

# Understanding consumer values of participants in a cost-offset community supported agriculture (CSA) program

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## Abstract

Community supported agriculture (CSA) programs offer consumers access to fresh, local foods in exchange for an upfront subscription payment. Over the past few years, this direct-to-consumer production and distribution model has become

more visible to consumers due to cost-offset programs and the integration of food assistance funds. As new, nontraditional CSA shareholders begin to experiment with CSA, farmers should consider different ways to reach and support their shareholders. To do this, it is critical to understand

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how different shareholder segments are defined by specific consumer values related to food acquisition.

In this article, we present the results of a survey that asked 172 shareholders and nonshareholders from an employer-sponsored CSA voucher program at the University of Kentucky what values were most and least important to their decision on whether to join a CSA. We used a best-worst scaling (BWS) approach to demonstrate that subscribers and nonsubscribers have different considerations when deciding to join a CSA. Our BWS analysis suggests, for example, that subscribers are primarily interested in the product quality and local economic impacts of CSA. Those who declined a CSA focused on perceived food affordability. From these results, we theorize how the CSA model can and is evolving to include shareholder segments with heterogeneous value sets. This study provides a focus on a direct market, cost-offset option to a growing literature linking consumer values with food purchasing decisions.

### Keywords

community supported agriculture, food consumer values, cost-offset CSA, CSA shareholder values

### Introduction

Community supported agriculture (CSA) is a unique food acquisition model where an individual (i.e., shareholder) subscribes to a share of a farm's harvest for a set duration of time. Shareholders often pay for the subscription before the harvest season without detailed knowledge about what products they will receive. In its ideal form, CSA is a mutually beneficial relationship between the farmer and the shareholder where the latter shares the financial risks inherent to farming and the former shares in the bounty of a harvest (Woods & Tropp, 2015). In other words, CSA is designed to exceed the simple transaction of money for goods.<sup>1</sup>

Traditional shareholders have been motivated by consumer values that consider the economic, social, cultural, and environmental effects of their financial transactions (Bougherara et al., 2009; Pole & Kumar, 2015; Zoll et al., 2021). They are not

narrowly concerned with maximizing the utility from their purchases (Hvitsand, 2016). Shareholders are also traditionally middle- and upper-class consumers with the flexibility to navigate CSA's unconventional structure and the financial ability to prepay for an unpredictable set of goods (Durrenberger, 2002; Ostrom, 2007; Vasquez et al., 2016). Consequently, CSA has historically been limited in its potential for market expansion.

In recent years, CSA has evolved to broaden its potential shareholder base. The COVID-19 pandemic generated interest in the model since it was a safe pathway to acquire fresh vegetables at a time when supply chains were unsettled (Bonfert, 2022; Mert-Cakal & Miele, 2021). Additionally, organizations and employers have recently developed vouchers and other incentives to offset the high upfront cost of the subscription (Rossi & Woods, 2021; White et al., 2018). Healthcare organizations have tied CSA to wellness initiatives to encourage produce consumption (Berkowitz et al., 2019). These trends have expanded participation in CSA to nontraditional shareholder types (Rossi & Woods, 2021). As a result, farmers have modified their product arrays, distribution logistics, and CSA structure to meet the changing demands of new shareholders (CSA Innovation Network [CSA-IN], 2021; Durant et al., 2023; Rossi & Woods, 2021).

The emergence of new shareholder types has prompted the following research question: "What values influence the decisions of different consumer segments on whether to join a CSA program?" Our goal is to understand differences in perception of CSA by consumer segments defined by particular value sets. We expect that individuals who decided to subscribe to a CSA likely prioritize a different set of consumer values than nonshareholders. With these differences defined, CSA farmers might market different aspects of the CSA experience to expand their potential shareholder base.

To evaluate these differences in shareholder values, we present results from a best-worst scaling (BWS) experiment, which was conducted via survey in 2023 with 172 individuals who claimed a

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<sup>1</sup> However, as Feagan and Henderson (2009) note, a significant portion of shareholders see CSA as transactional.

