email that they did not meet the criteria (three do not have CSAs and one sold the farm). A total of 33 farms started the survey; 29 of those farms met the

⁶ The approach of searching for farm information exclusively online introduces another element of convenience sampling (Etikan et al., 2016).

inclusion criteria and completed the survey, three farms did not meet the inclusion criteria, and one farm started the survey but did not complete it. With a total of seven farms not meeting the inclusion criteria for the study based on their responses by email or to the survey, the sample size was 90. With 29 out of 90 farms completing the survey, the response rate was 32%. Those completing the survey were offered a \$10 Amazon e-gift card as a thank you for their participation. Funding for the incentives was provided by the Jastro and Shields Graduate Research Award.

The survey data were downloaded from Qualtrics, identifying information was removed, and the data were cleaned and coded. Google Sheets and Microsoft Excel were used to generate descriptive statistics, graphs, and visuals representing the data.

Interview Development and Analysis

Interviews were key to elicit more nuanced responses that address the experiential and perceptual nature of the research questions. The interview included nine questions and asked questions about the participant's role on the farm, when the CSA program was started, changes they observed to their CSA during the pandemic, and challenges and successes. The interview script and instrument can be found in Appendix A. The interview questions were reviewed by members of the Galt Research Team, Vikram Koundinya (a professor and evaluation expert), and members of the CSA Innovation Network. Maximum variation sampling was used to intentionally select 18 racially diverse CSA farms to participate in interviews from the list of 97 farms. Farmers of color were identified by using information online (i.e., website, social media) to select farmers appearing to represent a (non-white) minority group⁷ (Palinkas et al., 2015). Other California CSA studies have shown that CSA farmers tend to be less ethnically diverse than California farmers in general (Galt et al., 2012). For this reason, I was interested in intentionally including more diversity in my interviews to capture more diverse experiences (Onwuegbuzie and Collins, 2007). I offered a \$40 Amazon gift card to those participating in the interview. I conducted interviews over Zoom or in-person, depending on the participant's availability and my ability to travel. Interviews were

⁷ I recognize that assuming that someone is a person of color or non-white without understanding how they self-identify is problematic. Some individuals may appear to me as a specific race, but this is based on my own perception and bias, and it is impossible for me to know their actual background without asking them explicitly.

recorded over Zoom when conducted remotely and with an audio recording device when conducted in-person.

A total of 13 interviews were conducted. I asked all interviewees to complete a survey before the interview. One interviewee participated in an interview but did not complete a survey. Though the sample for interviews was built based on maximum variation sampling, first for racially diverse farms and second, for farms representing a variety of counties in the selected region of California, some of the identified farms did not respond to my outreach and others responded that they were too busy to participate. Notably, data collection was conducted during a heavy rain season in California (February through May). Many farmers were flooded out of their farms and dealing with the stress of managing that immediate situation (Marshall-Chalmers, 2023). To ensure I conducted enough interviews for the research, I began asking farms outside the original interview sample to participate in an interview, particularly once they had completed a survey (these farms still represented the 20 counties included in my population for the research). This method may have disproportionately included farmers more enthusiastic about participating and learning about the findings and may have also been exclusionary for farms limited on time or resources to participate in this research.

To analyze the qualitative interview data, I first listened back to the recordings of each interview, wrote detailed notes (not full transcriptions), and captured salient quotes. I then created a list of common themes based on my initial impressions from conducting the interviews and listening to the recordings. Using those themes, I annotated each set of interview notes and quotations using comments in Google Docs. Then, I reviewed the interviews again, this time, revising and consolidating my original list of themes.

To integrate the quantitative and qualitative data, I looked for common themes that connected findings from both methods, following a concurrent triangulation strategy (Creswell, 2009). I first organized interview data by coding for common themes and responses and identifying overarching themes. Then, I analyzed quantitative data, including organizing and coding responses from open-ended questions and “other” descriptive responses in multiple choice questions. There were consistent overlaps between findings from quantitative and qualitative data, but in some cases, interviews unearthed notable themes that were not addressed in survey questions. Because of this, I was not always able to integrate

quantitative and qualitative findings. Overall, using mixed methods enabled me to collect concrete data about key points such as CSA enrollment changes across the pandemic, while also diving deeper into the nuanced experiences of CSA farmers during this time.

Findings

Mixed methods research was conducted to understand the experiences of CSA farmers during the COVID-19 pandemic and how CSA enrollment has fared as the pandemic wanes. Though the survey addresses quantitative questions about enrollment and gross farm sales, it also asks questions that are more qualitative and descriptive in nature, such as challenges with changes in enrollment and strategies for CSA member retention. The interviews address more phenomenological questions that get at the specific experiences and observations of the interviewees pertaining to accounts of operating the CSA during the pandemic. To illustrate a holistic picture that accounts for the variety of data collected, survey and interview findings are integrated in this findings section when appropriate. Findings answer the aforementioned research questions: (1) how California farmers have used and adapted the CSA model amidst changing market conditions throughout the COVID-19 pandemic, and (2) how California CSA farms are faring as the pandemic wanes. To address these questions, findings are organized by six major themes: (1) characteristics of participating CSA farms, (2) CSA enrollment trends during COVID-19, (3) farmer responses to COVID-19 pandemic, (4) CSA members and customers, (5) farmer experiences, and (6) food access and support networks.

Characteristics of Participating CSA Farms

The majority of survey respondents identified as farm owners involved in the management of their farm's CSA program (79%, n=23), followed by a hired manager involved in the management of their farm's CSA program (17%, n=5), and lastly, in another position on the farm and knowledgeable about the CSA program (3%, n=1). Though 13 interviews were conducted, there were two interviews in which more than one person participated, so there were 16 total interviewees. Notably, one interviewee joined the farm as the CSA manager in late 2020 and two interviewees changed farms during the pandemic. Survey respondents self-identified their race/ethnicity, with the option to choose more than one option. Of survey respondents, 86% (n=25) identified as White, followed by Latino or Hispanic (21%, or n=6). Out of the 29

respondents that responded to this question, five selected more than one option for race/ethnicity (Table 1).

Table 1

Self-identified Race/Ethnicity of Survey Respondents

Race/Ethnicity	Number of responses	Percent of total
White	22	76%
Latino or Hispanic	2	7%
Asian	1	3%
Asian / Latino or Hispanic / Native Hawaiian and Other Pacific Islander / Other	1	3%
Black or African American / White	1	3%
Latino or Hispanic / Native Hawaiian and Other Pacific Islander	1	3%
Latino or Hispanic / White	1	3%
Total number of respondents	29	100%

Survey respondents represented 29 CSA programs farming in 15 counties across Northern California (Table 2 and Figure 2). Three respondents indicated their farm operates in two different counties; the remaining respondents identified farming in only one county. According to survey data, total acreage farmed by each survey respondent (owned and rented combined) ranged between 0.5 and 560 acres (Table 3). The median number of acres farmed by respondents was 5, while the mean was 50.3 with a standard deviation of 125.4, indicating a highly skewed dataset. Of the farms represented in the survey, 31% (n=9) started their CSA program during or after March 2020, while the highest percentage of respondents started their CSA between 2011 and February 2020 (Table 4). Most of the farms surveyed offered vegetables in their CSA (97%, n=28), followed by fruit (86%, n=24) and cut flowers (52%, n=15). Other items offered included: grains and pulses, meat, nut crops, other crops, nursery stock, oil crops, and seed crops (Table 5).

Figure 2

California Counties Represented by CSA Farms in Study

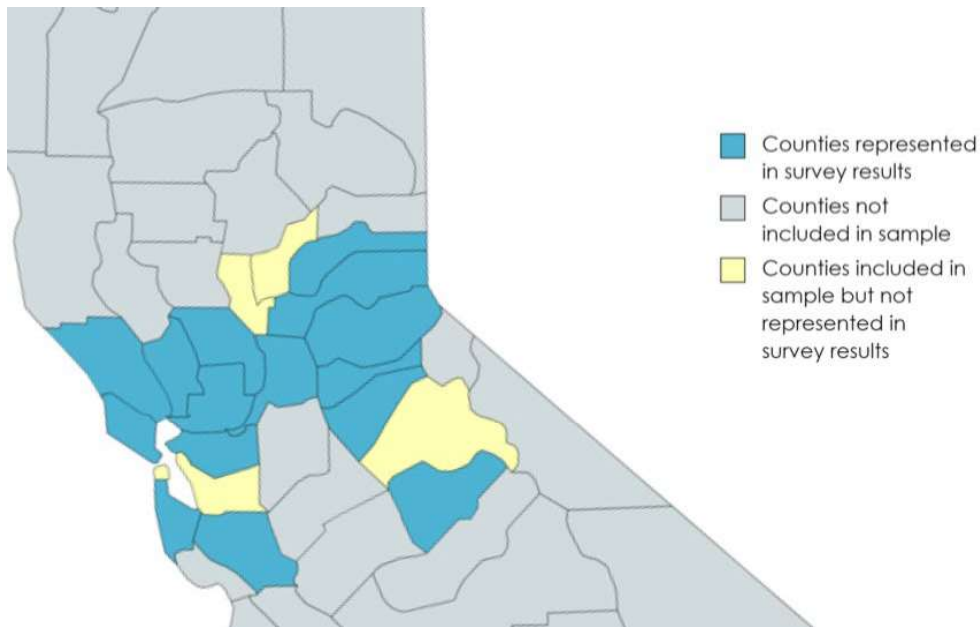


Table 2

Farm Locations by County

County	Number of responses
Sonoma	6
Yolo	6
Sacramento	3
Solano	3
Mariposa	2
Nevada	2
Placer	2
Amador	1
Calaveras	1
Contra Costa	1
El Dorado	1
Marin	1
Napa	1

San Mateo	1
Santa Clara	1
Total number of respondents	29

Table 3

Acres Farmed by CSA Farm Respondents

	Median	Mean	SD	Minimum	Maximum
Owned (n=15)	4	62.2	150.2	0.1	560
Rented (n=20)	5.5	23.8	49.8	0.5	200
Total, owned and rented combined (n=28)	5	50.3	125.4	0.5	560

Note. SD = standard deviation.

