Agric Hum Values (2017) 34:435–452
DOI 10.1007/s10460-016-9724-1

What difference does income make for Community Supported Agriculture (CSA) members in California? Comparing lower-income and higher-income households

Ryan E. Galt[1] · Katharine Bradley[2] · Libby Christensen[3] · Cindy Fake[4] · Kate Munden-Dixon[5] · Natasha Simpson[6] · Rachel Surls[7] · Julia Van Soelen Kim[8]

Accepted: 22 September 2016 / Published online: 3 November 2016

Abstract In the U.S. there has been considerable interest in connecting low-income households to alternative food networks like Community Supported Agriculture (CSA). To learn more about this possibility we conducted a statewide survey of CSA members in California. A total of 1149 members from 41 CSAs responded. Here we answer the research question: How do CSA members' (1) socioeconomic and demographic backgrounds, (2) household conditions potentially interfering with membership, and (3) CSA membership experiences vary between lower-income households (LIHHs) and higher-income households (HIHHs)? We divided members into LIHHs (making under $50,000 annually) and HIHHs (making over $50,000 annually). We present comparisons of LIHHs' and HIHHs' (1) employment, race/ethnicity, household composition and education, use of food support, and enjoyment of food-related activities; (2) conditions interfering with membership and major life events; and (3) sources of information influencing decision to join, reasons for joining, ratings of importance of and satisfaction with various CSA attributes, gaps between importance of and satisfaction with various CSA attributes, valuing of the share and willingness to pay more, and impacts of membership. We find that LIHHs are committed CSA members, often more so than HIHHs, and that CSA members in California are disproportionately white, but that racial disproportionality decreases as incomes increase. We conclude by considering: (1) the economic risks that LIHHs face in CSA membership, (2) the intersection of economic risks with race/ethnicity and

✉ Ryan E. Galt
regalt@ucdavis.edu

Katharine Bradley
katiefranbradley@gmail.com

Libby Christensen
libby.christensen@colostate.edu

Cindy Fake
cefake@ucanr.edu

Kate Munden-Dixon
kmundendixon@ucdavis.edu

Natasha Simpson
nlsimpson@ucdavis.edu

Rachel Surls
ramabie@ucanr.edu

Julia Van Soelen Kim
jvansoelen@ucanr.edu

[1] Department of Human Ecology, University of California, Davis, 1309 Hart Hall, Davis, CA 95616, USA

[2] SIT/World Learning, Inc., 1 Kipling Road, Brattleboro, VT 05302, USA

[3] Department of Agricultural and Resource Economics, Colorado State University, B314 Clark Building, Fort Collins, CO 80523, USA

[4] University of California Cooperative Extension, Nevada County, 255 South Auburn Street, Grass Valley, CA 95945, USA

[5] Geography Graduate Group, University of California, Davis, 133 Hunt Hall, Davis, CA 95616, USA

[6] Community Development Graduate Group, University of California, Davis, 133 Hunt Hall, Davis, CA 95616, USA

[7] University of California Cooperative Extension, Los Angeles County, 700 W. Main Street, Alhambra, CA 91801, USA

[8] University of California Cooperative Extension, Marin County, 1682 Novato Boulevard, Suite 150, Novato, CA 94947, USA

cultural coding in CSA; and (3) the possibilities of increasing participation of LIHH in CSA.

Keywords Community Supported Agriculture · Lower-income households · Higher-income households · Race and ethnicity · Disproportionality · Consumption

Abbreviations

AFNs	Alternative food networks
CSA	Community Supported Agriculture
LIHH	Lower-income household (for our purposes, those with annual earnings under $50,000)
HIHH	Higher-income households (for our purposes, those with annual earnings over $50,000)

Introduction

Community Supported Agriculture (CSA) is a relatively new type of relationship in which consumers commit to supporting local farmers. As originally conceived in the U.S., CSA members receive shares of produce from the supported farm, usually each week, in return for paying in advance, often for a full season. CSA farmers tend to emphasize organic and agroecological practices, and the model was conceived to share risks between producers and consumers (DeLind 1999; Dyck 1997; Henderson and Van En 2007; O'Hara and Stagl 2001; Tegtmeier and Duffy 2005). The number of CSAs has grown dramatically since its origin in the 1980s (Galt 2011), as have other forms of alternative food networks (AFNs), such as farmers' markets.

A better understanding of CSA members has become important as their numbers have grown, and as farmers relying on CSA have increased in number. The literature on CSA members in the U.S., which we review in depth in the next section, has shown that they are disproportionately white and middle- and higher-income. These trends mean that relatively little attention has been given to low- and lower-income households' participation in CSA since their numbers in most studies are too small to draw conclusions (an important exception is Pole and Gray 2013; Pole and Kumar 2015). There are, however, a handful of smaller-scale studies, also reviewed below, that examine low-income households' motivations for joining, barriers to participation, and member type in CSA. Overall, then, there is a lack of large-scale research that looks at the backgrounds and participation experiences of low-income households that are members of CSA, and even less research that has conducted statistical comparisons of the backgrounds and experiences of low-income households and high-income households.

In this paper we report on the largest study of CSA members yet conducted. We conducted a survey of current CSA member households that received 1149 responses from 41 different CSAs around the state of California. Since our study was comprehensive enough to include a large number of lower-income households, we use this survey data to answer the following research question: How do CSA members' (1) socioeconomic and demographic backgrounds, (2) household conditions potentially interfering with membership, and (3) CSA membership experiences vary between lower-income households (LIHHs) and higher-income households (HIHHs)?

The paper proceeds as follows. We first review studies focused on CSA members, with a special focus on studies with data on lower-income households and households of color. We then explain our survey's methods, and move on to the comparison of lower- and higher-income households that are CSA members. We organize the comparison into three areas: socioeconomic and demographic characteristics, household conditions influencing membership, and CSA membership experiences. We then summarize the differences and point to three conclusions about how income influences CSA membership, the intersections of race/ethnicity and income, and the potential benefits of increasing the numbers of lower-income household members in CSA.

Community Supported Agriculture and low-income households

Studies of CSA members have focused on the demographics and socio-economic characteristics of CSA members and their motives for participation. Members are disproportionately white, middle to higher income, and have high levels of formal education (Cone and Myhre 2000; Cooley and Lass 1998; DeLind and Ferguson 1999; Durrenberger 2002; Schnell 2007). For example, in one of the larger studies, Perez et al.'s (2003) survey of members of eight farms with a CSA in the Central Coast of California found that members were 90% European-American (much higher than the proportion of European-American in the study area, at 51%), were highly educated (81% had the equivalent of a college degree or higher), and were more likely to be middle-to-upper income than the general population. Member participation is motivated by the concern for a healthy environment, desire to eat in season, interest in supporting local farmers, wanting a direct connection to a farmer, and characteristics of produce in the CSA share—organically produced, fresh, transparency about origins, and taste—particularly compared with

availability in grocery outlets (Andreatta et al. 2008; Cone and Myhre 2000; Cooley and Lass 1998).[1]

A handful of studies have been conducted that allow for some insights into the influence of income on member motivations and/or experiences (Andreatta et al. 2008; Cox et al. 2008; Hinrichs and Kremer 2002; Kolodinsky and Pelch 1997; Lang 2005; Pole and Gray 2013; Pole and Kumar 2015). Kolodinsky and Pelch (1997) attempted to predict CSA membership. In their survey of 238 non-members and 277 members from three CSAs in Vermont, they found that members generally had a higher level of education than non-members, but also that income was not a variable that predicted membership. Lang's (2005) study focused on member satisfaction in five mid-Atlantic CSAs. While Lang hypothesized that income would positively correlate with satisfaction, he found an inverse correlation between satisfaction and income; since there were so few lower-income households in the dataset, this finding "suggests middle class members are more likely to be satisfied with their membership than upper class members" (p. 75).

A few studies have compared the motivations of low-income households, at times compared to high-income households (Andreatta et al. 2008; Hinrichs and Kremer 2002; Pole and Gray 2013; Pole and Kumar 2015). Some of these studies show that affordability is one of the primary concerns of low-income households (Andreatta et al. 2008; Hinrichs and Kremer 2002). Hinrichs and Kremer (2002, p. 79) found that motivations for joining CSAs differed by income: food quality is the most common motivation among higher-income members, while motivations of "food availability and affordability" (concern with the pragmatic details of access to food) are most common among lower-income shareholders. In terms of participation,[2] upper-income members participated the least and middle-income members participated the most, with lower-income members falling in the middle. The authors also found that low-income households that participate are slightly less likely to feel part of the CSA farm community than high-income households, but that this difference in participation was not consistent across other aspects of class (occupation and education) (Hinrichs and Kremer 2002, p. 81). Andreatta et al.'s (2008) study showed that barriers to participating in CSAs experienced by low-income households include transportation, work schedules, and financial constraints, similar to constraints experienced by low-income households in food shopping generally (Hersey et al. 2001). In their study Andreatta et al. (2008) removed the known barriers to low-income household participation (by using outside funding to pay for shares and arranging drivers to get to drop-off sites), and found that the motivations reported in the literature seemed to hold true for all income groups despite differences in socio-economic and demographic characteristics of members, including race/ethnicity (Andreatta et al. 2008). Since Andreatta et al.'s short-term case study provided free shares, it is unclear if these motivations are the same for low-income shareholders who are members of CSAs without free or subsidized access.