CSA cost-offset voucher from the University of Kentucky (UK) in 2022. (Some of those who claimed vouchers ultimately decided to not subscribe to a CSA.) Participants were presented with 11 questions that contained different combinations of 11 total consumer values. In each case, they were asked to select the most and least important values related to their decision on whether to purchase a CSA subscription in 2022. These responses were analyzed with a mixed logit model to identify values that were relatively more important to understanding the CSA subscription behavior of different consumer segments. Before we present the results and their implications, we review the literature related to consumer values in CSA, discuss the specific parameters of our participants' voucher program, and then present the methods of our research study.

## Literature Review

### *CSA Shareholder Base Has Historically Been Limited to Consumers with a Specific Value Set*

CSA is a niche model for acquiring produce but one that has expanded and evolved in recent years (Rossi & Woods, 2024; Woods & Tropp, 2015). While there are CSAs for different types of products, such as meat or dairy shares, we are restricting our focus to vegetable-based CSAs. In these arrangements, a shareholder visits a specific drop point each week to pick up a box of vegetables and perhaps other items, such as meat or egg add-ons. They also generally pay some or all of the share cost prior to the harvest season. Farmers then provide their shareholders with a constantly changing box of seasonal produce. Farmers usually have multiple convenient pickup locations throughout their market regions, including on-farm options.

Because of this unique structure, the consumer base for CSA is somewhat limited. A shareholder must be willing to learn and experiment with food preparation since the contents of the box change weekly (Russell & Zepeda, 2008; Zoll et al., 2021). And despite the emergence of semicustomizable shares (where the shareholder can choose certain items to include or exclude), CSAs generally limit choice due to the production decisions of farmers. Shareholders must be willing to have fewer choices

than if they were going to the grocery store (Harmon, 2014). Additionally, increasing choice in CSA items via customization options may make a subscription less attractive to certain shareholder segments (Galt et al., 2019). In short, flexibility and creativity are often requirements of being shareholders in a CSA.

The upfront payments common to CSA can exclude those with limited means and individuals who want more certainty about what they are receiving (Galt et al., 2017; Harmon, 2014). Shareholders may have to make an extra stop to purchase food to supplement their CSA. Additionally, existing pick-up locations may not be convenient for individuals with unpredictable work schedules, time constraints, and lack of geographic proximity (Andreatta et al., 2008; Galt et al., 2017; White et al., 2018). Consequently, these factors limit who can access or who might be interested in the model. Galt et al. (2019) note that shareholding might be limited to “CSA people”—those with a predisposition to be attracted to CSA and who have social and/or environmental opportunities to take advantage of the model.

Participants in CSA—and local food systems (LFSs)—are generally motivated by consumer values that extend beyond maximizing their own satisfaction and include ethical concerns related to food systems (Hvitsand, 2016). Researchers have noted that participants in CSA and LFSs want their purchases to have positive impacts on the environment, support local economies, and valorize place and locality (Bougherara et al., 2009; Brehm & Eisenhauer, 2008; Flora & Bregendahl, 2012; Hayden & Buck, 2012). Some see supporting LFSs as a political act to counterbalance the forces of corporate consolidation, industrialization, and globalization (Hvitsand, 2016; Zoll et al., 2021). Others simply see CSA as a source of high-quality produce (Andreatta et al., 2008; Pole & Kumar, 2015). In short, traditional CSA shareholders are defined by values that extend beyond cost and convenience.

The social, environmental, and economic values held by participants in LFSs may not broadly appeal to the general U.S. consumer, who is more focused on aspects of food that directly affect them (e.g., price, safety, nutrition, and taste)

when making purchasing decisions (Lusk & Briggeman, 2009). Consequently, the unique aspects of CSA that make it attractive to traditional shareholders limit its potential for market expansion.