Table 4

Year CSA Program Started

Year Range	Number of responses	Percentage
1980-1990	1	3%
1991-2000	5	17%
2001-2010	3	10%
2011-February 2020	11	38%
During or after March 2020	9	31%
Total number of responses	29	100%

Table 5

Items Offered in CSA Box

Item	Number of responses	Percent of CSA farms that offer item
Vegetables	28	97%
Fruit Crops	24	83%
Cut flowers, floriculture, or ornamentals	15	52%

Grains and Pulses	9	31%
Meat	6	21%
Nut Crops	5	17%
Nursery stock	2	7%
Other (open text): eggs	2	7%
Oil Crops	1	3%
Seed crops	1	3%
Honey	1	3%
Herbs	1	3%
Value-added products (jam, sauces, dried fruit, baked goods, pasta)	1	3%
Wool	1	3%
<hr/>		
Total number of respondents	29	
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The surveys and interviews reflect how the CSA model has evolved overtime; Northern California farmers are operating a diverse mix of CSAs and payment plans that deviate from the standard model in which members pay up front for their CSA shares and pick up their boxes on a weekly basis from a set location (Table 6). When asked to choose how they would describe their CSA, most respondents indicated their farm produces all of the contents in their CSA boxes (59%, n=17), while 31% of respondents (n=9) indicate they produce 50% or more of contents in their CSA and supplement with items from other farms (Table 7). Though most farms operate a standard CSA, alternative CSA models include Friends of the Farm, Convenience Card, Multi-Farm CSAs, Winter CSAs⁸, and customization and add-on options, with payment plans including paying installments up front, pay-as-you-go, week-to-week, and reduced cost for low-income populations (Table 6).

⁸ See Table 8 for definitions of these alternative CSA models.

Table 6*Type of CSA Model*

CSA Model	Total responses	Percent of total
Standard CSA (farmer/manager sets box contents and pre-packs boxes for member pick up)	24	69%
Friends of the Farm Card (members buy a card in the beginning of the season to use in the style of a debit card to purchase produce throughout the CSA season)	2	6%
Customizable CSA (CSA members can choose what goes in their boxes)	2	6%
Farmers market style-CSA (set up tables of produce and customers choose what they want)	2	6%
Other (open text): limited customizing (can choose some items)	2	6%
Other (open text): income-based	2	6%
Other (open text): add-ons	1	3%
Total number of respondents	29	

Table 7*Source of CSA Contents*

CSA sourcing description	Number of responses	Percent of responses
We produce all of the contents in our CSA box.	17	59%
We produce 50% or more of the contents in our CSA boxes and supplement with items from other farms.	9	31%
We produce less than 50% of the contents in our CSA boxes and supplement with items from other farms.	3	10%
Total number of respondents	29	100%

Table 8*Alternative CSA Models*

Model name	Description
Convenience Card	Like Friends of the Farm, the Convenience Card model affords flexibility to the customer by allowing them to purchase produce at the farmers market through a prepaid card held by the farmer, instead of receiving boxes with a set mix of produce. Before the start of the season, customers purchase a card with a set value between \$150 and \$450 and the farm adds on 10% as an incentive (i.e., \$150 becomes \$165). In this way, the farmer still receives up-front capital in the spirit of a traditional CSA, but gives the customer more choice over their produce.
Multi-Farm CSA	In a multi-farm CSA, several farms collaborate to provide regular boxes of produce to their members. Rather than a single farm taking on the burden of producing a wide variety of fruits and vegetables, participating farms engage in joint crop planning to divide growing equitably and each farm specializes in a few crops to supply to the CSA. The farm overseeing management of the CSA receives an extra cut of earnings.
Winter CSA	A Winter CSA operates in a similar way to a traditional CSA in that members pay up front (what they can) in exchange for a regular share of the harvest. In this case, the CSA boxes (mostly storage crops) are offered once a month and only during winter months. This model has the potential to benefit the health and well-being of the farmer by shifting the seasonal patterns of work to avoid heat waves and wildfire smoke. In California, it is also an adaptive reaction to climate change.

Note. The descriptions of these alternative CSA models are based on conversations with the farmers participating in this research. They are not meant to be exact, broad definitions for all farms operating these models, but rather, examples of how farms included in this research are innovating with CSA.

CSA Enrollment Trends During COVID-19

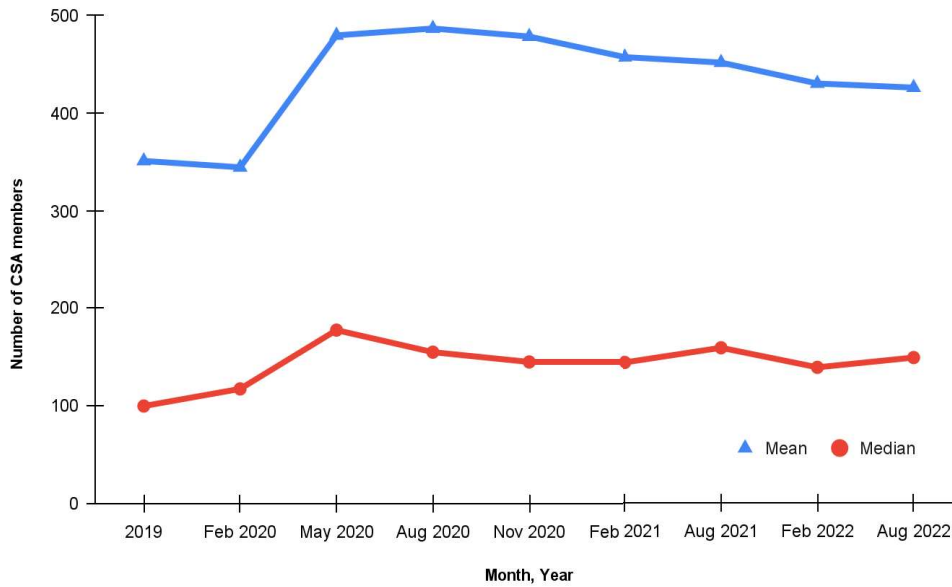
Survey respondents reported their best estimates of CSA member enrollment numbers across the pandemic. All 29 survey respondents answered the question, which requested CSA member enrollment estimates from 2019; February, May, August, and November, 2020; February and August, 2021; and February and August, 2022⁹. I excluded enrollment numbers from analysis that were “0” if the farm had not yet started their CSA program or if the farm was on a break from their CSA due to the season. A summary of the CSA member enrollment data can be found in Appendix C. For mean and median CSA enrollment counts (Figure 3), I included only farms that responded to every time period in the survey, excluding farms that started their CSA after 2019 or have seasonal CSAs to avoid skewing the numbers. The mean CSA enrollment count reaches a peak in August 2020 with 487 members, representing a 38% increase from 2019 (mean of 352 members). The mean falls slightly to 452 members in August 2021, a 7% decrease from August 2020, and continues to decrease into August 2022 to 426 members, a 12% decrease from August 2020. Notably, the mean CSA member count in August 2022 remains significantly higher (21%) than 2019. The medians follow a similar pattern, though the median (100 members) in August 2022 is 50% higher than in 2019 (150 members).

The sum of CSA enrollment for all survey respondents from 2019 to August 2022 (Figure 4), shows a similar pattern, with a steep increase of CSA members in 2020 followed by a gradual decline. Though it is from a limited sample of CSA farms, the data suggest that CSA member enrollment numbers generally spiked during 2020 with the peak sum of enrollment in August 2020 at 6,820 members, representing a 41% increase from 2019 (4,573 members). Total CSA enrollment has been decreasing as the pandemic wanes, to 6,518 members in August 2021, a 4.4% decrease from August 2020. While CSA enrollment dropped again in August 2022 to 6,015 members (12% decrease from its peak in August 2020), enrollment remained 32% higher than it was in 2019 (Figures 3 and 4).

⁹ Notably, one farmer suggested collecting data on the number of CSA boxes delivered per week rather than only the number of CSA members enrolled. They explained that, particularly at pandemic peaks, CSA members would buy a box for a friend in addition to their own some weeks, which became a loophole since there was a waitlist on the farm’s CSA during that time. In this way, one enrolled CSA member does not necessarily equate to one CSA box. Additionally, some CSA farms allow members to pause their subscription for an indefinite period of time, so there may have been times when not all CSA members accounted for in the enrollment survey question were active.

Figure 3

CSA Enrollment Changes, 2019-2022

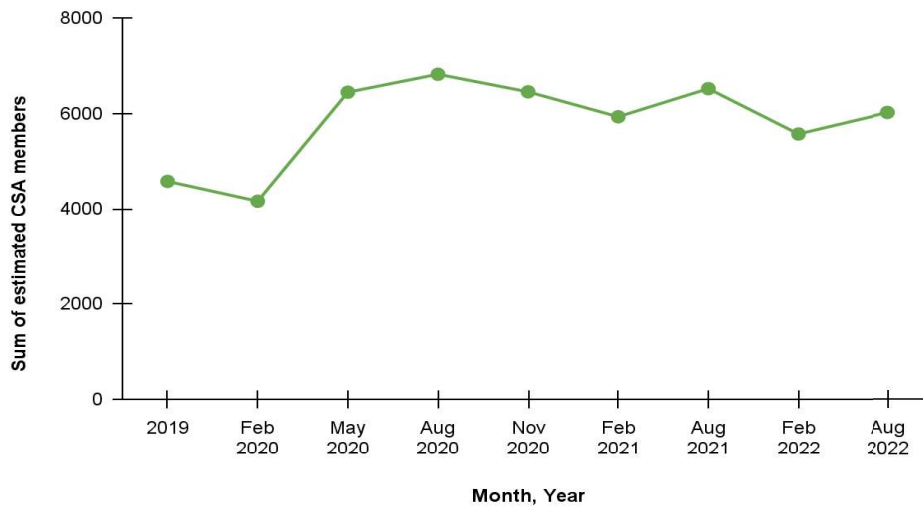


Note. Mean and median CSA enrollment between 2019 and August, 2022, and CSA program counts.

Enrollment numbers represent the best estimates of the survey respondents.

Figure 4

Total CSA Enrollment, 2019-2022



Note. Data reflects the sum of CSA members across all survey respondents' best estimates between 2019 and August, 2022.

While CSA enrollment has trended down since its peak in the beginning of the pandemic, enrollment data from the survey demonstrate that most farms (n=19, or 66%) had higher enrollment in August 2022 than in 2019 (Table 9). CSA enrollment was lower for five of the surveyed farms (17%) and about the same for the remaining five farms (17%). The survey question about enrollment ends in August 2022, but interviews were conducted in the first half of 2023, so it is unclear how many of the farms still had higher enrollment at the time of the interviews.