In the only other statewide study of CSA members, Pole and Gray (2013, p. 92) showed that lower-income members rated the following motivations more highly than higher-income member: sharing financial risk, volunteering, meeting like-minded people, and wanting to participate in farm events. These are important aspects of CSA as originally conceived (Henderson and Van En 2007), and all of these motivations declined as incomes increased (Pole and Gray 2013, p. 92).[3] This suggests that lower-income members are more dedicated than higher-income members

[1] Zepeda and Li (2006) have shown that these interests do not necessarily equate to participation in a CSA, and Russell and Zepeda (2008) showed that interest in cooking, and openness to change in diet and purchasing practices, are good indicators for likelihood to continue with a CSA.

[2] Hinrichs and Kremer (2002) measured participation as a count variable (from 0 to 6) in terms of engagement in various CSA activities: spring festival, cooking classes, children's activities on food distribution day, farm field day, other family activities at the farm, and harvest festival.

[3] These findings contradict the conclusions of Pole and Kumar (2015, p. 1495), who, using the same data, found that higher-income households in 2010 in New York made up the greatest proportion of "Quintessential Members"—defined as "the ideal CSA member who cares about all aspects of the CSA, especially building a sense of community." They attributed this preponderance "to the fact that Quintessential Members are committed to the ideals espoused by the traditional notion of CSA and they are willing to pay almost any fee, regardless of their income" (Pole and Kumar 2015, p. 1498). Yet, they did not present the proportion of the kinds of members *within each income category*. Indeed, it is not surprising that higher-income households make up the greatest proportion of Quintessential Members because they also make up the greatest proportion of all members. To understand if low-income households are more or less likely to be Quintessential Members than members with other incomes, we should examine the proportion of low-income households that are Quintessential Members in relation to the total sample of low-income households, then compare these same proportions across income categories. Doing this by using the data they present in their article (Pole and Kumar 2015), we find that the lower-income households in their sample are more likely to be "Quintessential Members" (as a proportion of all low-income households in the sample) than higher-income households (also as a proportion of all higher-income households in the sample). The proportion of members within an income group that are "Quintessential Members" goes down consistently with each step up in income in their data. Looking within each income category, there is a clear trend: 45% of households making $0–15 000 are Quintessential Members, compared with 39% of households making $15 000–35 000, 33% of households making $35 000–$50 000, 32% of households making $50 000–$75 000, 26% of households making $75 000–125 000, and 17% of households making over $125 000 (data from Pole and Kumar 2015, p. 1496). This trend suggests that lower-income members are more likely to be committed to CSA, and is entirely consistent with Pole and Gray's (2013) findings.

and more likely to have values that correspond with the original vision of CSA in the U.S. However, since theirs was the first statewide study of CSA members, these relationships need to be explored in other regions.

The question of why CSAs tend to have members who are wealthier than average is intimately tied to the question of why they are disproportionately white. Incomes between racial and ethnic groups in the U.S. are far from parity: Asians and whites are more likely to be in higher-income brackets and African Americans, Latinos, and Native Americans are more likely to be in lower-income brackets (U.S. Census Bureau 2014a). This situation has been met with two veins of literature. On the one hand, this race gap in AFNs has led many academics and practitioners to promote the idea of connecting lower-income households—especially households of color—to AFNs under the banner of food justice. Bradley and Herrera (2016) argue that there are two major types of food justice, one based on the "original" notion of food justice that seeks to empower communities, and the other, the "moralist" notion of food justice, with more of a missionary impetus. The "original" notion of food justice promotes activities that lead to community autonomy and self-empowerment—usually for communities of color and low-income communities that have been abandoned or neglected by governmental programs and divested by corporate capital (Alkon and Agyeman 2011). This type of food justice is generally respectful of the foodways of community members (Bradley and Galt 2014; White 2010, 2011a, b). The moralist approach to food justice is characterized by ignorance of the barriers to participation for low-income consumers and of the motivations and attitudes about local food that transcend income groups. Therefore, these efforts typically gain "limited participation and support from the minority community" where they work (Kato 2013, p. 372).

On the other hand, an increasing amount of work is focused on explaining the mechanisms behind the race gap in AFNs. This work disrupts assumptions about knowledge being the main determinant of the race gap in AFNs (i.e., "if only they knew"), and points out that there is little solid research about households' of color practices and values in relation to food (Kirkland 2011) and food from AFNs (Bradley and Galt 2014; Guthman 2011). This burgeoning literature has addressed racialization as it relates to agriculture and AFNs (Alkon 2012; Alkon et al. 2013; Bradley and Galt 2014; Bradley and Herrera 2016; Brown and Getz 2011; Green et al. 2011; Harper 2011; Kato 2013; McClintock 2011), with a particularly strong emphasis on the whiteness of AFNs as a main mechanism through which exclusion occurs (Alkon 2012; Boulé 2012; Guthman 2008a, b; Slocum 2006, 2007). Since this literature is broad, we focus only on those working on CSA. In her influential article focused on farmers' markets and CSAs, Guthman (2008b, p. 388) argues that "much alternative food discourse hails a white subject to these spaces of alternative food practice and thus codes them as white. Insofar as this has a chilling effect on people of color, it not only works as an exclusionary practice, but it also colors the character of food politics more broadly." Bradley and Galt (2014) found that a CSA in an area with low incomes and a high proportion of people of color has had difficulties enrolling enough members, despite the farmers being members of the community and people of color. The ways that race intersects with income within AFNs and CSAs specifically has not been examined.

Methods

We compiled a list of all CSAs in California using web listings, including LocalHarvest, Robyn Van En Center, California Certified Organic Farmers, and Community Alliance with Family Farmers (see Galt et al. 2015). We contacted each CSA to see if they were indeed a CSA,[4] and whether they were still operational. Using this revised list of 244 CSAs, we conducted a survey of CSA farms (Galt et al. 2015), in which we asked farmers' willingness to participate in the member survey. Then, from April 2014 to January 2015, we asked each CSA, except those wanting to be excluded, to share links to an online survey for current members. Many CSA operators were unwilling to share the survey. Rationales varied, but many CSA farmers did not want to bother their membership with the survey, or noted that they conducted their own surveys. The majority of CSA operators never responded to our calls or emails about the member survey, so it is difficult to know their motivation for not sharing. However, some farmers who participated in workshops we offered around the state in 2015 told us that they received our email but did not have the time to share it with their members. Others mentioned that they did not share the member survey because they were concerned that they would not see the results. No incentives were provided to farmers for sharing the survey, but 25 prizes of $100 were offered in drawings to members who completed the survey (gift cards were mailed to 25 randomly selected respondents). Institutional Review Board approval was received for the study.

The survey received 1149 individual member responses. These are from 41 different CSA farms (out of 244), and of these 41 CSAs, 11 have fairly high estimated response rates, which ranged between 20 and 76%, with an average

[4] Some lists contained community-oriented farms using direct marketing channels that are distinct from CSA. These farms were excluded.

of 31%.[5] The responses from these 11 farms constitute 974 responses of the total of 1149 (84.8%). The remaining 175 responses are from 30 other CSAs in the state.

Our CSA member survey is, to our knowledge, the largest yet conducted in California and in the United States. As with other studies, for a host of reasons we cannot definitively know whether our 1149 responses are truly representative of CSA members statewide. CSA farms without an online presence were not included. Since it was an online survey, CSA members without email addresses were excluded. Internet surveys tend to be answered more frequently by younger and more highly educated populations (Wright 2005). Since respondents self-selected their participation, it could be that the respondents are not representative of California CSA members generally (Pole and Gray 2013).

Yet, of all studies done on CSA members, ours likely captures a broader range of participating members since most previous studies rely on member information from one or a few CSAs, and ours relies on a substantial number of members from 11 CSAs. By having relatively high percentages of members responding from 11 different CSAs, we suspect that substantial differences in member populations between CSAs have been somewhat evened out. As a check for bias, our findings about member demographics tend to mirror the findings of most of CSA member studies, suggesting either that all studies have the same biases or that our study and others accurately reflect CSA membership. However, as will be shown below, our larger sample allows us to make more detailed comparisons and reveal relationships that have not yet been seen with smaller studies.

The survey consisted of seven sections with the following topics: joining a CSA, CSA satisfaction, CSA involvement and activities, CSA share value, household income and food access, household demographics, and an open-ended question about the CSA experience not adequately addressed in the survey. We used SurveyMonkey to administer the survey electronically, downloaded the data to Excel, "cleaned" the data, and made new variables out of existing data.

We used Stata to run various statistical tests to compare variables between the two groups. For continuous variables we used *t* tests. For binary variables we used z-tests (tests of proportion in Stata) since the assumption of normal distribution does not allow for *t* tests. For count variables we used the Wilcoxon rank-sum (Mann–Whitney) test, an appropriate non-parametric test. For ordinal variables we used various tests, depending on the context, including Wilcoxon rank-sum (Mann–Whitney) tests for Likert-scale questions (De Winter and Dodou 2010) and for ranked and forced-ranked questions, and Kruskal–Wallis tests for variables with more than ordinal dependent variable (e.g., education level). The tables comparing the variables note both the variable types and the kinds of tests conducted.