### *CSA is Evolving to Accommodate a Broader Shareholder Base*

In the mid-2010s, farmers in traditional CSA strongholds in the U.S.—such as the upper Midwest and the Northeast—began to see decreases in shareholder numbers (Rossi & Woods, 2024). In California, Galt et al. (2016) observed declines in CSA farm viability as a result of competition from other market channels. They suggest that shareholder gains might occur only if CSA was made more accessible and/or cultivating consumers who value the unique benefits of CSA. This would mean lowering costs and/or generating consumer awareness of CSA.

In some places in the U.S.—such as the Southeast—incentive programs emerged to offset subscription costs and make the model more accessible (Rossi & Woods, 2024). Combined with marketing efforts from farm support organizations and Extension personnel, consumer awareness of CSA increased. One strategy for expanding CSA participation was to tie fresh produce consumption to food access and health initiatives. Produce prescriptions through health clinics, SNAP-related cost-offset programs, and employer-sponsored voucher programs incentivized healthy eating and expanded access points for fresh, local foods (Berkowitz et al., 2019; Orsega-Smith et al., 2020; Rossi & Woods, 2021; Seguin-Fowler et al., 2021; Slagel et al., 2022). Cost-offset and cross-subsidy programs, aggregated or multi-farm CSAs, sliding-scale CSAs, and health insurance rebates emerged as options to make CSA more visible and accessible (Sitaker et al., 2021; Woods et al., 2017).

Additionally, COVID-19 generated interest in CSA nationally as consumers sought direct purchasing options that were safer than grocery store environments and/or addressed conventional supply chains shortages (Thilmany, Canales et al., 2021). With more awareness of what local farms had to offer, many consumers bought from multiple local market channels for the first time during

the pandemic (Thilmany, Brislen et al., 2021). New consumer trends brought many new shareholders into the fold, and new CSA farms emerged to meet this spike in consumer interest (Bonfert, 2022; Mert-Cakal & Miele, 2021). The pandemic experience accelerated the evolution of CSA as farms started altering their CSA structure to make it more accessible and convenient through online ordering, home delivery, and share customization (CSA-IN, 2021; Durant et al., 2023). It also portended a general shift in food-related consumer behaviors (Thilmany, Brislen et al., 2021), though it is unclear if these consumer behaviors are long-lasting or indicative of changes in underlying values (Ellison & Ocepek, 2021).

### *CSA Experience Can Transform Behaviors and Values of Participants*

With less-traditional shareholders involved in CSA for the first time, their experiences may transform habits and values related to food purchasing decisions. Once an individual is enrolled in a CSA, the repetitive, iterative structure of the model creates a learning experience (Rossi, Allen et al., 2017). They sometimes increase their knowledge of food production and the relationship between farming and the environment (Hayden & Buck, 2012). Shareholders gain skills in food preparation, become more flexible with meal planning, and change shopping habits to include more produce, organic items, and food from local purveyors (Curtis et al., 2015; Rossi, Woods et al., 2017; Russell & Zepeda, 2008). In short, CSA creates space to transform shareholders' relationships with and attitudes toward food including increased consideration of social and environmental effects on food systems (Zoll et al., 2021).

At the same time, different shareholder types have different needs. New shareholders from incentive programs might not have the same consumer values as traditional shareholders (Vasquez et al., 2016). Changes in behavior and values might not occur without tailored technical assistance (TA) and communication strategies to help shareholders navigate the CSA experience (Rossi & Woods, 2021). Also, expanded TA and logistic strategies may allow farmers to better understand how to connect communities with different foci (e.g., food

access versus workplace wellness programs). It is increasingly critical to evaluate the values of different shareholder groups to develop strategies for shareholder expansion and support programming.

### *Consumer Value Studies in Relation to CSA*

Research on consumer food values has emerged as an important avenue for understanding the potential for expanding local food enterprises. In this project, we draw from the analytic and conceptual approach of Lusk and Briggeman (2009), who used best-worst scaling to understand the values U.S. consumers hold when purchasing food. They note that values vary by individual, but mainstream U.S. consumers generally value safety, nutrition, taste, and price. Similarly, Connors et al. (2001) show that taste, health, cost, time, and social relationships drive food choices.