Table 8

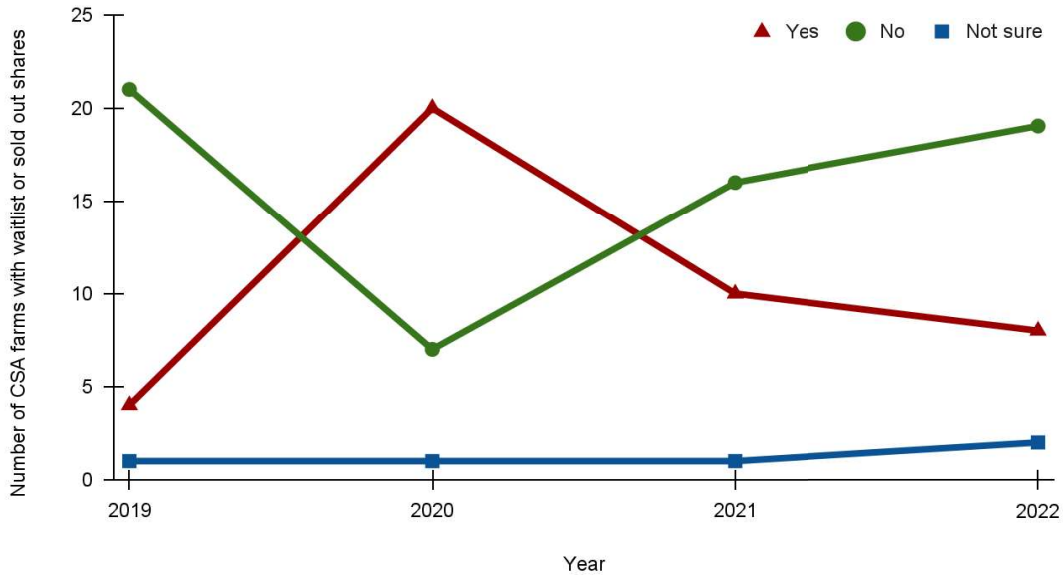
CSA Enrollment: Comparison Between 2019 and August 2022

Difference in enrollment between 2019 and August 2022	Number of respondents	Percentage of respondents
Number of farms with higher enrollment in Aug 2022	19	66%
Number of farms with lower enrollment in Aug 2022	5	17%
Farms with about the same enrollment in 2019 and Aug 2022	5	17%
Total number of respondents	29	100%

Survey respondents also reported on the existence of waitlists or selling out of CSA shares between 2019 and 2022 (Figure 5). Four (15%) of respondents reported having a waitlist or selling out of their CSA shares in 2019; this increased to 20 respondents (71%) in 2020, which is a 500% increase. In the subsequent years, the number of CSA farms with wait lists decreased to ten (37% of respondents) in 2021 and eight (28% of respondents) in 2022. Overall, the number of farms with a waitlist in 2022 was 100% higher than in 2019 (Figure 5).

Figure 5

CSA Farms with Waitlist or Sold Out Shares (2019-2022)



Note: CSA farms indicating whether they had a waitlist or sold out of CSA shares for each year from 2019 and 2022.

The accounts from interviews with CSA farm owners and managers reflect the enrollment and waitlist trends captured in the survey. Interviewees explained that the demand for CSA shares increased sharply in the beginning of the pandemic, particularly leading up to and during early shelter-in-place mandates, to the point where many had to instate waitlists to slow sign-ups and manage the volume of customer intake. While there was a large increase in CSA enrollment in the beginning of the pandemic, most interviewees reported a decline in enrollment as pandemic restrictions were lifted. Some interviewees also observed more members taking vacations again, meaning the farm delivered fewer CSA boxes throughout the year. Other interviewees reported reducing the number of CSA pick-up sites in some cases because there are not enough boxes to warrant a delivery. Speaking about their CSA programs when interviews were conducted between February and May, 2023, interviewees generally expressed that demand has decreased to the point that they've removed the waitlist. Some interviewees expressed that, while they did not have to market their CSAs earlier in the pandemic, they are now making an effort to market their CSA again, and in some cases, have not been able to recruit enough

people to fill their CSA programs to their full capacity. One farm observed an increase in the number of farms operating CSAs in their region during the pandemic, noting that many of those same farms are no longer operating a CSA.

Notably, CSA demand may vary regionally and based on the area served; for example, two of the interviewed farms serve their surrounding rural area where other CSAs are not available. One of these farms had a waitlist for their CSA prior to the pandemic, which they attributed to being the only CSA available in the area. While both farms experienced growing waitlists early in the pandemic, they had relatively consistent CSA member enrollment numbers from pre-pandemic to the time of the interview. Both were farming on a small-scale acreage, which limited their ability to accommodate the increased demand for CSA shares while other farms were growing their CSAs in response.

Farmer Responses to COVID-19 Pandemic

Though the increase in CSA member enrollment was a welcome change for many farms as they were losing sales from other market channels such as restaurants and food service accounts, the sudden spike also brought challenges. Many interviewees noted the labor-intensive nature of running a CSA program, even outside a pandemic – the complicated logistics of delivery to pick-up locations or homes; offering the right amount of produce; growing a large variety of produce; packing boxes by hand; and managing communication with CSA members, including customer service, writing newsletters, and providing education about how to store and use the produce. Survey respondents identified common challenges they experienced as a result of changes in CSA enrollment (Table 10), with the most responses for educating new members on what to expect (n=13), crop planning (n=13), and predicting availability for other market channels (n=13). Some interviewees shared that they intensified crop production to accommodate more CSA members and created new systems and protocols to protect the health of their employees, customers, and themselves, such as creating more space for packing CSA boxes. Interviewees also confirmed that the influx of new CSA members sometimes required more education (i.e., food storage tips, working with the volume of produce in the box, box pick-up logistics).

Table 10*Challenges Experienced as a Result of Changes in Enrollment*

Challenge	Number of responses	Percent of total responses	Percent of respondents that chose this option
Educating new CSA members what to expect (e.g., quantity, food storage, recipes, logistics of picking up box, etc.)	13	17%	45%
Crop planning (e.g., ensuring that there are enough items / item variety to fill boxes)	13	17%	45%
Predicting availability for other market channels (e.g., restaurants, grocery stores, wholesale)	13	17%	45%
Labor availability	9	12%	31%
Other (please describe)	9	12%	31%
Transportation of CSA boxes to delivery locations	7	9%	24%
Shortages of packing supplies	7	9%	24%
Insufficient online technology to manage CSA efficiently or learning curve with new online CSA management technology	5	6%	17%
Not sure	2	3%	7%
Total responses	78	100%	

Though crop planning was identified by 45% of survey respondents as a challenge from the changes in enrollment, most of the interviewees chose not to change their crop plans to accommodate the sudden influx of CSA members or could not in 2020 because of the timing of planting. Farmers were uncertain about how long shelter-in-place would last and how long new members would stay enrolled in CSAs, creating hesitancy around making major changes to crop plans. At the same time, some interviewees reported increasing and intensifying field production because of the increased demand for produce during the pandemic.

Interviews and surveys show that CSA farms used adaptive strategies to accommodate the increased demand for direct-to-consumer local food (Table 11). Examples of innovations include offering waitlisted customers “one-time” mixed boxes based on produce left after harvesting regular CSA boxes, and pre-bagging produce to sell for grab-and-go at the farmer’s market. These strategies enabled farms

to distribute more produce when they could not meet demands for their regular CSA shares for reasons such as limited space in delivery vehicles and insufficient crop variety available after packing the regular CSA shares. According to interviewees, early in the pandemic, CSA members reportedly increased their purchasing of special orders and add-ons – items offered as optional supplements to preset CSA box items. In addition to innovative models that helped farmers reach more customers, some interviewees reported adopting new technology such as online sales and CSA management platforms. More sophisticated management systems helped improve the efficiency of their CSA programs, while the learning curve was sometimes burdensome to CSA managers during an already chaotic time.

Table 11

CSA Strategies and Adaptations

Strategy / adaptation	Description
Supplement CSA with add-ons	Increased add-on options by offering more items and/or sourcing food items from neighboring farms and local businesses to offer more variety for box contents
Online farm stand	Used online farm stand to offer excess crops to customers for ordering and picking up at the farm
“One-time” CSA boxes	Created “one-time” CSA boxes with produce that had been intended for restaurants and had less variety than regular CSA boxes, and offered those as first-come-first-serve to those on waitlist
Farmers market CSA	Offered pre-bagged mix of produce at farmers market at set prices for grab-and-go
CSA for those facing health or economic hardships	Created CSA exclusively for those who were immunocompromised or at high risk with support-grant funding

Survey respondents also remarked on how they made changes to their CSA programs to adapt during the pandemic: adding more CSA box shares to their program to mitigate risks of farmers markets

and restaurant accounts being shut down; allowing customers to order boxes on a week-to-week basis; offering home delivery; and increasing the number of pickup days to split the larger number of members into more groups (Appendix D). One survey respondent noted that they stopped doing some components of the CSA, such as writing a weekly newsletter, reminding members about the process, and calling members if they didn't pick up.

Many interviewees emphasized that growing a diversity of crops and utilizing a mix of sales channels (e.g., wholesale, farm stand, farmers market, CSA) is a strategy for building more resilience into their farm businesses. Referring to the ability of their farm to adapt to changing market conditions during the pandemic and continue to operate without making major changes, Farmer¹⁰ 1 explained: “Diversity and diversity of income streams at this farm shows that you can have pretty major shake ups and not go under because you have these different pillars to fall back on.” While many farms lost restaurant and food service sales at the beginning of the pandemic and farmers markets stood on shaky ground initially, the simultaneous surge in CSA demand allowed those farms to pivot without taking major losses to their income. Farmer 13 also described how intentionally building diversity into their farm helped them be more resilient during the pandemic:

... if one crop fails, then you've got other crops that give you financial security, or just ... food security against those types of unforeseen challenges. And then we look at it through the business lens. Also, diversifying your markets so that if something goes – you know, prices go down or the market's saturated or something happens in the economy like a pandemic, something big like that, you can kind of adapt – it gives you a buffer with other avenues. It can be a little more complicated to do it that way, but it definitely saved us in that situation because, yeah, so restaurants went down so we took a loss there, however CSA went up ...

In this way, the interviews showcase the way in which CSA farms were able to adapt to the pandemic and protect their businesses amid an unpredictable and unstable market.

Survey respondents also shared their farm's annual gross farm sales for 2019, 2020, and 2021 (Table 12). The sum of gross farm sales across all respondents demonstrates an increase between 2019 and 2020 (34%), and then a small decrease from 2020 to 2021 (8.3%). The mean gross farm sales in 2021 dip below 2019 and the peak in 2020, while the median illustrates an increase from 2019 and 2020

¹⁰ I use the term “farmer” to describe interviewees. This term refers to farmers, farm managers, and farm owners.

in 2021. It is worth noting that new farms added in more recent years may have small gross sales, which could artificially drop the mean.

Table 10

Gross Farm Sales

	Sum ^a	Mean	Median	SD	Maximum	Minimum
2019	\$11,494,469	\$604,972	\$106,000	\$1,441,584	\$6,000,000	\$8,500
2020	\$15,405,544	\$682,893	\$130,000	\$1,742,634	\$8,000,000	\$3,500
2021	\$14,125,536	\$584,481	\$163,000	\$1,419,652	\$6,500,000	\$4,500

^a The sum of gross farm sales only includes farms that provided a response for all 3 years (n=19).