Analysis by income groups

We chose $50,000 annual gross household income as the cutoff point between two income groups. This means that lower-income households that are CSA members (which we abbreviate as LIHHs hereafter) have annual gross household incomes under $50,000, while higher-income households that are CSA members (HIHHs hereafter) make $50,000 or above annually. We chose this cutoff because the federal government defines low-income households as those earning less than twice the federal poverty line, or $47,700 for families of four (U.S. Department of Health & Human Services 2015). For reference, the median annual income for California households was $61,400 (U.S. Census Bureau 2014b).

Table 1 shows the distribution of member households by income. There were 129 respondents in the LIHH group, with an average gross household income of approximately $32,577.[6] Thus, the LIHH group has low incomes relative to the general population of California, yet the majority of LIHHs in the study are likely above the Federal poverty level, depending on household size. There were 920 respondents in the HIHH group, with an average gross annual income of approximately $150,922. The substantial differences in the LIHH and HIHH groups by gross annual household income—$32,577 compared to $150,922—suggests that the differences in the economic realities of these two household groups are substantial. There is also a strong disproportionality of CSA membership by income. According to U.S. Census Bureau information for 2014, 41.3% of California households made under $50,000 annually and 58.7% made over $50,000 annually. In contrast, LIHHs make up 11.2% of CSA membership, while HIHHs make up the 80.1% of member households (the remaining 8.7% did not respond to the question). This shows that LIHHs are less likely to be CSA

[5] We can calculate the response rate for most individual CSAs since we surveyed the CSA farmers/operators in a previous survey and collected data on member numbers (Galt et al. 2015). Of these 11 CSAs for which we have data from the farmer, only one accepted Electronic Benefit Transfer (EBT, how the state of California distributes benefits to recipients of CalFresh and other food support programs) at the time of the study. Of the 115 member respondents from that CSA, only three are CalFresh users.

[6] Approximate average income was calculated by taking the midpoint of each category, with the assumption that $300 000 was the midpoint for the households earning $200 000 or more.

Table 1 Household incomes of CSA members

Income category	n	Percentage of respondents (%)
LIHHs		
<$10,000	8	0.7
$10,000–$14,999	7	0.6
$15,000–$24,999	17	1.5
$25,000–$34,999	31	2.7
$35,000–$49,999	66	5.7
All LIHHs	129	11.2
HIHHs		
$50,000–$74,999	141	12.3
$75,000–$99,999	171	14.9
$100,000–$149,999	272	23.7
$150,000–$199,999	158	13.8
$200,000 or more	178	15.5
All HIHHs	920	80.1
No response	100	8.7

members than HIHHs in California, a finding consistent with other studies of CSA in the U.S.

Now that we have examined the incomes of the two groups, we turn to the comparisons of LIHHs and HIHHs by three large categories: (1) socioeconomic and demographic characteristics, (2) household conditions that might influence their membership, and (3) membership experiences.

Socioeconomic and demographic characteristics by income group

Employment

There are differences in employment of the two groups, which likely contribute to the income differences of the groups. LIHHs have fewer full-time employed members of the household (0.9 vs. 1.4 for HIHHs, $p = 0.000$). When standardized by household size, LIHHs have fewer full-time jobs relative to the number of adults 25 years and older in the household (60 vs. 72% for HIHHs, $p = 0.001$). LIHHs also have more part-time jobs worked by members of the household (0.5 vs. 0.4 for HIHHs, $p = 0.006$). Additionally, LIHHs were also much more likely to have suffered job loss in the last year (13.3 vs. 6% for HIHHs, $p = 0.001$), another structural factor contributing to lower incomes.

Race and ethnicity

In this section we use racial/ethnic groups as defined by the U.S. Census Bureau (2014a) to allow for direct comparisons between CSA members and the general population (Table 2). There are no significant differences in the racial/ethnic identities of respondents from LIHHs and HIHHs. People of color (defined here as any race but white, and anyone of Latino/a ethnic origin) make up about 20% of respondents from both income groups. Conversely, the category of white alone, non-Latino makes up about 80% of respondents from both income groups. More specifically, the study's LIHHs are slightly more likely to be comprised of Latinos/as than HIHHs, and slightly less likely to be Black or African American than HIHHs, but neither of these differences is significant at the 5% level. Overall, then, respondents' racial and ethnic identities are remarkably similar between the LIHHs and HIHHs.

There are, however, large differences between CSA members and the California population as a whole, and this racial disproportionality varies considerably by income group. The top rows of Table 2 shows that LIHHs and HIHHs are both disproportionately white (i.e. white alone, non-Latino) relative to the overall California population in the same income group, but that the disproportionality is higher for LIHHs. People of more than one race are also disproportionately likely to be CSA members: 6% of LIHH members compared to 3% of the California population. Disproportionality runs in the opposite direction for all other races and ethnicities in LIHHs (Table 2). Thus, among LIHHs, whites and people of more than one race are about twice as likely to be CSA members, while other races and ethnicities are much less likely to be members.

Looking at racial/ethnic disproportionality for HIHHs, the patterns are similar, but in almost every category there is less racial disproportionality compared to LIHHs. Table 2 shows that both whites and people of more than one race are again overrepresented: 81% compared to 54, and 6% compared to 3%, respectively. All other groups are underrepresented, although generally not as much as for LIHHs. Racial/ethnic disproportionality generally declines as income goes up, and, when looking at the detailed income categories, is the lowest for the households making over $200,000 annually. These important findings of disproportionality are discussed more in the conclusion.

Household composition and education

While the average age of all household members is the same between LIHHs and HIHHs, there are important differences in specific age groups (Table 3a). LIHHs have significantly higher numbers of younger members between the ages of 25 and 34, and are significantly more likely to be comprised entirely of members over 65 years old. HIHHs are about twice as likely to have children.[7] HIHHs

[7] This differs from the state as a whole, where 47% of children are in low-income households (National Center for Children in Poverty 2015).

Table 2 Race and ethnicity of CSA members compared to the California population, by income categories

Race/ethnicity[a]	Population	LIHHs (%)	HIHHs (%)
White alone, non-Latino	CSA	82	81
	California[b]	42	54
Latino or Hispanic	CSA	8	5
	California	36	23
Black or African American alone	CSA	1	1
	California	9	5
Asian alone	CSA	6	8
	California	11	15
American Indian and Alaska Native alone	CSA	0	0.1
	California	0.9	0.6
Native Hawaiian and other Pacific Islander alone	CSA	0	0.2
	California	0.3	0.3
More than one race	CSA	6	6
	California	3	3
People of color	CSA	21	20
	California	60	47

[a] Racial categories listed in the question were taken from categories of the U.S. Census Bureau 2014a

[b] California population, with data from U.S. Census Bureau (2014a)

also have higher numbers of middle-aged members in the age groups of 35–44 and 45–54. This suggests, together with education differences discussed below, that HIHHs are more likely to be raising children and established in their careers. LIHHs tend to have younger, adults without children, or are more likely to be elderly.

The survey asked respondents to note the level of formal education achieved by the person in the household who was most educated (Table 3b). Both groups of households are highly educated; having a graduate degree is the most common category for both, and 81.9% of LIHHs and 94.7% of HIHHs have at least a bachelor's degree, compared to 30.7% of the California population (U.S. Census Bureau 2015). However, LIHHs have less formal education than HIHHs. Specific differences in educational attainment are in degrees in progress or partially completed. Ten percent of LIHHs responded with *some college* and 19.7% responded with *some graduate school*, compared with 2.6 and 7.1% for HIHHs, respectively.[8] Likewise, 65.3% of HIHHs have a member with a graduate degree, while that number is 39% for LIHHs, suggesting that HIHHs are more likely to have completed their education and be established in their careers, which is also suggested by the household age comparisons.

Use of food support

Table 4 shows that LIHHs were much more likely to use food support of some form or another than HIHHs. In terms of specific forms of food support, LIHHs relied much more frequently on CalFresh (California's Supplemental Nutrition Assistance Program or SNAP); Women, Infants, and Children (WIC); free or reduced-price school meals; food banks; and the Farmers Market Nutrition Program for WIC or seniors. While there are significant differences between the income groups, the percentage of LIHHs using food support is lower than that of the overall California population. Approximately 11% of California's population used CalFresh in December 2013 (Legislative Analyst's Office 2014, p. 1) compared to 3.9% of CSA LIHHs and 0.9% of all CSA member households. Approximately 4.4% of California's population used WIC in 2012,[9] which is slightly higher than the 3.1% household use by LIHH CSA members and much higher than the 0.5% of all CSA member households that use WIC.

Enjoyment of food-related activities

The survey asked respondents about their enjoyment of a variety of food-related activities. These included Likert-

[8] It could be that many of the LIHHs involved in CSA have the potential for upward income mobility in the future, as some members are likely to complete degrees and may commence full-time work or receive higher paying jobs.

[9] There were 1 660 302 participants in WIC in California in 2012 (Johnson et al. 2013, p. A-5), out of the state population of 38 000 000.