Since CSA is a more niche market channel, others have theorized and demonstrated that participants in LFSs and CSA hold values that exceed concerns about how food choices directly impact the consumer. For instance, Cooley and Lass (1998) illustrated produce quality, support for local farming, the environment, and food safety concerns were prime motivators for subscription decisions. O'Hara and Stagl (2001) found that shareholders were motivated by the opportunity to receive fresh and organic produce, concern for the environment, and desire to support local farmers. Shareholders were also interested in the health aspects of CSA and knowing the origin of their food (O'Hara & Stagl, 2001). More relational values, such as sharing risk with farmers and community-building through CSA, were important to fewer shareholders. Hvitsand (2016) and Pole and Gray (2013) have similar observations regarding the community building motivations, but Brehm and Eisenhauer (2008) also show that individuals with a strong sense of community are more likely to join a CSA. Vasquez et al. (2016) noted that shareholders were mainly interested in receiving fresh food. Bougherara et al. (2009) showed that shareholders had higher expectations for quality and were interested in supporting local farmers. These studies indicate that CSA shareholders have a broad set of consumer values that are often more than transactional.

However, CSA shareholders have heterogeneous value sets that depend on context (Brehm & Eisenhauer, 2008). Pole and Kumar (2015) illustrate this observation by segmenting shareholders by value sets. They show that while some groups of shareholders embody values typically associated with CSA, others are really only interested in getting quality vegetables. Similarly, Feagan and Henderson (2009) suggest that shareholders exist along the spectrum of 'instrumental' to 'collaborative' with the former most interested in maximizing satisfaction from their purchase, and the latter viewing CSA as a relationship with the producer. Galt et al. (2019) distinguish between longer-term shareholders and those who have some experience but do not renew their subscriptions. This latter group seemingly values innovations that make CSA more convenient—such as share customization—but ultimately are less likely to stay enrolled (Galt et al., 2019). Finally, Flora and Bregendahl (2012) show that shareholders who renew their subscriptions are more likely to value activities that have collective benefit.

With an expanding shareholder base, subscribers to CSA likely hold varying value sets. As we demonstrate later, shareholders are drawn to CSA for different reasons and thus require different modes of engagement. Understanding consumer values can help farmers, coalitions, and farmer support organizations develop relationships with shareholders in different contexts.

### **Methods**

We surveyed employees at UK, which has offered a CSA voucher since 2015. This voucher program was designed to lower financial barriers to subscribing, thereby increasing the potential market for local farmers. A related goal was to increase awareness of CSA and provide employees with supplementary consumer education. Vouchers can be applied to at least 10 participating farms' CSA programs. In our region, produce CSAs generally run weekly from May to October (20-25 weeks). At the time of analysis, shares cost between \$500 and \$1000 for the summer season, depending on the share size and farm. With the voucher, employees receive a \$200 discount on the subscription of their CSA.

For the first year, voucher participation was limited to 95 first-time shareholders as part of a grant funded proof of concept. With only first-time shareholders, we could measure the impact of fresh vegetable consumption on food-related lifestyle behavior vis-à-vis CSA participation. Once impact data were collected and presented to the employer, they decided to fund approximately 200 vouchers through a lottery system for their 12,000 eligible employees (Rossi & Woods, 2021; Rossi, Woods et al., 2017). Eventually, the employer removed the lottery and began funding 1000 vouchers per year in 2019.

Vouchers can be claimed by any employee with an employer-sponsored health care plan in a first-come, first-serve manner. Once a voucher is claimed, the employee must then select a participating farm to which they subscribe directly. The farm discounts the share if they apply a CSA voucher code. If a voucher claimant decides not to subscribe, then the employer makes the voucher available to others. Since the employer keeps records of those who claimed vouchers and subscribed to a CSA, we are able to segment voucher participants by their subscription decision. In 2022, 375 individuals claimed a voucher but did not subscribe to a CSA, while 615 individuals subscribed with a voucher.