Survey respondents also identified the percentage of annual gross farm sales that came from their CSA program in 2019, 2020, and 2021 (Table 13). The mean percent of gross farm sales from the CSA increases from 34% to 45% between 2019 and 2020, and dips in 2021 to 41%. The median percent of gross farm sales coming from the CSA follows a similar pattern.

Table 13

CSA as a Percentage of Gross Farm Sales

	Number of respondents	Mean	Median	SD	Minimum	Maximum
2019	23	34%	28%	31.9	0%	100%
2020	24	45%	38%	30.6	0%	100%
2021	25	41%	35%	30.2	0%	100%

CSA Members and Customers

When discussing the varying levels of commitment from CSA members during the pandemic, one interviewee described the concept of “CSA people” – committed members who want to eat a certain way – contrasting this to “I don’t want to go to grocery store” people or “farmers markets are scary” people who joined the CSA for pandemic-related reasons, but whose lifestyles may not align with the CSA in regular times. A similar idea was repeated by other interviewees, who described their perception that

many people are interested in CSA as a concept, but find it difficult to be committed to a regular box of produce that is based on farm availability and seasonality rather than choice. As put by Farmer 10:

Through the pandemic, I think a lot of people learned what a CSA is, and we did have a lot of people, curious, asking us questions after 2020 into 2021, 2022, asking us, what our CSA is, how they could be a part of it. Ultimately, I think it's a little bit too much of a commitment for a lot of people to actually subscribe to a certain number of boxes for a whole season. I think a lot of people are...not actually ready to fully commit.

Many interviewees observed that a scarcity mindset and anxiety about the (un)availability of food early in the pandemic drove many to sign up or show interest in their CSA programs.

Several interviewees offer on-farm events for their CSA members and noted less interaction and connection to CSA members than before the pandemic, even with the end of pandemic restrictions like mask mandates and social distancing. A nonprofit farm that participated in an interview noted that while they functioned mostly as a community-building organization prior to the pandemic, they are now perceived primarily as a food distributor because of the role they took on during the pandemic.

While interviewees reported a sense of disconnect from CSA members, they also remarked on the supportive actions of CSA members during the pandemic, such as dropping off homemade masks at the farm for employees and sharing appreciation for the service provided by the CSA farms during the height of the pandemic. In the years of the pandemic, many CSA farmers were also confronted with wildfires, be it smoke or physical encroachment onto their properties. One interviewee described the support they received from their CSA members when fires threatened their farmland. The farmers lost water and electricity at the farm and became stuck at the farm putting out fires as roads were blocked, preventing them from delivering CSA boxes. When they shared with their CSA members that they might not be able to deliver the CSA boxes for two or more weeks and offered refunds, the overwhelming majority of CSA members refused to take their money back, arguing that this type of support – through the ups and downs – is what they signed up for as CSA members. In another case, a CSA farm owner described putting out a request to their CSA membership for assistance covering the cost of a new delivery vehicle during the pandemic. The CSA members heeded their call for help and provided enough donations to pay for the new vehicle.

In many instances, interviewees noted the importance of their CSA newsletters in staying connected with their membership. Though many interviewees expressed hesitancy about increasing the

price of the CSA to keep up with inflation and the rising cost of operating their farms, when they did implement price hikes, they generally met with support and understanding from their membership.

Several interviewees serving rural areas remarked seeing impacts on their customer bases as a result of the trend of relocating from urban to rural areas during the pandemic due to the flexibility of remote work. One interviewee perceived this as a potential opportunity for their farm, theorizing that the young, formerly city-dwelling families may be accustomed to paying higher prices for local, organic food. On the flip side, an interviewee serving the Bay Area noted many CSA members moved out of the state or country during the pandemic. Overall, there was a sentiment that the pandemic may have some lasting impacts on the composition of local food customers in certain regions of Northern California.

Farmer Experiences

Many CSA owners and managers interviewed expressed a feeling of empowerment and pride providing an essential service to their communities during the pandemic. Others were proud that they were simply able to “keep going” and continue to distribute food to their communities amid the chaos of the pandemic. As Farmer 3 put it, “Overall I felt grateful that I was able to feed so many people so much food.”

However, interviewees also expressed that the responsibility they felt to serve their communities contributed to feelings of stress and anxiety throughout the pandemic. At the beginning of the pandemic, CSA farms reported being inundated with emails and phone calls from people who were desperate to sign up for their CSA programs and did not want to be on the waitlist. Interviewees reported in some cases taking on the anxiety from the general public in ways that impacted their personal mental health.

Farmer 11 explained:

... the very desperate energy from everyone was very hard to absorb. I mean, yeah, I had a really tough time those first few months. I worked nonstop. I called my boss crying regularly, it felt like. I developed pretty severe anxiety. ... I think interacting with so many humans was really challenging and just absorbing a lot of that energy...

Some interviewees described going out of their way to ensure that immunocompromised or elderly CSA members were able to safely access their food, offering home delivery and in one case doing grocery shopping for an elderly CSA member, sometimes at the expense of their own mental health.

Furthermore, health concerns and unknowns about the pandemic were commonly cited challenges for the

interviewees' farm operations. Owners and managers expressed feelings of stress and anxiety regarding their responsibility for keeping their employees safe, coupled with uncertainty about how best to protect their employees' health and well-being during the pandemic. This was particularly challenging amid evolving COVID-19 guidelines from the Center for Disease Control and other public health agencies. At some farms, employees were part of the same family and shared housing, so the stakes felt especially high for their well-being and the potential impact on farm labor. Farmer 9 expressed these concerns while talking about hiring processes decision-making, and access to personal protective equipment like gloves and masks during the pandemic:

Another [challenge] was: How do you hire somebody? How do you talk to them? Are we going to mandate vaccines (yes, we are)? Is that legal? Can we get slammed for that? Do we need gloves? Where do we get gloves from because everybody wants gloves right now? You know, that was a lot of the decision-making. And then the normal – are we ready to get in that field yet, is it going to flood – there's already a lot of decision-making, especially around the kind of farming we do.

In addition to concerns about keeping their employees safe, interviewees were preoccupied with following safe protocols for CSA deliveries and pick-ups. One interviewee described sanitizing and wiping down every CSA box for months in the beginning of the pandemic and packaging everything one full day before being received by customers because they heard that the virus could stay on contact surfaces for 24 hours. Others, such as Farmer 11, described similar lines of questioning about best practices for protecting the health of their employees and CSA members:

All the logistics associated with the pandemic were very challenging, of like – do we require masks? Are we still going to let people go inside delivery closets that we have? Or what if people don't want to wear masks ... the first few weeks our CSA boxes were missing a lot – we had some theft problems. So we had our own employees host the sites for several weeks and check people off and wear little cloth masks, and was that the right safety thing? We navigated a lot of like, what's the right protocol for our employees getting Covid and interacting with other people? We were all – what was our mask policy? We were working outside every day, but it took several months or – I don't remember the timeline – for people to realize that I like, it's not as transmittable outside even though that's kind of what we gathered because we were working outside. But then inside our barn, and you know ... we were touching all these peoples' produce and these people were touching boxes at our CSA sites, our delivery drivers were touching the boxes. Are delivery drivers wearing gloves? Are they wearing masks the whole time? They're delivering outside. Are they, like – do CSA hosts even want us to deliver at their site because this is contagious and maybe – blah blah blah. Or maybe our CSA members get Covid. Are they going to the site? Are they spreading it there? Are we going to reimburse people if they have Covid and they can't pick up their box – that was a big thing. I think we did do that for a while. Or – oh god, this was such a crazy time.”

The quote from Farmer 11 illustrates the challenge of dealing with the unknown of the pandemic and a common worry of putting CSA members at risk if they did not take the proper steps to minimize the risks associated with virus transmission.

Interviewees also expressed frustration that many CSA members dropped out once restrictions were lifted and the vaccine was released. Some farmers perceived a quick change in the attitudes of consumers once the food-buying climate became easier and safer to navigate. Farmer 10 expressed this sentiment:

It was hard because farmers were put on a pedestal in the 2020 pandemic. And everyone's like oh, it was like the "heroes, the essential workers'." ... Like, everything's going to be okay, we have these essential workers. It felt good, but it was honestly like a lot of pressure. I just felt like we were pulled in so many directions. ... It was very soul-sucking being put on that pedestal and having this like, hero, essential worker mentality to live up to. And then it's like dude, the pandemic's over, and that's all gone. It's like oh you're just farmworkers again. And we're like wait, but we were like, we were your essential worker heroes last year and now we're like nothing to you again. It was hard to navigate, a lot of ups and downs, definitely.

The impacts on farmers from the pandemic were further compounded by events occurring at the same time – climate change, wildfires, drought, the economic downturn, racial injustice and turmoil, and a politically-charged atmosphere – which created uncertainty about the future and led to stress, anxiety, grief, and burnout. From Farmer 8:

The coupling of the turmoil of Covid, the turmoil of racial reckoning and egregious social injustice, and frankly, like the political kind of attack that we're seeing on women's bodies, coupled with drought, and now coupled with flooding, as someone who is a farmer but also works at the intersection of agriculture and equity and climate in my work outside of actually, my work on the ground, the fatigue and the burnout is really intense, and it's like some of the health issues I've been having are residual from like intensity of Covid coupled, and then intensity of climate events, just like shoved on top of that like one after the other, like drought, and now flooding, and the financial impacts of that but even more so the kind of the emotional impacts of it.

Interviewees reported feeling emotional exhaustion and a burnout as a result of these events and also absorbing the anxiety from CSA customers (as well as farmers market customers). Many interviewees operating on a smaller scale expressed uncertainty about the future of their and other small farm businesses. Among several interviewees there was a concern about small farmer burnout and attrition in the near future because of the compounding of the pandemic alongside tangible manifestations of climate change like drought and wildfires that have direct impacts on farmers. Farmer 6 described the tension between a desire to serve the community by providing food while also dealing with the stress of taking on that responsibility. This is tied to their concern about farmer burnout in the farming community:

“There were really good aspects in terms of sales, but also the stress of being in a situation where suddenly there was a whole lot of demand on short notice. It’s just really stressful because you want to step into that space, you want to take care of the community, you want to fulfill that role that I’ve been seeing for farms, but it happened really quick, and you don’t necessarily feel prepared or ready to scale up in those ways. And I wonder, I just heard another farmer stepping away for an undetermined period of time and I know another farmer sort of scaling back ... to what extent that burst of stress and pushing through it will lead to some amount of turnover in the next few years. Because, you know, people buckled down and focused and did what they could but once you get on to the other side of it, it can lead to a lot of questioning of what you’re doing or just feeling burnt out.”