Table 3 Age and education of CSA member households, by income groups

	Lower-income households			Higher-income households			Wilcoxon rank-sum (Mann–Whitney) test		
	Mean	SD	n	Mean	SD	n	z	*p*	
a. Age, from responses to the question: "How many people of the following ages live in your household, including yourself?"									
Number of member(s) under 15 (count)	0.33	0.73	126	0.68	0.94	914	**4.19**	**0.00**	***
Number of member(s) ages 15–24 (count)	0.18	0.54	126	0.19	0.54	914	0.45	0.65	
Number of member(s) ages 25–34 (count)	0.87	0.88	126	0.45	0.96	914	**−6.76**	**0.00**	***
Number of member(s) ages 35–44 (count)	0.22	0.52	126	0.59	0.82	914	**4.75**	**0.00**	***
Number of member(s) ages 45–54 (count)	0.20	0.47	126	0.43	0.74	914	**3.14**	**0.00**	***
Number of member(s) ages 55–64 (count)	0.17	0.45	126	0.33	0.66	914	**2.43**	**0.02**	*
Number of member(s) over 65 (count)	0.14	0.41	126	0.13	0.43	914	−0.74	0.46	
Size of household (count)	2.11	1.13	126	2.82	1.25	911	**6.72**	**0.00**	***
							z-test (test of proportion)		
							z	p	
Household has children under 15 (binary)	22%	0.42	126	40%	0.49	914	**3.98**	**0.00**	***
Household has only members over 65 (binary)	8%	0.27	126	4%	0.19	911	**−2.20**	**0.01**	**
							t test		
							t	*p*	
Average age of household members (continuous)	36.7	15.7	126	37.4	14.9	911	0.49	0.31	

	Lower-income Households (n = 127)		Higher-income Households (n = 916)		z-test (test of proportion)		
	Frequency	Percentage	Frequency	Percentage	z	*p*	
b. Education level of the most educated household member, from responses to the question: "Consider the member of your household with the most formal education. What is that person's level of educational attainment?"							
High school degree (binary)	0	0.0%	3	0.3%	0.65	0.26	
Some technical school (binary)	0	0.0%	1	0.1%	0.37	0.35	
Technical school certificate program (binary)	2	1.6%	1	0.1%	**−2.90**	**0.00**	***
Some college (binary)	13	10.2%	24	2.6%	**−4.38**	**0.00**	***
Associates degree (binary)	8	6.3%	20	2.2%	**−2.70**	**0.00**	***
Bachelors degree (binary)	30	23.6%	204	22.3%	−0.34	0.37	
Some graduate school (binary)	25	19.7%	65	7.1%	**−4.78**	**0.00**	***
Graduate degree (binary)	49	38.6%	598	65.3%	**5.90**	**0.00**	***
					Kruskal–Wallis test		
					X^2	*p*	
Education level (ordinal)	–	–	–	–	**24.82**	**0.00**	***

Asterisks and bolding note statistical significance at or below the 5% level; * is 0.05–0.02, ** is 0.01, and *** is ≤ 0.00

scale ranking of enjoyment of cooking and food preparation; learning about cooking, food preparation, and/or preserving; gardening; preserving food; shopping for food; and fishing, hunting, and/or foraging. Overall, LIHHs enjoy food-related activities the same as HIHHs. This is true for every specific activity, although the differences are only close to statistically significant for one item: LIHHs like *fishing, hunting, and/or foraging* slightly more than HIHHs (Wilcoxon rank-sum test $p = 0.08$, *t* test $p = 0.04$).

Household conditions influencing membership by income group

Conditions interfering with membership

The survey asked about three major conditions households might face that interfere with CSA participation: work schedules, child care issues, and lack of transportation. For all conditions, a minority of respondents noted a negative impact. Only one—child care issues—is

Table 4 Use of food support strategies, by income group

Food support strategies[a]	LIHHs			HIHHs			z-test (test of proportion)		
	Mean	SD	n	Mean	SD	n	z	*p*	
Response to the question: "Over the most recent year of your CSA membership, did you or someone in your household use: [the strategies below]"									
Reduced cost or free school meals	3.1%	0.17	128	0.5%	0.07	918	**−2.97**	**0.00**	***
Produce prescription from a doctor or nurse	1.6%	0.12	128	0.7%	0.08	916	−1.10	0.14	
CalFresh, a.k.a. SNAP Supplemental Nutrition Assistance Program	3.9%	0.19	128	0.5%	0.07	917	**−3.68**	**0.00**	***
WIC Women, Infants and Children	3.1%	0.17	128	0.1%	0.03	918	**−4.68**	**0.00**	***
Farmers Market Nutrition Program	0.8%	0.09	127	0.0%	0.00	918	**−2.70**	**0.00**	***
Food bank or food pantry	1.6%	0.12	128	0.1%	0.03	918	**−2.89**	**0.00**	***
Soup kitchen or similar meal program	0.0%	0.00	128	0.2%	0.05	918	0.53	0.70	
Other free or reduced cost food from organizations or government	0.8%	0.09	128	0.0%	0.00	918	**−2.68**	**0.00**	***
Used food support of any type	9.4%	0.29	128	1.3%	0.11	918	**−5.80**	**0.00**	***
							Wilcoxon rank-sum (Mann–Whitney) test		
							z	*p*	
Number of food support types used (count)	0.13	0.46	128	0.02	0.14	985	**−5.72**	**0.00**	***

Asterisks and bolding note statistical significance at or below the 5% level; * is 0.05–0.02, ** is 0.01, and *** is ≤0.00

[a] All variables in the table are binary variables

significantly different between income groups. LIHHs are much less likely to experience this (1.6 vs. 6.1% for HIHHs, $p = 0.02$, test of proportions). This is likely a result of being much less likely to have children under the age of 15 in their households. While LIHHs are about half as likely to have children, they are about one-third as likely to experience childcare issues interfering with CSA membership, perhaps because they may have fewer adult household members employed outside of the home. Both income groups are much more likely to have work schedules interfere, and the interference rates are about the same (27.9% for LIHHs and 29.9% for HIHHs). Transportation issues were surprisingly not a challenge for most households. Only 4.7% of LIHHs and 6.2% of HIHHs noted transportation as a problem interfering with membership. While 11% of LIHHs have no automobile, 4% of HIHHs have no automobile, which suggests that it is not necessarily a problem of vehicle ownership for most households.

Major life events that might interfere with membership

We asked members whether they experienced major life changes for the household in the previous year, including: pregnancy/birth/adoption, moving, adults moving in, adults moving out, new job or new duties, job loss, divorce/separation, serious medical conditions, and death. There were significant differences in only three variables. As noted above, LIHHs were much more likely to suffer job loss. LIHHs were also much more likely to have moved (35 vs. 13% for HIHHs, $p = 0.00$, z-test). As noted above, HIHHs appear to be more established in their careers and are more likely to have children, and thus are likely more settled. LIHHs were also more likely to have had an adult member move into the household (11 vs. 6%, $p = 0.02$, z-test). It could be that this is related to households in which there are adult students pursuing degrees,[10] and/or to new households being formed through domestic partnerships or marriage.

CSA membership experiences by income group

On average, LIHHs have been CSA members for 3 years, while HIHHs have been CSA members for 4 years. This is a significant differences in the two groups (*t* test p = 0.01), and likely is a result of LIHHs being skewed toward the young adult age group of 25–34. LIHHs also tend to have been members of fewer CSAs (1.5 CSAs vs. 1.6 CSAs, *t* test $p = 0.13$).

Sources of information influencing decision to join

While LIHHs and HIHHs generally rated sources of information similarly—e.g., a word-of-mouth referral is by

[10] There is a significant, positive association (as expressed by the phi coefficient, also known as mean square contingency coefficient, arrived at through a Pearson correlation run on two binary variables) between *some graduate school* and *had an adult member moving into the household*—$r_\varphi = 0.07$, $p = 0.01$—while phi coefficients between other educational levels and this variable are not strongly associated.

far the top category for both groups—there are some important differences. Table 5 shows that LIHHs were much more likely to use social media, LocalHarvest or similar local food website, and online searches than HIHHs. HIHHs were more likely to use information from farmers' market booths. Overall, the differences in sources of information reflect some of the generational differences of member households, since LIHHs are much more likely to have members between the ages of 25–34.

Reasons for joining

With a forced ranking question we asked members' reasons for joining a CSA. The reasons they could select were: to obtain high-quality, fresh food; to support alternative/organic agriculture; to improve my health or my family's health; for environmental benefits (e.g. reduce food miles); to support local farmers' livelihoods; to obtain safe food; for convenience; to improve farmworkers' working conditions; to be part of a community or build community; and to save money on food. The rankings between LIHHs and HIHHs were very similar, with obtaining high-quality, fresh food, supporting alternative/organic agriculture, and improving my health or my family's health highest ranked (in the same order) by both groups. The only significant difference in the rankings of specific categories was *saving money*, where LIHHs ranked it higher on average (3.4 of 10 compared to 2.8 of 10 for HIHH, Wilcoxon rank-sum test $p = 0.02$). *Saving money*, however, was still the lowest-ranked category for both LIHHs and HIHHs.

Importance of various CSA attributes

Our survey asked members to rate the importance of 13 CSA attributes (Table 6). The importance of CSA attributes varies much more by income than do the reasons for joining. Table 6 shows that while the top two ranked attributes are the same and the bottom six ranked attributes are the same, the ones in the middle differ in their rankings. For LIHHs, *affordability* is much more highly ranked, and this is the greatest difference between the two groups. The other major differences are that LIHHs value *short transportation distances for produce* and *ease of communication with CSA staff/farmer* more highly than HIHHs. Smaller but still significant differences include *convenience* and *health impacts*, which are more important for LIHHs. Additionally, LIHHs value *knowing their farmer personally* more highly than HIHHs, although this is not significant at the 5% level. More broadly, LIHHs rate seven of the 13 attributes as more important than HIHHs rate them; conversely, HIHHs rate no attributes higher than LIHHs. This suggests that LIHHs value a broader array of CSA attributes than do HIHHs.