### *Survey Design*

With the influx of new, nontraditional shareholders, we began to wonder whether there were measurable differences in consumer values held by different groups. In other words, what motivations do different people have for signing up for a CSA? To answer this research question, we developed a CSA values survey that we gave to two distinct groups of employees who participated in the 2022 voucher process:

1. individuals who claimed the voucher but did not subscribe to a CSA, and
2. individuals who claimed the voucher and subscribed.

With these two groups, we can first identify differences in consumer value sets between subscriber and nonsubscriber segments and then eval-

uate how values affect subscription decisions. Knowing these details can help CSAs and support organizations focus on messaging and programming to expand shareholder participation.

The survey was structured as a BWS experiment and used a Balanced Incomplete Block Design (BIBD) (see Louviere et al., 2015; Pierce, 2023). In BWS, a survey-taker is presented with sets of attributes, or in this case, consumer values (Louviere et al., 2015). They must then choose the “best” and “worst” attributes to answer the question presented (Louviere et al., 2015). In our case, we ask respondents to choose the consumer values that are “most important” and “least important” to their decision to join a CSA. The BWS methodology forces respondents to make trade-offs between values rather than assigning a subjective score to each value (Lusk & Briggeman, 2009). Unlike rating scales, choices are made in reference to all other attributes in a set.

We used a BIBD to develop best and worst choice sets where each value is presented the same number of times and is compared to each other value equally (Louviere et al., 2015). For our survey, individuals were given 11 questions, each of which contained a set of five values. They were forced to choose the most and least important consumer values relevant to their decision on whether to subscribe to a CSA. With five values per choice set, there are 20 possible best and worst permutations per question. Across 11 choice sets, each of the 11 values was evaluated in five separate questions and against each other value twice. Equal representation of values is critical to the BIBD approach and provides a sufficient number of permutations for meaningful statistical analysis. Figure 1 provides an example of how each question was structured.

The 11 values included in this survey were identified through two focus groups conducted with experienced and first-time CSA shareholders drawn from our employer’s voucher program. The focus group itself was structured as an affinity diagramming exercise which asks participants to identify and sort concepts into distinct categories (Harboe & Huang, 2015; Lucero, 2015; Shafer et al., 2005). Once both groups identified relevant categories (in this case consumer values that motivate

CSA subscriptions behavior), we cross-referenced their results, refined them, and developed definitions for survey takers to reference for each choice set. The survey was then evaluated by a national group of CSA TA practitioners to refine values and definitions. Pierce (2023) describes the development of the survey in his thesis.

While other consumer values predominate in different market channels, the following values emerged during focus groups and subsequent CSA-related literature review. Table 1 provides the consumer value definitions, which were presented in the survey.

- **Affordability** or price is the most important consideration for many consumers in food choices (Lusk & Briggeman, 2009; Connors et al., 2001) and plays a role in CSA subscriptions (Pole & Kumar, 2015).
- Food **quality** and **variety** are often important to consumers (Brehm & Eisenhauer, 2008; Lusk

& Briggeman, 2009; Connors et al., 2001; Pole & Kumar, 2015).

- **Convenience** matters to some shareholder segments (Harmon, 2014; Pole & Kumar, 2015), though inconveniences of CSA do not keep shareholders from renewing their subscriptions (Vasquez et al., 2016).
- With CSA entering into health programs, **health** effects increasingly motivate subscriptions (Vasquez et al., 2016), though this value has a long-standing history in CSA (O'Hara & Stagl, 2001).
- CSA as a form of building **community**

**Figure 1. Sample Best-Worst Scaling Question**

Suppose you are deciding whether to purchase a CSA subscription. Which of the following considerations is **most important** to your choice? Which is **least important**?