The idea of “pushing through” and committing to their CSA membership no matter the conditions was a common theme among interviewees. Interviewees expressed a sense of obligation towards their CSA members, while reflecting that it may be damaging to their own health and well-being. Farmer 11 also expressed this idea:

For whatever reason, it felt worth it to be like, we can provide food, and we can be this reliable source. I think we’ve always had – the nature of our CSA delivering to Aggieville¹¹ and that surrounding area has always been like, “We will weather any storm because it’s always so snowy, and we’ll never miss a delivery, and we will get your produce – we will be super reliable.” And that same mentality came through, or was like, thrust upon me in the pandemic. We will weather any storm, we will handle this. We will grow 900 bunches of radishes even though we never have because we were deemed emergency personnel and essential workers and whatnot and I think that was a little extreme and it maybe wasn’t healthy for anyone to have that, like, ‘we have to do this’ kind of thing.

Interviewees noted several personal and business changes that occurred as a result of challenges during the pandemic. These included: attending therapy, working less as business owners and relinquishing more responsibilities to employees, setting boundaries, and changing personal lifestyle habits like elimination of drinking alcohol and coffee. At one farm, a mental health program was developed to provide stipends for employees to use for purchases or services related to health and wellness. Another interviewee noticed a cultural change in the way that mental health and time off from work is viewed, noting that they observe more understanding when someone needs to take the day off if they are not feeling well. With the context of broad societal conversations about unfair treatment and low wages for service workers resulting from the pandemic, one farm crew began engaging in collective bargaining, prompting farm management to develop an employee manual and establish clear guidelines that supported more equitable bonus structures across all staff.

¹¹ I have replaced the name of this city to protect the identity of the farmer.

When asked about the long-term impacts of the pandemic on their mental health, some interviewees expressed experiencing lingering effects and are just now recovering from the exhaustion of the pandemic, while others observed feeling like the exhaustion is just catching up with them now. However, it was difficult for respondents to disentangle the impacts from all of the global and societal events external to the pandemic that have occurred since 2020. COVID-19 did not happen in isolation of other stress-inducing events, and interviewees had a sense that these events all impacted their mental health in aggregate. Among the farms interviewed, some responses to the stress included: pulling back and scaling down their operations; shifting to a winter-only CSA; and pivoting to off-farm income and reducing their on-farm production.

Additionally, there was a feeling of isolation from their CSA members and social networks, including the farming community. Farmer 6 explained the change in communication between farmers during the pandemic:

... also a removal of a lot of the support systems or the community around farming, like this year we're going to try to restart having barbeques and potlucks with other farmers, but for the first – well, I guess it's almost been three years now – all of that went away. And that was typically something that we did. You had a much more active farming community and then it just became sort of like texting or messaging over Instagram, which doesn't really serve a lot of the same functions, so there was a lot more of a sense of isolation.

Another interviewee described difficulty connecting with their friends outside of farming during the pandemic, noting that for a lot of people, life slowed down and they were able to spend more time at home or spend time with family. In contrast, as a farmer, life got busier during the pandemic and the interviewee felt they did not have the “break” that others had, leading to feelings of disconnection to people.

In short, CSA farmers responding to interview questions about mental health during the pandemic expressed a tendency towards sacrificing their own well-being to ensure that CSA members received a consistent supply of fresh produce from their farms. Interviews reveal a tension between the sense of pride CSA farmers and managers felt providing an important service to their communities and the intense stress that put on their day-to-day lives.

Food Access and Support Networks

Another common theme that emerged from the interviews was food access and the roles that other organizations played in supporting farmers in reaching food insecure populations or providing them with additional streams of income when others disappeared. For some farms, this became more important as food insecurity issues were exacerbated by the pandemic. Many interviewees viewed the pandemic as an opportunity for CSAs to align more with their values around food access by creating low-income CSA programs, accepting EBT payments, offering free box programs, and creating programs where paying members cover low-income boxes. Some created these programs during the pandemic while others built upon or grew existing programs. Additionally, farms were able to expand their reach to low-income populations by selling their produce to food relief programs during the pandemic, some of which were running box programs themselves. Farmer 2 described the opportunity to reach more low-income communities as a result of new programs stemming from the pandemic:

For the first time we were also thinking about the food access piece. Like how there is a gap there that – there is funding for food insecurity. ... And wow, isn't it great to be able to connect that with sourcing from small farms as opposed to how that model usually works with larger, corporate farms trucking in stuff and leaving it at food banks. ... So I felt like that ... added a channel that we never even thought existed.

Several farms were involved in the USDA Farmers to Families Food Box Program as vendors and/or distributors. When subsequent phases of the USDA Farmers to Families Food Box Program made it more difficult to qualify for as vendors/distributors due to more stringent food safety and meat and dairy requirements, other organizations, such as Growing the Table, stepped into this role to support regional emergency food relief. Many interviewees also discussed the role of food hubs, many of which pivoted to direct-to-consumer models during the pandemic.

Interviewees also discussed receiving financial support from organizations like the Community Alliance with Family Farmers (CAFF) and Western Sustainable Agriculture Research and Education in addition to Covid assistance from the USDA. Farmer 8 describes receiving financial assistance from the USDA, while also noting the lack of natural disaster support for small, diversified farms from the public sector:

I don't want to say feeling abandoned by the community, but feeling the fickleness of consumer base and that farmers are not supported through the public sector, like farmers at least in my situation, like small-scale, mid-scale, diversified row croppers who are getting like – we got Covid assistance which is amazing, like props to the USDA for doing that – it was really helpful in making it really easy. We've gotten no real assistance for drought or for flooding, like row

croppers are not supported, like perennial crop growers and livestock operations are supported with these natural disasters and row croppers are like not eligible for anything from what I can tell. So that's been really frustrating and it just underscores the ways that we're not supported.

In the ways described by farmers participating in this research, supporting hungry communities through emergency food assistance programs was meaningful work, yet sometimes contrasted with the lack of direct funding their farms received to recover from weather events often brought on by climate change.

In short, findings from surveys and interviews of Northern California CSA farms show an initial surge of CSA enrollment early in the pandemic followed by a general downward trend, though enrollment remained higher for most farms in 2022 than 2019. Farms growing a mix of crops grown and selling through a variety of channels (e.g., CSA, farmers market, wholesale) reported that this diversity made them more resilient when they had to adapt to changes in the market due to the pandemic. CSA farmers adapted to increased demand for direct to consumer sales by innovating with alternative CSA models, which also enabled them to make up for lost sales in areas such as restaurant and wholesale. While many CSA members expressed extra gratitude for the service of CSA farmers, there was a general feeling of desperation related to accessing food, and many CSA farmers in this study reported absorbing this anxiety through customer interactions. Many CSA farmers felt deep responsibility to feed their communities and accommodate the demand, but the combination of anxiety from CSA member management, in addition to stress about keeping their employees healthy amid changing CDC guidelines and addressing climate change and the racial reckoning occurring during the peak of the pandemic led to mental health challenges and farmer burnout. Despite these challenges, the pandemic presented an opportunity for many CSA farmers to increase their involvement in emergency food distribution, reaching low-income and underserved populations.

Discussion

The findings from surveys and interviews with CSA farmers in Northern California illustrate their response to increased demand for CSA shares during the COVID-19 pandemic, the impacts of the pandemic on their CSA programs, and effects on their mental health. Quantitative data show a spike in CSA enrollment in the beginning of the pandemic in 2020, followed by a slow, general decline, though CSA enrollment numbers remained higher on average in 2022 than in February 2020, prior to shelter-in-

place mandates. As noted in the findings section, 66% of respondents (n=19) had higher enrollment in August 2022 than in 2019 before the pandemic. To accommodate these changes, CSA farmers adopted a variety of strategies, while also working to adapt their operations to evolving state and federal guidelines intended to protect the health and safety of employees and customers. While there was overwhelming support for CSA farmers and broad recognition of the critical role of local food systems during the height of the pandemic, CSA enrollment data and perceptions of CSA farmers indicate that this has declined as pandemic restrictions have eased. There also appear to be longer-term ramifications for farmers. The pressure and time needed to adapt, along with the unknowns of the pandemic and concurrent events such as wildfires and drought, led to stress, anxiety, burnout, and/or concerns about burnout among many CSA farmers. The state of the food system during the COVID-19 pandemic and resulting impacts on the CSA farming community in Northern California provide an interesting lens through which to understand CSA as a community economy.

CSA as a Community Economy

Findings from this research demonstrate the diversity of CSA models operated by farmers in Northern California, often representing a divergence from CSA's original conception as a model of ethical reciprocity between farmers and their communities as farmers adapt to a changing marketplace, particularly in a moment of crisis. While the community economy is described as a marketplace of social interactions and interdependence among human actors, CSA farms reported feeling more isolated and disconnected from their membership bases as a result of the COVID-19 pandemic. Farms usually holding in-person community events for their CSA members could no longer do so because of social distancing and shelter-in-place regulations; other farms observed a shift in their role for CSA members as one of community-building to strictly food delivery. On the other hand, many farms were able to continue doing business throughout the pandemic by converting lost restaurant and food service sales into CSA sales, given the increased demand for CSA shares, add-ons, and innovative direct-to-consumer, CSA-like models. In this way, the CSA served as a marketplace of interdependence and ethical reciprocity among human actors: community members seeking safe access to fresh food supported farms financially as many sought alternative income channels for their produce. Still, it is worth questioning the motivations of

CSA customers: were they supporting these CSA farms for ethical reasons – environmental, social – or out of necessity, convenience, and desperation?

Early in the pandemic, CSA was put on a pedestal as an ideal antidote to food access issues, but CSA farmers tend to feel forgotten as the pandemic wanes, grocery stores become safer to frequent, and their utility to consumers diminishes. There is a perception that much consumer support of CSA farms was conditional to the circumstances of the pandemic that made shopping for food in shared spaces a risky endeavor. Additionally, there is a tension between CSA farmers feeling proud of being able to feed their community during a crisis while also experiencing burnout due to the stress of fulfilling this commitment.

Gibson-Graham (2008) describe how the CSA places the care of the environment and well-being at the center of economic activity. I would argue that this stance requires re-evaluation in light of the immense pressure put on the modern farmer by the global pandemic, climate emergency, and ongoing financial challenges such as inflation. When asked about their mental health, farmers describe the stress and anxiety they felt navigating the pandemic. For many farmers, these feelings were rooted in interactions with customers desperate to access fresh food; additional work absorbing and educating more CSA customers; managing more planted acreage to accommodate increased CSA enrollment; and anxiety about keeping themselves and their employees safe in their roles as essential workers. From interviews with Northern California CSA farmers, CSA does not completely align with the tenets of the community economy, as the well-being of the farmers tends to be compromised to be able to meet consumer demands; while Galt (2013) identified this situation within a “normal” context, the pandemic context pushed farmers to take on even more burdens.