Satisfaction with various CSA attributes

The survey asked respondents to rate their level of satisfaction with the 13 CSA attributes (the same ones in Table 6). Unlike the importance of various attributes, there are no statistically significant differences between the ranks of any of the attributes. When we sum all of the satisfaction ratings together, their sums are also basically the same (55.8 for LIHHs and 56.2 for HIHHs). Thus, the two groups are equally satisfied with their CSA experience.

Gaps between importance of and satisfaction with various CSA attributes

Table 7 compares members' satisfaction with various CSA attributes to members' ratings of their importance. For each of the 13 attributes, the mean of the importance was subtracted from the mean of the satisfaction. Generally, most gaps are positive for both groups, meaning that satisfaction is similar to or higher than the level of importance. For *high quality produce*, satisfaction is lower than importance for both groups, but the negative gap is very small. Comparing LIHHs and HIHHs, there is a large and significant difference between the gap for *affordability* for the two groups; the gap is negative for LIHHs and positive for HIHHs. The only other attribute where there is negative gap for one group and not the other is with *appropriate diversity of products in the share* (LIHHs have a small negative gap, while there is no gap for HIHHs). Other significant differences between the groups are with *ease of communication with CSA staff/farmer*, *short transportation distances for produce*, *convenient pickup/delivery location*, and *knowing my farmer personally*. For all of these categories, the gaps are positive for both groups, but larger for HIHHs. Since, as noted above, there were no significant differences in their satisfaction, most of these differences in the gaps come from differences in the groups' rating of importance for the characteristics (for which LIHHs ranked most attributes more highly).

Perception of the monetary value of the share and willingness to pay more for a fairer farmer salary

We asked members about the value of their share relative to what they pay for it. All income brackets, except those making under $10,000 annually, perceive their share to be worth more than what they pay (Table 8). LIHHs thought, on average, that their share was worth 14% more, while HIHHs thought it was worth 12% more (the difference is not statistically significant, t test $p = 0.27$). The income

Table 5 Sources of information influencing members to join, by income group

	Lower-income Households (n = 129)		Higher-income Households (n = 921)		z-test (test of proportion)		
	Mean	SD	Mean	SD	z	*p*	
Responses to the question: "Which of the following sources of information influenced your household's decision to join your current CSA? Please select all that apply."[a]							
News article	9.3%	0.29	8.7%	0.28	−0.23	0.82	
Word of mouth referral from friend	56.6%	0.50	55.7%	0.50	−0.19	0.85	
Farmers' market booth	14.0%	0.35	21.3%	0.41	**1.93**	**0.05**	*
On farm advertising, e.g., at a farm stand or you pick place	4.7%	0.21	3.8%	0.19	−0.47	0.64	
Community groups and institutions, e.g., churches, schools	11.6%	0.32	10.3%	0.30	−0.46	0.65	
Social media, e.g., Facebook, Twitter	15.5%	0.36	4.1%	0.20	**−5.30**	**0.00**	***
LocalHarvest or similar website for finding local food and CSAs	20.9%	0.41	11.6%	0.32	**−2.97**	**0.00**	***
Online search for local food, e.g., Google, Yahoo, Bing	27.1%	0.45	19.5%	0.40	**−2.00**	**0.05**	*
Online forum/discussion board	7.8%	0.27	4.5%	0.21	−1.63	0.10	
Print advertising, e.g., newspaper, magazine	3.9%	0.19	1.5%	0.12	−1.88	0.06	
Internet advertising, e.g., banners or sponsored search results	0.0%	0.00	1.5%	0.12	1.41	0.16	
posted pamphlets or fliers	2.3%	0.15	4.9%	0.22	1.30	0.19	

Asterisks and bolding note statistical significance at or below the 5% level; * is 0.05–0.02, ** is 0.01, and *** is ≤0.00

[a] All variables in table are binary variables

Table 6 Importance of various CSA attributes, by income group

	LIHHs				HIHHs				Wilcoxon rank-sum (Mann–Whitney) test		
	Rank	Mean	SD	n	Rank	Mean	SD	n	z	p	
Responses to the question: "How IMPORTANT TO YOU are the following characteristics of your CSA?"[a]											
High quality produce	1	4.9	0.3	127	1	4.9	0.3	916	**−0.05**	0.96	
The farm's agricultural practices, e.g., organic	2	4.6	0.8	127	2	4.6	0.8	909	−1.47	0.14	
Convenient pickup/delivery location	3	4.4	0.9	127	4	4.3	0.8	910	**−2.23**	**0.03**	*
Appropriate quantity of food in the share	4	4.4	0.8	127	3	4.3	0.8	915	−1.49	0.14	
Affordability	5	4.3	0.9	125	7	3.8	1.0	913	**−6.39**	**0.00**	***
Appropriate diversity of products in the share	6	4.3	0.9	125	5	4.3	0.7	908	−0.44	0.66	
Health, dietary, &/or lifestyle impacts from membership	7	4.1	1.0	126	6	3.9	1.0	911	**−2.26**	**0.02**	*
Short transportation distances for produce	8	4.0	1.0	127	8	3.7	1.0	905	**−3.17**	**0.00**	***
Ease of communication with CSA staff/farmer	9	3.9	1.0	124	9	3.5	1.0	912	**−3.42**	**0.00**	***
Ability to choose share items/content	10	2.8	1.3	101	10	2.6	1.2	678	−1.40	0.16	
Knowing my farmer personally	11	2.8	1.1	120	11	2.6	1.2	882	−1.73	0.08	
Newsletter	12	2.6	1.0	125	12	2.6	1.0	886	−0.49	0.63	
Sense of community in the CSA, incl. member events	13	2.6	1.1	122	13	2.6	1.0	892	−0.16	0.87	

Asterisks and bolding note statistical significance at or below the 5% level; * is 0.05–0.02, ** is 0.01, and *** is ≤0.00

[a] All variables in the table are ordinal variables arrived at through ranking. The survey asked about whether various attributes were "important AND essential for continuing my CSA" (coded as 5), "important BUT NOT essential for continuing my CSA" (coded as 3.75), "of minor importance" (coded as 2.5), or "not important" (coded as 1.25)

bracket perceiving the largest difference between value and cost was households making $25,000–$34,999; they responded that the share is worth 23% more. The income brackets with the smallest gap between value and cost were those households making under $10,000 (4.6% less) and those making over $200,000 (10.4% more).

Table 7 Gap of satisfaction with, compared to importance of, various CSA attributes, by income group

	Mean of LIHH Gap (=Satisfaction −Importance)	Mean of HIHH Gap (=Satisfaction −Importance)	Wilcoxon rank-sum (Mann–Whitney) test		
			z	p	
Calculated by subtracting responses to importance (see question in Table 6) from responses to satisfaction ("How SATISFIED ARE YOU with the following characteristics of your current CSA?")[a]					
High quality produce	−0.2	−0.1	0.34	0.74	
The farm's agricultural practices, e.g., organic	0.0	0.1	1.80	0.07	
Convenient pickup/delivery location	0.1	0.3	**2.43**	**0.02**	*
Appropriate quantity of food in the share	0.1	0.2	1.70	0.09	
Affordability	−0.2	0.4	**5.77**	**0.00**	***
Appropriate diversity of products in the share	−0.1	0.0	1.47	0.14	
Health, dietary, and/or lifestyle impacts from membership	0.5	0.6	1.87	0.06	
Short transportation distances for produce	0.4	0.6	**2.63**	**0.01**	**
Ease of communication with CSA staff/farmer	0.6	0.9	**3.69**	**0.00**	***
Ability to choose share items/content	0.8	0.9	1.38	0.17	
Knowing my farmer personally	1.1	1.1	**1.97**	**0.05**	*
Newsletter	1.5	1.5	1.47	0.14	
Sense of community in the CSA, incl. member events	1.2	1.2	0.88	0.38	

Asterisks and bolding note statistical significance at or below the 5% level; * is 0.05–0.02, ** is 0.01, and *** is ≤0.00

[a] All variables in table are the difference between two ordinal variables. Satisfaction responses included "Very satisfied" (coded as 5), "Satisfied" (coded as 4), "Neutral/mixed feelings" (coded as 3), "Unsatisfied" (coded as 2), "Very unsatisfied" (coded as 1), and "This does not apply to my CSA" (coded as missing, "." in Stata)

We conditioned members' willingness to pay more by asking if they would be willing to pay more for their share to provide a fairer farmer salary.[11] In this scenario the differences between LIHHs and HIHHs run the other way than just the consideration of the share's value, with LIHHs being willing to pay 17% more and HIHHs being willing to pay 19% more (but this difference is not statistically significant either, t test $p = 0.18$). Table 8 shows that, as with the valuation question above, members with gross household incomes of $25,000–$34,999 were willing to pay the most (23% more), while members making under $10,000 were willing to pay the least (6% more).

Impacts of membership

CSA membership impacts households most strongly in terms of increased vegetable consumption and improvement of diet, and these self-reported changes are seen for both LIHHs and HIHHs (Table 9). The largest differences between the groups are in impacts on food expenditures, eating out, and time shopping. LIHHs were much more likely to *save money overall on food purchases* as a result of membership. Other significant differences were that LIHHs were more likely to *eat out less often*, and more likely to have *reduced their time spent shopping for food*. These are important overall effects for LIHHs, as they line up with the importance of affordability by increasing time and/or money savings in other areas of life.