Under each column of least & most important value, choose one option.

Least Important Value		Most Important Value
<input type="radio"/>	Local Impact	<input type="radio"/>
<input type="radio"/>	Affordability	<input type="radio"/>
<input type="radio"/>	Culturally Appropriate	<input type="radio"/>
<input type="radio"/>	Farm Connection	<input type="radio"/>
<input type="radio"/>	Convenience	<input type="radio"/>

**Table 1. Definition of 11 Values Used in the Choice Sets**

Value	Definition
Variety	You value different food types and flavors.
Quality	You are motivated to find fresh, tasty, and flavorful foods.
Community Relationships	Food is important to developing relationships.
Nutritional Health	You consider the overall health benefit of food.
Culturally Appropriate	You prefer foods that reflect cultural values and experiences.
Affordability	Price is a strong motivator to your food choices.
Convenience	You do not like spending a lot of time acquiring food.
Local Impact	You prefer food that is grown, raised, or produced locally.
Farm Connection	You like to know where food is coming from and how it is produced.
Sustainability	You consider the impact of your food choices on the environment.
Future Farmer Education	You value opportunities to support the next generation of farmers.

Source: Adapted from Pierce, 2023.

**relationships** is important to some shareholders (Pole & Gray, 2013; Pole & Kumar, 2015; Russell & Zepeda, 2008), but less important for others (Brehm & Eisenhauer, 2008; Hvitsand, 2016; O’Hara & Stagl, 2001).

- **Sustainability** and other environmental motivations are valued by traditional CSA shareholders (Cooley and Lass, 1998; O’Hara & Stagl, 2001). The shareholder experience can also cultivate environmental subjectivities (Hayden & Buck, 2012).
- Supporting the development of sustainable and local agriculture—which encompasses the values of **future farmer education, farm connection, and local impact**—is important to many shareholders, though most focus on the latter (Bougherara et al., 2009; Brehm & Eisenhauer, 2008; O’Hara & Stagl, 2001; Pole & Kumar, 2015).
- Finally, CSA can be limited by the perception that it is not **culturally appropriate** (Cotter et al., 2017).

### Survey Distribution

The survey was sent out to 660 individuals who participated in the 2022 voucher process in spring 2023 via Qualtrics, an online survey platform. UK has a complete list of individuals who claimed a voucher and gave permission to be contacted for research projects. Of these individuals contacted, 285 had subscribed to a CSA in 2022, and 375 had claimed a voucher but not subscribed. We received a total of 172 complete surveys with 104 subscribers (i.e. shareholders) and 68 nonsubscribers (i.e. nonshareholders) who answered each of the 11 BWS question sets and provided classifying information. We also asked individuals if and to what extent they had previous experience with CSA. Table 2 provides the

descriptive statistics for each segment. Subscribers to the CSA program in 2022 were more likely to have a graduate or professional degree, have higher incomes, and have smaller household sizes. They also have more previous experience in CSA. Age, gender, and race are relatively similar though the nonsubscribing group had a larger proportion of individuals identifying as Black or Hispanic/Latin.

### Analysis

As described earlier, our survey was structured using a BWS approach which asks respondents to