Further, the experiences of CSA farmers during the pandemic puts into question how well CSA melds with the community economy definition set forth by Gibson-Graham (2017), which underlines the components of creating surplus in “safe and fair working conditions.” If we include mental well-being in this definition, it seems that many CSA farmers, who tend to self-exploit for the benefit of their CSA member community, are not operating under these conditions. During the pandemic, CSA members were able to rely on farmers when they needed safe access to food for a finite period and could move on when they felt safe returning to pre-pandemic shopping habits. However, farmers often self-sacrificed to meet

these demands and in turn, relied more heavily on consistency from CSA members to move their produce. As demonstrated by CSA enrollment trends during the pandemic, this relationship may not represent a balanced exchange. Notably, this imbalance is largely a result of CSA models bending more towards customer convenience over farmer well-being. CSAs requiring an annual commitment are better aligned with the idea of a community economy than those that have evolved into pay-as-you-go or week-to-week schemes, in which a longer-term commitment to the farm is not required. Additionally, having a core group – described by Cone and Kakaliouras (1995) as long-term, committed CSA members willing to weather lean or bad crop years and still re-subscribe, or engage with the farm in meaningful ways – is another characteristic aligning with the idea of a community economy.

Another challenge of the CSA as a community economy stemming from this research is the question of how much agency specific segments of the population have to choose how they source their food. Research from Galt et al. (2017) discusses the makeup of CSA customers according to socioeconomic and demographic characteristics, noting that it is more economically risky for low-income households to invest in CSAs than households with higher income. Participating in a CSA is made doubly difficult for low-income people of color, who must navigate what is typically a white space. Gibson-Graham (2006) discuss the community economy as a site of decision and re-politicization, however, there are barriers to low-income populations and people of color accessing CSA shares. Interestingly, many CSA farms remarked on increased efforts to make their CSA accessible to low-income populations during the pandemic through accepting EBT, providing free boxes through financial support from federal food relief programs, and creating opportunities for paying members to donate funds to cover the cost for low-income CSA members. This research did not explicitly ask about the demographic makeup or income of CSA members, so it is difficult to say whether CSA farms in this sample reached more low-income or racially diverse households during the pandemic. A pilot program of a SNAP online payment solution for direct marketing farmers is underway at the writing of this thesis (CAFF, 2023), so it will be interesting to see how this impacts the accessibility of CSAs for more socioeconomically diverse populations.

So which CSA model truly fits the mold of the community economy? Is it possible for CSA to overcome the consumer-driven economy in the current political, economic, and social landscape? Though some farmers I interviewed expressed a sense of abandonment and declining support from CSA

consumers, others noted the overwhelming support provided by the community, represented by acts of care, including emails and messages of gratitude, absorbing increased CSA box prices to help farmers cover rising costs, dropping off homemade masks at their farm properties, and refusing to accept CSA box refunds when the farm could not deliver due to wildfires. These acts are reflective of the interdependence, negotiations, and being-in-common that constitute a community economy as described by Gibson-Graham (2006).

Though CSA farms are able to practice agency by choosing what to grow and how to grow it, they are still beholden to the costs of supplies as dictated by the market and providing a fair and legal wage to their employees and/or pay themselves enough to survive. Another tenet of the community economy is distributing surplus in a way that contributes to social and ecological well-being and expands the commons (Gibson-Graham, 2017). Research on the profitability of direct market channels indicate that CSA programs may not be profitable for most farms due to the expenses of marketing, labor, and production (Hardesty and Leff, 2010; Galt et al., 2016). In this case, there may not be a surplus to distribute to the commons, be that the farmworkers, CSA members, or the farm itself through participating in agroecological farming practices that create returns for the ecosystem rather than extracting resources from the land. As mentioned previously, however, many farmers were able to participate in the redistribution of the surplus to low-income populations through privately-and publicly-funded emergency food assistance programs during the pandemic. It is possible that a more equitable distribution of the surplus could be achieved by continuing programs that provide funding to small farms to help them reach more low-income and food-insecure populations outside of times of crisis.

If the CSA is to truly represent a site of ethical decisions and re-politicization, farmers and CSA members should be able to support each other in a way that expands mutual and ecological well-being, while contributing good to the commons. The COVID-19 pandemic was an exceptional time for CSA, bringing about broad support for this model due to the circumstances around the broader food system and creating opportunities for sharing organic and ecologically grown produce beyond the traditional membership base. In many ways, CSA embodied characteristics of the community economy during this time of crisis, however, the pressure to respond and the even more unequal burdens between CSA farmers and CSA members took a toll on the mental health and well-being of many CSA farmers. As the

pandemic wanes, CSA should continue to be examined through a critical lens to understand *who* it serves, *what* we learned from the perspective of CSA farmers, and how these lessons can inform the re-development of the CSA into an alternative economy based on ethical reciprocity.

If CSA members feel compelled, outside of a crisis, to show the unconditional support provided during the pandemic, CSA could be a more reciprocal, sustainable model for farmers. The question is how to build this dedication and appreciation for the work of farmers outside of crises. The type of longing experienced by CSA farmers missing interaction through regular events with CSA members and in-person interactions with their farming communities underlines the importance of social ties – both inside and outside – of CSA models. These social ties and connectedness can build loyalty and generate buy-in among CSA members. CSA programs that lack in-person or on-farm interactions and function solely as an income stream for farms may face difficulty building these loyal customer bases or “core groups.” However, it is extremely challenging to run a diversified farming operation that provides a living wage to its owners and employees, while also following agroecological farming practices, dealing with the unpredictable weather patterns of climate change, complying (and paying for compliance) with ever-evolving regulations, and creating experiences that will generate buy-in among CSA members. To add a layer, as described by Galt et al. (2017) in their summary of literature, CSA members are disproportionately white, middle to higher income, and hold high levels of formal education. Below, I propose a few ideas that could contribute to more just resilience, balanced reciprocity, and stronger embodiment of the community economy for CSA farmers and their members. I recognize that this topic requires more time and discussion than what I have allotted here, in particular, more input from CSA farmers themselves.

First, I propose multi-farm CSAs as a way to spread responsibility of managing a CSA across collaborating farms and ease the burden of growing a large diversity of food for individual farms. while also increasing the scale and scope of those CSAs (Woods et al., 2017). In this model, farms can focus on what grows well in their region and microclimate and potentially reduce the cost of specialized farming equipment needed for growing a wide variety of crops. Farm-to-farm cooperation can also cultivate and strengthen social ties between farms, which through this research, proved to be an important point of connection for CSA farmers.

Second, sliding scale or “pay what you can” CSAs could be a way for CSA programs to become more accessible to low-income populations. Farms can ask that paying members subsidize or sponsor CSA shares for lower-income members, a way to spread the surplus that seems feasible considering the tendency of CSA membership to lean towards higher-income households. In a CSA Innovation Network (2023) webinar about sliding scale CSA programs, a CSA farmer running a sliding scale program referred to the idea of “solidarity economics,” that seeks to narrow income inequality while engaging in an alternative economy based in cooperation and innovation. The CSA farmer used a model adapted from Soul Fire Farm, which suggests CSA share prices depending on immigrant status, use of EBT/SNAP, and income level (Figure 6).

Figure 6

Soul Fire Farm CSA Farm Share Sliding Scale



Inspiration from Soul Fire Farm



Soul Fire Farm Ujaama CSA Farm Share Sliding Scale		
Membership Category	Weekly Cost	20-Week Season Cost
“Solidarity Share” for immigrants, refugees, and those impacted by state violence	\$0	\$0
EBT/SNAP Users	\$23	\$460
Low Income/Wealth	\$25	\$500
Middle Income/Wealth	Up-front payment expected	\$560
Upper Income/Wealth	Up-front payment expected	\$660
“Soul on Fire!” Contributor Share	Up-front payment expected	\$800-\$1000

Note. Example of a CSA sliding scale program, shared from PowerPoint presentation from CSA Innovation Network (2023) webinar.

Lastly, the government should continue to fund CSA box programs outside of emergency times and subsidize diversified farming operations, particularly those operating on a small-scale and/or owned by socially disadvantaged farmers. Farming is a difficult business made more challenging by the

unpredictability of weather and market conditions. Many farmers rose to the occasion when called upon to feed their communities during the pandemic, making swift adaptations in response to food access needs. This was often not without sacrificing their own well-being. It should not take a global pandemic to create and fund initiatives like USDA's Farmers to Families Food Box Program, which benefited not only hungry households but farmers who needed an alternative stream of income to weather the pandemic. Farmers can be poised to respond to emergencies without self-exploiting if structural supports are normalized outside of crises. In this way, "emergency" food programs and avenues for funding CSA programs should be the rule rather than occur under exceptional circumstances.

Lessons Learned and Limitations

Throughout the process of conducting research, I learned lessons about developing survey and interview instruments and creating a sampling framework. To start, it would have been beneficial to create branches for the survey depending on when particular farms started their CSA programs. I included farms that started their CSAs during the pandemic, but I received feedback from some of those farms that the questions were difficult to answer at times or did not apply to their farm since they did not have a CSA during the pandemic (e.g., changing their CSA model in response to the pandemic and changes in enrollment, gross farm sales, and profitability between 2020 and 2022). Also, due to the language used for recruiting participants as well as the language in the inclusion criteria, I excluded farms that are no longer operating a CSA, but were during the pandemic. It would be interesting to compare how many farms in the sample started a CSA during the pandemic but are no longer compared with farms who started a CSA during the pandemic and continue to operate a CSA. In this way, I would be interested in understanding the specific experiences and data points of lapsed CSA farms, including farm characteristics, challenges, approaches to decision-making, enrollment trends, and any changes in CSA share prices.

Additionally, I decided to focus only on CSA programs run by a *farm* that grows at least some of the food items it offers through the CSA, rather than including aggregators such as food hubs or emergency food distribution actors. The survey was built with farms in mind, but including non-farm aggregators would have yielded interesting results in terms of understanding their responses to the pandemic compared to farms.

A limitation in this research is having an incomplete picture of the data due to the turnover that occurs on many farms. A few respondents that I'm aware of started their positions as CSA managers after the start of the pandemic. Two interviewees switched to different farms during the pandemic, which made it challenging to fill out the survey, as well as respond to interview questions at times. They sometimes alternated from speaking about one farm to the other, making it more challenging to conduct the interview, and creating a messier process for analyzing qualitative data. Ultimately, I chose to be less rigid for both interviewees, recognizing that an important part of this research was understanding nuanced CSA farmer experiences during the pandemic; and changing farms during the pandemic made their experiences unique and nuanced.

Another survey limitation based on feedback from a respondent was a question of whether the acreage should be all arable acres or acres in active production. I imagine this is more a significant question for larger farming operations, while the sample included in this research tended towards smaller acreage and may not follow as much land, if any, because of limited growing space. However, with more rigorous pilot testing, this issue could have been addressed before the survey was launched.