Discussion

Here we revisit our research question of how CSA members' (1) socioeconomic and demographic backgrounds, (2) household conditions potentially interfering with membership, and (3) CSA membership experiences vary between lower-income households (LIHHs) and higher-income households (HIHHs).

In terms of background, LIHHs and HIHHs differ in many important respects. LIHHs have significantly lower numbers of household members with full-time jobs, and significantly higher numbers with part-time jobs (per household members over 25 years). There are no significant differences in the racial/ethnic identities of respondents from LIHHs and HIHHs, but LIHHs are more disproportionately white than HIHHs relative to the general California population, and racial/ethnic disproportionality decreases as income increases. LIHHs have significantly higher numbers of young adult members and are more likely to be comprised of exclusively elderly members, while HIHHs are significantly more likely to have children and have higher numbers in the middle age groups. The

[11] This was based on previous research showing that CSA farmers in California's Central Valley have median annual earnings of $6 750 per farm partner, while the average was $25 408 (Galt 2013).

Table 8 Perceived monetary value of, and willingness to pay more for, the CSA share, by income category

Income category	Monetary value of share relative to what members pay (as a % of current price)			Willingness to pay more for CSA share to provide fairer farmer salary (as a % of current price)		
	Mean (%)	SD (%)	n	Mean (%)	SD (%)	n
LIHHs						
<$10,000	−4.6	27.0	8	5.9	19.9	8
$10,000–$14,999	13.9	42.1	7	18.5	25.4	6
$15,000–$24,999	16.1	25.9	15	16.1	14.6	12
$25,000–$34,999	22.5	46.7	28	23.3	41.0	27
$35,000–$49,999	11.9	24.4	61	15.7	18.4	57
All LIHHs	13.9	32.5	119	17.1	25.9	110
HIHHs						
$50,000–$74,999	12.8	25.7	127	19.6	21.5	118
$75,000–$99,999	13.5	32.5	156	20.0	21.2	136
$100,000–$149,999	11.7	32.8	238	19.0	30.5	215
$150,000–$199,999	13.6	25.3	137	21.7	19.0	123
$200,000 or more	10.4	24.2	154	18.7	22.6	139
All HIHHs	12.2	28.8	864	19.3	23.8	771
None stated	10.1	27.3	52	12.6	11.9	40
All categories combined	12.4	29.3	983	19.0	24.1	881

Table 9 Impacts of CSA membership, by income group

	Lower-income households (n = 129)		Higher-income households (n = 911)		z-test (test of proportion)		
	Mean (%)	SD	Mean (%)	SD	z	*p*	
Responses to the question: "How has CSA membership impacted you? Please select all that apply."[a]							
I have increased my vegetable consumption	86	0.35	83	0.37	−0.84	0.20	
I have improved my diet	81	0.39	78	0.42	−0.95	0.17	
I spend more time cooking or preparing food, including preserving	73	0.45	68	0.47	−1.10	0.14	
I have reduced my time spent shopping for food, including transportation time	64	0.48	56	0.50	**−1.75**	**0.04**	*
I have developed a greater awareness of agricultural and environmental issues	60	0.49	65	0.48	0.95	0.17	
I go out to eat less often	53	0.50	43	0.50	**−2.05**	**0.02**	**
I save money overall on my food purchases	47	0.50	32	0.46	**−3.57**	**0.00**	***
I have increased my fruit consumption	36	0.48	41	0.49	1.22	0.11	
I have increased my meat consumption	5	0.21	3	0.17	−1.02	0.15	

Asterisks and bolding note statistical significance at or below the 5 % level; * is 0.05–0.02, ** is 0.01, and *** is ≤0.00

[a] All variables in table are binary variables

most educated member of LIHHs had significantly less formal education than HIHHs, yet both groups are very highly educated compared to the general population. There are large differences with degrees partially completed or in progress, which are more common for LIHHs. Household composition and educational level suggest that difference in life phase has a considerable influence on income level. LIHHs were also much more likely to use various forms of food support than HIHHs, although their overall use is lower than the California average for CalFresh and WIC use. Lastly, LIHHs enjoy food-related activities just as much as HIHHs.

Turning to household conditions that might influence membership, we found only a few differences. The only significant difference in conditions interfering with CSA participation was child care issues, which LIHHs are much less likely to experience than HIHHs, which is likely a result of being less likely to have children in the household and having

less full-time employment per adult member. LIHHs were more likely to experience a handful of major life events, including moving, having an adult member move into the household, and losing a job. These findings support the idea that typical LIHHs and HIHHs are in different life stages.

As for their experiences with CSA, the significant differences between LIHHs and HIHHs were the following. LIHHs have been members for a shorter time, but are also younger. While LIHHs ranked saving money on food as a reason for joining a CSA significantly more highly than HIHHs, saving money was the *least* important reason for joining on average for both LIHHs and HIHHs. LIHHs were much more likely to use social media, LocalHarvest, and online searches as information sources that influenced their decision to join, likely due to being younger.

LIHHs rated a large number of CSA attributes as more important than HIHHs, including affordability, short transportation distances, ease of communication with CSA staff/farmer, convenient pickup/delivery location, health impacts from membership, and knowing their farmer personally. HIHHs did not rank any CSA attributes more highly than LIHHs. This shows that LIHHs value their CSA membership more than HIHHs, including the traditional aspects of CSA of environmental benefits and supporting local farmers.

There were no significant differences in satisfaction between LIHHs and HIHHs. LIHHs had a very small negative gap between their satisfaction and their ranking of importance of two CSA attributes: affordability and diversity of products in the share (−0.2 and −0.1, out of 5). They shared with HIHHs a small negative gap (−0.2 out of 5) for quality of produce. These gaps are extremely small, which shows that current members are, on average, satisfied with almost all aspects of CSA.

The difference in LIHHs' valuing of their share relative to what they pay is higher than for HIHHs (14 vs. 12%, respectively), although the difference is not statistically significant. As for impacts of CSA membership, LIHHs are more likely to report saving money overall on food purchases, eating out less, and spending less time overall shopping. This likely helps to explain their greater appreciation for the value of their share.

Conclusion

Overall, our findings show that the inclusion of LIHHs in CSAs provides a benefit for both members and farmers. LIHHs report improved diets (81%), increased vegetable consumption (86%), a reduction in time spent shopping (64%), and less money spent on food (47%). At the same time, the data show that LIHHs are highly committed CSA members. They rate a variety of CSA attributes as more important than HIHHs, they place a slightly higher monetary value on their share than HIHHs despite their lower incomes, and they are just as interested in food-related activities as HIHHs. Importantly, the households making between $25,000 and $34,999 annually perceive their share to be worth the most *and* would be willing to pay the most for a higher farmer salary. Our findings showing LIHHs are committed CSA members are generally consistent with the only other statewide study of CSA members in the U.S. (Pole and Gray 2013; Pole and Kumar 2015).

We conclude on three main points: (1) the economic risks that LIHHs face in CSA membership, (2) the ways that these economic risks intersect with race/ethnicity and cultural coding in CSA; and (3) the potential benefits of increasing the numbers of LIHH members in CSA, with the recognition that LIHHs currently in CSA are not representative of LIHHs in California generally. First, we theorize how risk differentially influences membership experiences for LIHHs and HIHHs. Lang (2005, p. 69), in his work on member satisfaction, noted that "poorer members are likely to spend a higher proportion of their income on their food purchases than wealthier members, which may enhance the risk of paying money in advance for an unspecified amount of produce." In addition to this pre-payment risk, paying a larger percentage of one's income means that more is at stake with membership. LIHHs face higher risks if unexpectedly faced with a need to supplement their share with further food purchases; i.e., households that have devoted a larger proportion of their food dollars to the CSA and do not have their food needs met by their share will need to spend more money on food than planned.

We believe these economic risks help explain why LIHHs rate the majority of CSA attributes as more important than HIHHs—LIHHs are more committed members since they participate *despite lower incomes that make membership economically riskier than for HIHHs*. We found a number of indicators suggesting high levels of dedication to CSA by participating LIHHs. This was also evident in Pole and Kumar's (2015) data we reanalyzed above: lower-income households had the highest proportion of ideal "Quintessential" members, which decreased as incomes increased. Even though LIHHs have more riding on their membership, we find that their satisfaction is the same as HIHHs.[12] Additionally, the interference of work schedules, transportation, and child care with CSA

[12] Although we did not ask, we suspect that LIHHs are more likely to use their shares to fill most or all of their vegetable needs (as Lang 2005 showed), which would explain why they were less satisfied with appropriate diversity of products in the share than HIHHs, and why they would have a larger gap between satisfaction and importance for the two attributes of affordability and diversity of products in the share.

participation did not adversely impact LIHHs more than HIHHs. Indeed, HIHHs were more likely to have child care issues interfere with their CSA participation. This suggests that those LIHHs that participate have resolved these issues relative to their membership, or that these LIHHs face fewer lifestyle barriers to participation in the first place. We also had one finding that contradicted findings of other CSA studies; while some found that affordability was an important motivation for LIHHs joining CSA (e.g., Hinrichs and Kremer 2002), we found that it was the lowest-ranked motivation for LIHHs (just as it was for HIHHs, even though LIHHs rated it higher than HIHHs). Since we used a forced ranking system and other studies used mostly qualitative methods, this could be an artifact of different forms of inquiry.

Second, our findings add nuance to common critiques of the representativeness and inclusion of AFNs in the U.S. Most central here is the whiteness of AFNs (Alkon 2012; Guthman 2008b): CSAs are often coded as white spaces by being based on white, middle class values, which works to dissuade participation by people of color while providing a welcoming environment for many white people. Our data—the first to break down race/ethnicity by income for CSA members—suggests that race/ethnicity and class intersect in important ways within CSA. We find that racial disproportionality decreases as income increases.

We theorize this in the following way, which should be examined through further qualitative research. LIHHs led by people of color face a double disadvantage in CSA participation: their membership is economically risky *and*, with most CSAs, they have to navigate a white space. These aspects of CSA help explain why LIHHs of color would be the least represented demographic groups, and likely prefer other AFNs like farmers' markets when in search of local, organic food due to lower economic risk. In contrast, white-led LIHHs face only a single dissuading influence—the economic risks of membership—that might be offset by the comfort and other benefits (for them) associated with CSAs as white spaces. As incomes go up and members experience lower economic risks from their membership, our data suggest that people of color are more likely to participate in CSA. In HIHHs headed by people of color, the economic risk is reduced, so the main dissuading factor is navigating a white space. It may be that HIHHs led by people of color have become adept at, or perhaps used to, operating in white spaces, and/or that they are more likely to share "foodie" values of the white middle and upper classes.

How the intersection of these racial/ethnic and class dynamics function in CSAs and AFNs more generally could be explored through more qualitative research with households of various races and ethnicities in different income groups. Our study shows that there are enough members within different groups—e.g., HIHHs of color, LIHHs of color, white HIHHs, and white LIHHs—to compare and contrast their experiences, qualitatively and quantitatively. And, the data show that despite discourse that reinforces the white coding of these AFN spaces, they are actually racially diverse and this diversity should not be ignored.

Lastly, our data suggest that increasing LIHH participation in CSA—if done with sensitivity to the various issues shaping how people of various races/ethnicities and class positions view and experience CSAs and AFNs—could create some win–win scenarios that increase food access for populations in need and bring new consumers to farmers. While the LIHHs in our study are not representative of LIHHs in the state generally—LIHHs in our study are more likely to be white, more educated, more upwardly mobile, younger, and less likely to have children and the related complications that arise such as childcare issues—there are likely more LIHHs that are interested in CSA but find the economic risks prohibitive, their cultural coding unwelcoming, and/or their modes of interaction unfamiliar. We address these three barriers below with practical suggestions.

There are many strategies to mitigate the economic barriers. One strategy to enroll potential LIHH members is for CSAs to become vendors that accept CalFresh Electronic Benefit Transfer (EBT), which is how the state of California distributes benefits to recipients of CalFresh (SNAP elsewhere as noted above). As of this writing, CSAs in California can apply for free to become an EBT-accepting vendor, and the EBT machine is of no charge to them. Our study shows that a large percentage of LIHHs participating in CSA experience the common benefits of improving diets, reducing time spent shopping, and spending less money on food. Using EBT would reduce the important economic barrier to more LIHH participation, and likely bring more CSA members into the fold, which would be welcome by most CSAs in California that often struggle to make ends meet economically and would like more members (Galt 2013; Galt et al. 2015).

Another strategy to mitigate the economic barriers is to create sliding scales for shares, with shares priced lower for lower-income households and higher for higher-income households. In this way, "higher priced shares subsidize the lower priced shares" (Forbes and Harmon 2008, p. 71). The difference between LIHHs and HIHHs in their satisfaction with CSA affordability that we found suggests that sliding scales could work well for both groups.

To help spread EBT acceptance and sliding scales, more should be done to encourage and train established CSA farmers about the benefits to farmers of serving LIHHs. In our experience, some CSA farmers are operating on the

assumption that LIHHs are not a viable CSA member group, and our findings can be used to inform farmers about LIHHs' potentially strong commitment and alignment with CSA values. CSA farmers may be especially interested to know that CSA members with very modest household incomes in the $25,000–$34,999 range were willing to pay the most for their CSA share when compared to other income groups. Additionally, lessons learned from those CSAs that are set up to address the needs of LIHHs could be researched and communicated.

There are also many strategies to mitigate and reduce the whiteness of CSA in California. CSAs that focus on specific kinds of culturally relevant produce exist—such as that run by Asian and Pacific Islander Obesity Prevention Alliance (APIOPA) in Los Angeles—and more research is needed about how these CSAs function for the communities they serve. Additionally, training for CSA farmers of all ethnicities/races and income levels could help to explain the ways that racially-specific cultural coding works in food and agriculture, how our society's histories of racism strongly shape who won and lost (and currently wins and loses) in California agriculture, and how to create a more welcoming space for customers from a wide range of racial and ethnic backgrounds.

Lastly, another group underrepresented in LIHHs participating in CSA is the elderly. Including more elderly LIHHs could involve such strategies as using additional forms of traditional print marketing to reach these populations, flexible payment plans for those on fixed incomes, and smaller share options for older individuals who often eat less and have smaller households. We believe the strategies mentioned above and others could increase the representativeness of LIHHs, people of color, and the elderly in CSA generally, allowing for increased benefits for both consumers and producers.

Acknowledgements We thank the numerous CSA member households and CSA farmers who kindly participated in this research. We are also thankful to the papers' reviewers and the journal editor for their helpful comments that greatly improved the paper. This work would not have been possible without a competitive grant Dr. Galt received from University of California's Division of Agriculture and Natural Resources.

References

Alkon, A.H. 2012. *Black, white, and green: Farmers markets, race, and the green economy*. Athens, GA: University of Georgia Press.

Alkon, A.H., and J. Agyeman. 2011. Introduction: The food movement as polyculture. In *Cultivating food justice: Race, class, and sustainability*, ed. A.H. Alkon, and J. Agyeman, 1–20. Cambridge, MA: MIT Press.

Alkon, A.H., D. Block, K. Moore, C. Gillis, N. DiNuccio, and N. Chavez. 2013. Foodways of the urban poor. *Geoforum* 48: 126–135.

Andreatta, S.L., M. Rhyne, and N. Dery. 2008. Lessons learned from advocating CSAs for low-income and food insecure households. *Southern Rural Sociology* 23(1): 116–148.

Boulé, D. 2012. *Beyond black and white: Understanding the sociocultural dimensions of "healthy" food access in South Sacramento*. Master's thesis, Community Development Graduate Group. Davis, CA: University of California.

Bradley, K., and R.E. Galt. 2014. Practicing food justice at Dig Deep Farms and Produce, East Bay Area, California: Self-determination as a guiding value and intersections with foodie logics. *Local Environment: The International Journal of Justice and Sustainability* 19(2): 172–186.

Bradley, K., and H. Herrera. 2016. Decolonizing food justice: Naming, resisting, and researching colonizing forces in the movement. *Antipode* 48(1): 97–114.

Brown, S., and C. Getz. 2011. Farmworker food insecurity and the production of hunger in California. In *Cultivating food justice: Race, class, and sustainability*, ed. A.H. Alkon, and J. Agyeman, 121–146. Cambridge, MA: MIT Press.

Cone, C.A., and A. Myhre. 2000. Community-supported agriculture: A sustainable alternative to industrial agriculture? *Human Organization* 59(2): 187–197.

Cooley, J.P., and D.A. Lass. 1998. Consumer benefits from Community Supported Agriculture membership. *Review of Agricultural Economics* 20(1): 227–237.

Cox, R., L. Holloway, L. Venn, L. Dowler, J.R. Hein, M. Kneafsey, and H. Tuomainen. 2008. Common ground? Motivations for participation in a community-supported agriculture scheme. *Local Environment: The International Journal of Justice and Sustainability* 13(3): 203–218.

De Winter, J.C.F., and D. Dodou. 2010. Five-point Likert items: t test versus Mann–Whitney–Wilcoxon. *Practical Assessment, Research & Evaluation* 15(11): 1–12.

DeLind, L.B. 1999. Close encounters with a CSA: The reflections of a bruised and somewhat wiser anthropologist. *Agriculture and Human Values* 16(1): 3–9.

DeLind, L.B., and A.E. Ferguson. 1999. Is this a women's movement? The relationship of gender to community-supported agriculture in Michigan. *Human Organization* 58(2): 190–200.

Durrenberger, E.P. 2002. Community Supported Agriculture in central Pennsylvania. *Culture & Agriculture* 24(2): 42–51.

Dyck, B. 1997. Build in sustainable development and they will come: A vegetable field of dreams. *British Food Journal* 99(9): 325–335.

Forbes, C.B., and A.H. Harmon. 2008. Buying into Community Supported Agriculture: Strategies for overcoming income barriers. *Journal of Hunger & Environmental Nutrition* 2(2–3): 65–79.

Galt, R.E. 2011. Counting and mapping Community Supported Agriculture in the United States and California: Contributions from critical cartography/GIS. *ACME: An International E-Journal for Critical Geographies* 10(2): 131–162.

Galt, R.E. 2013. The moral economy is a double-edged sword: Explaining farmers' earnings and self-exploitation in Community Supported Agriculture. *Economic Geography* 89(4): 341–365.

Galt, R.E., K. Bradley, L. Christensen, J. Van Soelen Kim, and R. Lobo. 2015. Eroding the community in Community Supported Agriculture (CSA): Competition's effects in alternative food networks in California. *Sociologia Ruralis*. doi:10.1111/soru.12102.