Future Directions

As mentioned in the lessons learned and limitations section, food hubs and non-farm aggregators have been prominent actors in local and regional food systems during the pandemic. I've observed that food hubs and multi-farm CSAs tend to represent more racial diverse farming operations than traditional CSA programs. I suspect that this is related to access to capital for land and infrastructure. As many of the interview participants pointed out, it is complicated and time-intensive to run a CSA due to the large diversity of crops farmers are expected to provide to their CSA members, and the infrastructure and transportation needed to pack and deliver CSA boxes. A history of systemic racism and inequitable distribution of land, capital, and resources disadvantages Black, Indigenous, Asian, and other farmers of color in California and across the U.S. (Horst and Marion, 2019). This is why I suspect collaborative CSA models may be more attainable to farmers of color; the region selected for the study and the sample in this region didn't include this population, which shows in the racial demographics of my sample. As awareness of the pivotal role that local and regional food systems actors played during the pandemic, funds supporting the growth of value supply chains has been flooding in. The Farm to Community Food

Hubs program (AB 1009) was recently signed into California legislation¹²; programs such as Farms Together will facilitate collaborations between food hubs and aggregators to support small, local, socially-disadvantaged producers to bring farm boxes to food banks and community sites for distribution (CAFF, 2023b); and institutions are undertaking projects to maintain and grow emergency food assistance networks that emerged during the pandemic (North Bay Food Systems). Future research should look at the origins and experiences of collaborative and cooperative CSA models – including multi-farm CSAs and food hubs – in California with a lens towards racial (and gender) equity.

Additionally, it would be interesting to conduct a social network analysis of the different local and regional food systems partnerships, both formal and informal, that emerged during the COVID-19 pandemic, to better understand the behavior of these networks and the most significant points of connection. A social network analysis could map out food systems relationships among organizations and individuals that helped keep communities fed during the pandemic and provide justification for the continuation and funding of their endeavors, particularly to be prepared for future food emergencies. In addition to community organizations and farms that partnered to fulfill food distribution through USDA's Farmers to Families Food Box Programs, spontaneous responses to support farmers and distribute produce to food-insecure populations also emerged from community-based organizations such as the Fresno Asian Business Institute and Resource Center (Ricker, 2020) and many efforts to respond to food access issues were facilitated by organizations like CAFF. Additionally, CSA farms collaborated with one another when they needed more crops to fill their CSAs; and interviewees talked about sourcing local food goods from other vendors at their farmers markets to provide greater variety to their CSA members and support those local vendors that lost some of their traditional market outlets. In sum, mapping these collaborations could shed a light on key points of connection and how these partnerships develop during emergencies and times of crisis.

¹² AB 1009 was signed into legislation by Governor Gavin Newsom in 2021 (Santa Monica Daily Press, 2021).

Conclusion

CSA farmers experienced unprecedented demand for their farm shares during the COVID-19 pandemic alongside overwhelming uncertainty about whether those changes would sustain. Initial spikes in Northern California CSA enrollment early in the pandemic were generally followed by declines in membership across 2021 and 2022, however, 2022 numbers remain higher than they were pre-pandemic. According to interviews with CSA farm owners and managers conducted in early- to mid-2023, those numbers have continued to decline and many farms have removed wait lists that had previously been used to manage the large influx of interest in CSAs. Given the unprecedented nature of the COVID-19 pandemic, understanding the responses and experiences of CSA farms can help us learn more about adaptations and strategic actions that serve to bolster local food systems during times of crisis.

In response to the sudden increased demands for CSA shares during the pandemic, many farms undertook creative pivots that helped them absorb more CSA members and distribute more produce, as well as fill in the gaps from the loss of other market channels such as restaurants and farmers markets. Participants report that demand for these innovations have tapered off over time as pandemic restrictions have been lifted and consumers resume their normal shopping habits. Notably, the unpredictability of the pandemic alongside stress of making decisions about how best to keep themselves, their employees, and their CSA members safe took a toll on the mental health of many CSA farm owners and managers. Feelings of stress and anxiety were exacerbated by concurrent crises – environmental, social, and financial – many like wildfires and drought that impacted the day-to-day operations of the CSA farms. Nonetheless, there is a broad sentiment that the CSA model helped many farmers secure a stable source of income among changing market conditions and aided in their ability to weather the pandemic. Research participants expressed a sense of pride in being able to provide an essential service to their communities. Farms were also able to distribute their CSA shares to low-income communities with the support of publicly and privately funded emergency food assistance programs, thus aligning their businesses more with their own social values.

However, an overwhelming commitment to their CSA membership sometimes led to the subversion of their own mental health and well-being, further tilting the already unbalanced ethical

reciprocity in this values-based marketing model. With the attrition of CSA members and concern about CSA farmer burnout as many view the pandemic in the rearview mirror, it is an important time to reflect on how small-scale, diversified farmers can be better supported. These farmers were part of resilient local and regional food systems that played a critical role in providing safe access to healthy food during the height of the pandemic; indeed, they helped prevent hunger and it is not too drastic to say that they helped prevent even greater societal disruption that can occur when large segments of the population are without food. Policies that support small-scale, diversified farms through financial subsidies and programs that generate pathways to distribute produce to underserved communities should be further developed and funded. Additional services should also be provided to aid these farms in the process of applying for funding that is often burdensome without technical expertise, with special attention to farming populations traditionally underserved due to language or cultural barriers. Accessible mental health resources and services targeted to meet the specific needs of diverse groups of farmers should be developed and shared widely. The pandemic clearly demonstrated that investment in farmers to support their endeavors in values-based marketing and food distribution can contribute to a more resilient food system for all.

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Appendix A

Interview Script and Questions

The purpose of this research is to understand how the COVID-19 pandemic has impacted California-based Community Supported Agriculture (CSA) farmers and how they have responded.

It will take 45-60 minutes to complete the interview. As a thank you for participating in this study, you'll receive a \$40 Amazon e-gift card within 2 weeks of completing the interview.

The interview will be audiotaped and transcribed, but your name will not be included on the transcription. No identifying information will be shared in the results of the project.

You are free to decline to take part in the project. You can decline to answer any questions and you can stop taking part in the project at any time.

Do you agree to take part in the interview?

Do you give me permission to record the interview?

More information about confidentiality

To minimize the risks of breach of confidentiality, the PI will maintain any identifiable electronic data on a password protected encrypted device. Passwords will not be shared and will be protected from access. All identifiable data will be removed and anonymized during the transcription stage. All recordings will be destroyed at the conclusion of the project.

IRB contact information

If you have any questions about your rights or treatment as a research participant in this study, please contact the UC Davis, Institutional Review Board by phone: 916-703-9158 or by email: HS-IRBEducation@ucdavis.edu

1. What is your role on the farm?
2. When did the farm start its CSA?
 - a. If you started your CSA program after the pandemic, why did you make that decision?
 - b. Were there considerations due to trends you were seeing related to the pandemic?
3. At the beginning of the pandemic in March 2020, did you observe immediate changes to your sales channels (e.g., CSA, farmers markets, restaurants, wholesalers, retail)?
 - a. What changes did you observe?
 - b. How did this impact your farm planning (e.g., financial, crop)?
4. What impacts have you observed the pandemic has had on your CSA (e.g., change in enrollment, interest, customer base)?
 - a. Do you perceive these as short, medium, or long term impacts?
 - b. Which impacts do you attribute to the pandemic and why?
 - c. Do you attribute those impacts to other events as well? (e.g., drought, wildfires, inflation)
5. Have you experienced any successes with your CSA during the pandemic?
 - a. What successes have you experienced with your CSA during the pandemic? What has gone well?
6. Have you experienced any CSA-related challenges during the pandemic?
 - a. What CSA-related challenges have you experienced during the pandemic?

7. I have a couple questions about mental health and well-being in relation to the farming operation. Are you comfortable talking about that?
 - a. Did you observe any impacts from the pandemic on your mental health and well-being as it relates to the farm?
 - b. How has this changed over time? How are you doing now? Do you view these as short or long term impacts?
8. Is there anything else you'd like to add? Any additional questions I should have asked?
9. Do you have any recommendations of CSA farmers I should contact for this study?

Appendix B

Survey Instrument

Welcome! We invite you to take a survey on how your Community Supported Agriculture (CSA) program has been affected by the COVID-19 pandemic. Thank you for your participation in this research.

What's the purpose of this research? This survey aims to understand how the COVID-19 pandemic has impacted your farm's CSA, how you've responded, and how your CSA has fared. Data will be used by the [CSA Innovation Network](#) (CSA-IN) and the University of California, Davis. CSA-IN is a resource base of programs and tools built by and for individuals and organizations supporting CSA. The purpose of the CSA-IN is to generate and facilitate idea sharing across the CSA community and to build consumer's awareness of the value of CSA.

How long will it take to complete? The survey takes approximately 30 minutes to complete. In order for your response to be counted, you must click the submit button at the end of the survey.

Will there be compensation? You will receive a \$10 Amazon e-gift card for completing the survey.

Taking part in the research is completely voluntary. Any information you provide will be kept confidential. Responses will be anonymized prior to data analysis and stored in a secure location. Any identifying information will be deleted and excluded from data analysis. You are welcome to respond to as many questions as you feel comfortable answering, and you do not need to answer any questions you do not wish to. You can leave the survey at any time.

If you would like more information about this project or have any questions or concerns, please email the project lead, Alicia Baddorf, at akbaddorf@ucdavis.edu or 609-216-1032.

If you are at least 18 years old and interested in taking the survey, please click the Continue button below.

SQ1 What best describes your **current** role in the farming operation?

- A farm owner involved in the management of my farm's CSA program.
- A hired manager involved in the management of the farm's CSA program.
- Another position on the farm and am knowledgeable about the CSA program.
- I am not involved in the farm's CSA program.
- The farm does not have a CSA program.

SQ2 What California county/counties do you farm/ranch in?

- Alameda
- Amador
- Calaveras
- Contra Costa
- El Dorado
- Mariposa
- Marin
- Napa
- Nevada
- Placer
- Sacramento
- San Francisco

- San Mateo
- Santa Clara
- Solano
- Sonoma
- Sutter
- Tuolumne
- Yolo
- Yuba
- None of the above

SQ3 Do you offer vegetables, fruits, or herbs in your CSA?

- Yes, all of those
- Yes, some of those
- No, none of those

Q1 How many acres do you farm? Please list approximately how many acres are (1) **owned** by the farm business or the farm business owners and (2) how many acres are **rented**.

	Total acres (for partial acres, use decimals)
1. Owned	
2. Rented	

Q2 When did your farm start its CSA program?

- 1980-1990
- 1991-2000
- 2001-2010
- 2011-February 2020
- During or after March 2020

Q3 What types of food and other items are generally available in your CSA shares? This includes add-ons or extra items offered outside of the regular box contents. Select all that apply.

- Vegetables
 - Fruit crops
 - Nut crops
 - Meat
 - Grains and pulses
 - Oil crops
 - Cut flowers, floriculture, or ornamentals
 - Seed crops
 - Nursery stock
 - Other types of crops (please specify crop)
-
- None of the above

Q4 How would you describe your CSA?