Green, J.J., E.M. Green, and A.M. Kleiner. 2011. From the past to the present: Agricultural development and black farmers in the American South. In *Cultivating food justice: Race, class, and sustainability*, ed. A.H. Alkon, and J. Agyeman, 47–64. Cambridge, MA: MIT Press.

Guthman, J. 2008a. Bringing good food to others: Investigating the subjects of alternative food practice. *Cultural Geographies* 15(4): 431–447.

Guthman, J. 2008b. "If they only knew": Color blindness and universalism in California alternative food institutions. *The Professional Geographer* 60(3): 387–397.

Guthman, J. 2011. *Weighing in: Obesity, food justice, and the limits of capitalism, California studies in food and culture*. Berkeley, CA: University of California Press.

Harper, A.B. 2011. Vegans of color, racialized embodiment, and problematics of the "exotic". In *Cultivating food justice: Race, class, and sustainability*, ed. A.H. Alkon, and J. Agyeman, 223–238. Cambridge, MA: The MIT Press.

Henderson, E., and R. Van En. 2007. *Sharing the harvest: A citizen's guide to Community Supported Agriculture*, Rev. expanded ed. White River Junction, VT: Chelsea Green.

Hersey, J., J. Anliker, C. Miller, R.M. Mullis, S. Daugherty, S. Das, C.R. Bray, P. Dennee, M. Sigman-Grant, and H.O. Thomas. 2001. Food shopping practices are associated with dietary quality in low-income households. *Journal of Nutrition Education* 33: S16–S26.

Hinrichs, C.C., and K.S. Kremer. 2002. Social inclusion in a Midwest local food system project. *Journal of Poverty* 6(1): 65–90.

Johnson, B., B. Thorn, B. McGill, A. Suchman, M. Mendelson, K.L. Patlan, B. Freeman, R. Gotlieb, and P. Connor. 2013. *WIC participant and program characteristics 2012: Final report*. Alexandria, VA: U.S. Department of Agriculture, Food and Nutrition Service.

Kato, Y. 2013. Not just the price of food: Challenges of an urban agriculture organization in engaging local residents. *Sociological Inquiry* 83(3): 369–391.

Kirkland, A. 2011. The environmental account of obesity: A case for feminist skepticism. *Signs* 36(2): 463–485.

Kolodinsky, J.M., and L.L. Pelch. 1997. Factors influencing the decision to join a Community Supported Agriculture (CSA) farm. *Journal of Sustainable Agriculture* 10(2/3): 129–141.

Lang, K.B. 2005. Expanding our understanding of Community Supported Agriculture (CSA): An examination of member satisfaction. *Journal of Sustainable Agriculture* 26(2): 61–79.

Legislative Analyst's Office. 2014. *CalFresh program overview*. Sacramento, CA: Legislative Analyst's Office.

McClintock, N. 2011. From industrial garden to food desert: Demarcated devaluation in the Flatlands of Oakland, California. In *Cultivating food justice: Race, class, and sustainability*, ed. A.H. Alkon, and J. Agyeman, 89–120. Cambridge, MA: MIT Press.

National Center for Children in Poverty. 2015. *California: Demographics of low-income children*. Columbia University. http://www.nccp.org/profiles/CA_profile_6.html. Accessed 12 Nov 2015.

O'Hara, S., and S. Stagl. 2001. Global food markets and their local alternatives: A socio-ecological economic perspective. *Population and Environment* 22(6): 533–554.

Perez, J., P. Allen, and M. Brown. 2003. *Community Supported Agriculture on the central coast: The CSA member experience*. Santa Cruz, CA: Center for Agroecology and Sustainable Food Systems, University of California.

Pole, A., and M. Gray. 2013. Farming alone? What's up with the "C" in Community Supported Agriculture. *Agriculture and Human Values* 30(1): 85–100.

Pole, A., and A. Kumar. 2015. Segmenting CSA members by motivation: Anything but two peas in a pod. *British Food Journal* 117(5): 1488–1505.

Russell, W.S., and L. Zepeda. 2008. The adaptive consumer: Shifting attitudes, behavior change and CSA membership renewal. *Renewable Agriculture and Food Systems* 23(2): 136–148.

Schnell, S.M. 2007. Food with a farmer's face: Community-supported agriculture in the United States. *Geographical Review* 97(4): 550–564.

Slocum, R. 2006. Anti-racist practice and the work of community food organizations. *Antipode* 38(2): 327–349.

Slocum, R. 2007. Whiteness, space and alternative food practice. *Geoforum* 38(3): 520–533.

Tegtmeier, E., and M. Duffy. 2005. *Community Supported Agriculture (CSA) in the Midwest United States: A regional characterization*. Ames, IA: Leopold Center, Iowa State University.

U.S. Census Bureau. 2014a. *American community survey 1-year estimates*. Washington, DC: U.S. Census Bureau. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_14_1YR_B19001&prodType=table. Accessed 28 Sept 2015.

U.S. Census Bureau. 2014b. *American FactFinder: California*. Washington, DC: U.S. Census Bureau. http://factfinder2.census.gov/. Accessed 15 Nov 2015.

U.S. Census Bureau. 2015. *California: State and County QuickFacts*. Washington, DC: U.S. Census Bureau. http://quickfacts.census.gov/qfd/states/06000.html. Accessed 23 Nov 2015.

U.S. Department of Health & Human Services. 2015. *2014 poverty guidelines*. Washington, DC: Office of the Assistant Secretary for Planning and Evaluation. http://aspe.hhs.gov/2014-poverty-guidelines. Accessed 8 Oct 2015.

White, M.M. 2010. Shouldering responsibility for the delivery of human rights: A case study of the D-Town Farmers of Detroit. *Race/Ethnicity: Multidisciplinary Global. Contexts* 3(2): 189–211.

White, M.M. 2011a. D-Town farm: African American resistance to food insecurity and the transformation of Detroit. *Environmental Practice* 13(4): 406–417.

White, M.M. 2011b. Sisters of the soil: Urban gardening as resistance in Detroit. *Race/Ethnicity: Multidisciplinary Global. Contexts* 5(1): 13–28.

Wright, K.B. 2005. Researching Internet-based populations: Advantages and disadvantages of online survey research, online questionnaire authoring software packages, and web survey services. *Journal of Computer-Mediated Communication*. doi:10.1111/j.1083-6101.2005.tb00259.x.

Zepeda, L., and J. Li. 2006. Who buys local food? *Journal of Food Distribution Research* 37(3): 1–11.

Ryan Galt is an associate professor and MacArthur Foundation Endowed Chair (2015–2020) in the Department of Human Ecology at the University of California, Davis, who studies agriculture and food systems with an emphasis on governance and sustainability. His research uses political ecology and political economy approaches and combines qualitative and quantitative methods to compare market relations in export, national, and local agrifood systems, and their shaping by geographically uneven processes of regulation and social change, unequal access to resources, and environmental change. He has examined pesticide-dependent smallholder agriculture in Costa Rica, Community Supported Agriculture in the United States and California, and fair and sustainable chocolate.

Katharine Bradley is a traveling faculty member for the International Honors Program, Rethinking Food Security. She teaches about

the political economy of food systems. Her research addresses urban agriculture, food justice, and activist-scholarship/scholarly-activism.

Libby Christensen is a postdoctoral researcher in the Department of Agricultural and Resource Economics at Colorado State University. Libby conducts applied research and outreach focused on the political economy of the food system with particular attention to the produce supply chain. Libby holds a Ph.D. in Geography and an MS in Community Development both from the University of California—Davis.

Cindy Fake is a Horticulture and Small Farms Advisor with the University of California Cooperative Extension in Placer County. She is involved in a variety of research and education projects related to vegetable and fruit crops, farm economics, and nutrition.

Kate Munden-Dixon is a Ph.D. student at the University of California, Davis in the Geography program specializing in food systems research. Prior to UC Davis, Kate worked for The University of Georgia as the Sustainable Agriculture Research and Education (SARE) Program Assistant. In this position, she worked with small- and mid-scale farmers to develop food hubs and efficient agroecology practices. Kate has degrees from The University of Georgia—A.B., International Affairs, 2004; MEPD, Masters of Environmental Planning and Design, 2011. Her current research focuses on the political economy of livestock supply chains and mid-scale vegetable aggregators.

Natasha Simpson is an M.S. student in Community Development at the University of California, Davis. Her research and practice focuses on food justice and the intersection of race, class, gender, and disability; health discourse and implications for disability identities; and community empowerment and building movements across difference. She received her B.A. in Women's Studies from San Francisco State University.

Rachel Surls is the Sustainable Food Systems Advisor for University of California Cooperative Extension in Los Angeles County, part of UC's Division of Agriculture and Natural Resources. She is involved in a variety of research and education projects related to urban food systems, on topics ranging from urban agriculture to food waste reduction.

Julia Van Soelen Kim is a Food Systems Advisor with the University of California Cooperative Extension in the San Francisco North Bay counties of Marin, Mendocino, Napa, and Sonoma. Van Soelen Kim's extension and applied research seeks to strengthen the viability, sustainability, and equity of the regional food system. Her work is directed at enhancing connections between farmers and local consumers by supporting the viability of local agriculture and expanding access to local food. She has a Master of Science in Community Development and a Master of Public Health from the University of California Davis.