- We produce **all of the contents** in our CSA boxes.
- We produce **50% or more of the contents** in our CSA boxes and supplement with items from other farms.
- We produce **less than 50% of the contents** in our CSA boxes and supplement with items from other farms.
- We **do not produce any of the contents** in our CSA boxes and instead **we aggregate from a variety of farms**.

Q5 How would you describe your current CSA model? Select all that apply.

- Standard CSA (farmer/manager sets box contents and pre-packs boxes for member pick up)
- Customizable CSA (CSA members can choose what goes in their boxes)
- U-pick CSA (members come to farm and harvest their produce)
- Farmers market style-CSA (set up tables of produce and customers choose what they want)
- Friends of the Farm Card (members buy a card in the beginning of the season to use in the style of a debit card to purchase produce throughout the CSA season)
- Other (please describe) _____
- None of the above

Q6 Did you change your CSA model in response to the pandemic?

- Yes
- No

Q6a If you would like, please describe **how you changed your CSA model** and **why you made that decision**.

Q7a Enter your **best estimate** of the **number of CSA members** for each of the following dates. If you did not have a CSA during the listed time, enter N/A.

	Estimated number of CSA members
	-
2019	
February 2020	
May 2020	
August 2020	
November 2020	

Q7b Enter your **best estimate** of the **number of CSA members** for each of the following dates. If you did not have a CSA during the listed time, enter N/A.

	Estimated number of CSA members
	-
February 2021	
August 2021	
February 2022	
August 2022	

Q8 Which of the following challenges, if any, did you experience **as a result of changes in CSA enrollment during the pandemic**? Select all that apply.

- Labor availability
- Transportation of CSA boxes to delivery locations
- Insufficient online technology to manage CSA efficiently or learning curve with new online CSA management technology
- Shortages of packing supplies
- Educating new CSA members what to expect (e.g., quantity, food storage, recipes, logistics of picking up box, etc.)
- Crop planning (e.g., ensuring that there are enough items / item variety to fill boxes)
- Predicting availability for other market channels (e.g., restaurants, grocery stores, wholesale)
- Other (please describe) _____
- None of the above
- Not sure

Q9 Did you have a **waitlist** and/or **sell out of CSA shares** in the following years:

	Yes	No	Not sure
2019	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2020	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2021	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2022	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q10a **Prior to the COVID-19 pandemic**, what strategies did you use to gain and retain CSA members? Select all that apply.

- Newsletter (including any farm updates, recipes, or tips for storing produce)
- Incentives (e.g., referral bonus, discount for longer commitment)
- Add-ons (offer extra items that members can buy in addition to their regular CSA box)
- Customization (allow members to choose some or all of what comes in their box)
- Bringing in produce and food products from other farms to expand offerings
- Expanded options for frequency of delivery (e.g., biweekly / monthly CSA box)
- Home delivery option
- Online marketing technology (e.g., online sales website, social media)
- Expanded delivery locations / added more pickup sites
- Additional box size options
- Sought assistance and/or resources from farmer support organizations (e.g., Community Alliance with Family Farmers, local Extension office, CSA Innovation Network)
- Other _____
- None of the above

Q10b **In response to the COVID-19 pandemic**, what **strategies** did you use to gain and retain CSA members? Select all that apply.

- Newsletter (including any farm updates, recipes, or tips for storing produce)
- Incentives (e.g., referral bonus, discount for longer commitment)
- Add-ons (offer extra items that members can buy in addition to their regular CSA box)
- Customization (allow members to choose some or all of what comes in their box)
- Buying in produce and food products from other farms to expand offerings
- More frequency options (e.g., biweekly / monthly CSA box)
- Home delivery option
- Online marketing technology (e.g., online sales website, social media)
- Expanded delivery locations / added more pickup sites
- Additional box size options
- Sought assistance and/or resources from farmer support organizations (e.g., Community Alliance with Family Farmers, local Extension office, CSA Innovation Network)
- Other _____
- None of the above

Q10c Were any of the listed strategies effective in retaining and gaining new customers?

- Yes
- No
- Not sure

Q10d **Which strategies were effective in retaining and gaining new customers?** Select all that apply.

- Newsletter (including any farm updates, recipes, or tips for storing produce)
- Incentives (e.g., referral bonus, discount for longer commitment)
- Add-ons (offer extra items that members can buy in addition to their regular CSA box)
- Customization (allow members to choose some or all of what comes in their box)
- Buying in produce and food products from other farms to expand offerings
- More frequency options (e.g., biweekly / monthly CSA box)
- Home delivery option
- Online marketing technology (e.g., online sales website, social media)
- Expanded delivery locations / added more pickup sites
- Additional box size options
- Sought assistance and/or resources from farmer support organizations (e.g., Community Alliance with Family Farmers, local Extension office, CSA Innovation Network)
- Other _____

Q10e If you'd like to explain why those strategies worked, please elaborate:

Q11 Have you raised the price of your CSA at any point since March 2020?

- Yes
- No
- Not sure

Q11a **Why did you decide to raise the price of your CSA?** Select all that apply.

- Increased cost of labor due to more employees
- Increased cost of labor due to higher wages
- Increased cost of farm supplies (e.g., seed, irrigation, packing supplies)
- Increased cost of online technology (e.g., website, CSA management platform, online store)
- Increased cost of living
- Increased cost of farmland
- Other _____
- None of the above
- Not sure

You're almost done You're almost done! We just have a few more quick questions for you. Press Continue.

Q12 For the following years, what were your **approximate gross farm sales** (total sales without expenses subtracted)? Leave blank if unsure or farm was not in operation.

This information will help us understand how CSA farmers' overall sales changed throughout the pandemic. All of your answers are confidential.

	Gross Farm Sales (\$)
2019	
2020	
2021	

Q13 For the following years, approximately what **percentage of your gross total farm sales came from your CSA?** Leave blank if unsure or farm was not in operation.

	Gross Farm Sales (%)
2019	
2020	
2021	

Q14 How did the **profitability** (sales with expenses subtracted) of your CSA change across the following years:

	Increased	Decreased	No change	Not sure
2018-2019	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2019-2020	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2020-2021	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2021-2022	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q15 How would you describe your race and ethnicity? Select all that apply.

- American Indian and Alaska Native
- Asian
- Black or African American
- Latino or Hispanic
- Native Hawaiian and Other Pacific Islander
- White
- Other _____
- Prefer not to answer

PQ1 **Please enter your farm name.**

Note: Farm names will be kept in our encrypted, password-protected storage device. They will be excluded from data analysis. No identifying information will be shared in the findings of this study. PQ2 Are you interested in any of the following? Select all that apply.

- Receiving a \$10 Amazon gift card
- Receiving updates on this research
- None of the above

PQ2a **Please enter your email address below to receive the \$10 e-gift card and/or receive updates on this research, based on your request.**

Important note: ****It may take up to two weeks to distribute e-gift cards.**** Feel free to email us for an update if you have not received your card within that time frame.

Please **double-check before submitting** to ensure accuracy, so we can get your e-gift card to you.

Note: Email addresses will be kept in our encrypted, password-protected storage device. They will be excluded from data analysis. No identifying information will be shared in the findings of this study.

BE SURE TO CLICK THE "CONTINUE" BUTTON BELOW AFTER ENTERING YOUR EMAIL ADDRESS.

Email address _____

PQ3 Optional: Do you have any suggestions to improve the survey (e.g., a question was confusing or we forgot to ask something important)? We appreciate your feedback.

CLICK SUBMIT TO END THE SURVEY AND ENSURE YOUR RESPONSE IS RECORDED.

Appendix C

CSA Member Enrollment Data

	Sum	Number of CSAs	Mean	Median	SD	Minimum	Maximum
2019	4573	20	352	100	467.2	10	2008
Feb 2020	4157	21	345	117.5	354.0	0	1367
May 2020	6444	26	480	177.5	470.8	0	2077
Aug 2020	6820	27	487	155	464.2	5	1995
Nov 2020	6452	26	479	145	475.0	0	1978
Feb 2021	5929	27	457	145	463.0	0	1973
Aug 2021	6518	27	452	160	433.3	3	1907
Feb 2022	5567	26	430	140	429.1	0	1787
Aug 2022	6015	27	426	150	410.8	0	1851

Note. The average and median CSA member numbers only include farms that responded for every time period and excludes farm respondents that entered "0" or "N/A" due to not having a CSA during the related time period or did not have a CSA due to having a seasonal break.

Appendix D

Change in CSA Model

Description of change made by CSA farm due to pandemic

In the way that I just described in the last question [During the first year of the pandemic, I offered more options to add items onto the standard size CSA box. I would have a list of items available to add on each week.] 2. During the very beginning of the pandemic, my CSA hadn't started yet, but I just started offering boxes right away on a week-by-week basis, with more much unusual items since the restaurants closed all of the sudden. Also, that time of year in March/April, there's just not as much normal stuff available.

I had not been running a CSA prior to the pandemic. I lost my restaurant clients and pivoted in 2020, running a CSA from February through September. Since then, I have completely changed my model altogether and now run a monthly winter storage crop CSA from December-February.

Started CSA

We added more CSA shares to keep up with demand and eliminate the risk of our farmers markets/restaurant accounts being shut down. We also added the flexibility of ordering CSA boxes week to week to accommodate customers that were new to the CSA model.

We did door-to-door delivery. The pick-up style was not wanted by the customers in our area.

We did two pickup times per week to split the larger numbers of members up into two groups.

We saw such a sudden demand, we changed from managing all our members via spreadsheets to using online billing via CSAware (something we had been wanting to do for a long time but didn't have time or push). Plus one of our farm managers did not feel comfortable working with others so doing the set up allowed them distanced work. It allowed us to add more members and to offer add ons. Our CSA went from having a seasonal (winter) waitlist of 20-50 to a year-round waitlist of 300+. ALSO for a short time spring 2020 we offered "One-Time CSA boxes" to people from our waitlist. This allowed us to curate these boxes to exactly what we had extra of from loosing our restaurant accounts. We utilized our standing CSA infrastructure and there was easy contactless pick up. They sold out in a matter of hours. We made 10% of our CSA sales that year via these one-time boxes.

We stopped our traditional CSA due to lack of capacity and demand for our farm stand. We created a makeshift CSA for folks who were immune-compromised or considered high risk. We stopped doing some of the components of the CSA such as the weekly newsletter, reminding community members about the process, calling them if they didn't pick up. We ended up prepacking boxes for a handful of folks based on what was available. They were grateful for our efforts since we had already reported we wouldn't offer a CSA.

Yes, we started a farm box due to the closure of our local towns farmers market.

Note: Responses are from survey questions about how farmers changed their CSA models in response to the pandemic.