**Table 2. Descriptive Statistics of Survey Participants**

Variable	Definition	2022 CSA Subscribers (n = 104)	2022 Non-Subscribers (n = 68)
Gender	Female	79.81%	85.07%
	Male	20.19%	13.43%
	Non-binary	0%	1.60%
Age	18–34	17.31%	22.39%
	35–44	37.50%	35.82%
	45–54	25.96%	25.37%
	55–64	16.35%	13.43%
	65+	2.88%	1.49%
Education	No College Degree	5.77%	17.91%
	College Degree	25.96%	24.33%
	Grad or Professional Degree	66.35%	46.27%
Race / Ethnicity	White Caucasian	84.91%	79.71%
	Black or African American	3.77%	5.80%
	Hispanic/Latin	1.89%	8.70%
	Other/Multiple Ethnicity	2.83%	2.90%
	Asian or Asian American	2.83%	1.45%
	Native American	0.94%	1.45%
Income	Less than \$50,000	4.81%	19.40%
	\$50,000–\$99,999	29.81%	34.33%
	\$100,000–\$149,999	27.88%	26.86%
	\$150,000–\$199,999	18.27%	11.94%
	\$200,000 or more	12.50%	5.97%
Household Size	1	18.27%	8.96%
	2	36.54%	38.81%
	3	21.15%	23.88%
	4	18.27%	14.93%
	5 or more	5.77%	13.43%
Years of CSA Experience Prior to 2023 Season	0	8.62%	55.13%
	1	37.07%	26.92%
	2	20.69%	5.13%
	3	11.21%	6.41%
	4	4.31%	3.85%
	5+	18.09%	2.56%

make choices between CSA values, revealing which ones are the most and least prioritized in their choice of whether to subscribe to CSA. In BWS, it is assumed that respondents evaluate all options in each choice set and then choose the pair that maximizes the difference between best and worst options (Louviere et al., 2015), or most and least important values, in our case.

We analyzed the BWS responses using a statistical technique called a mixed logit model. This model is particularly well-suited for analyzing choice data like ours, where we expect that different people will have different preference patterns toward CSA values (Train, 2009). Some people might care most about affordability, while others prioritize sustainability, and so on. The mixed logit model accounts for this preference heterogeneity by estimating how important each value is relative to others for different groups of people (Lusk & Briggeman, 2009).

Tables 3 through 6 below present mixed logit

model results, which are in the form of estimated coefficients. A larger coefficient for a particular value means that value is more important in a respondent's decision-making process. A value with a coefficient twice as large as another value's coefficient has roughly twice the impact on the decision. The absolute size of the coefficient is not directly interpretable; it is the differences in coefficients and between consumer groups that tell us which values matter most to whom.

In the following sections, we present the results of this analysis by comparing the values held by different groups, like shareholders versus non-shareholders, people with different levels of CSA experience, and people with different intentions for future CSA participation. In the results section, we focus on explaining these differences using the coefficients as supporting evidence for our conclusions. We also highlight demographic differences and how that relates to our different participant groups.

**Table 3. Relative Importance of Values of CSA Shareholders and Nonshareholders**

Shareholders		Nonshareholders	
Value	Mean SE	Value	Mean SE
Quality	4.44*** 0.17	Affordability	4.12*** 0.25
Nutritional Health	3.97*** 0.17	Quality	3.46*** 0.19
Variety	3.77*** 0.18	Nutritional Health	3.05*** 0.20
Local Impact	3.73*** 0.17	Convenience	2.75*** 0.30
Sustainability	3.56*** 0.16	Local Impact	2.58*** 0.19
Affordability	3.37*** 0.19	Variety	2.57*** 0.22
Convenience	3.19*** 0.23	Sustainability	2.18*** 0.19
Farm Connection	2.21*** 0.17	Farm Connection	1.68*** 0.19
Community Relationships	1.76*** 0.15	Community Relationships	1.47*** 0.16
Farmer Education	1.18*** 0.16	Farmer Education	0.96*** 0.18
Culturally Appropriate	Baseline	Culturally Appropriate	Baseline
<b>Model Stats</b>		<b>Model Stats</b>	
Log Likelihood	-2337.94	Log Likelihood	-1567.14
N	104	N	68

Note: \* $p < .05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

## Results

The first set of results shows which values are most relevant to subscription decisions for shareholders and nonshareholders (Table 3).

The main takeaway is that nonshareholders are comparatively concerned with the cost and convenience of CSA. For shareholders, affordability and convenience are minor concerns. Instead, they value the potential health and environmental impacts (i.e., sustainability) of their subscription as well as produce quality.

Both segments prioritize values that extend beyond a simple transaction (quality, health benefits, and local impact). However, one area that is less important is the potential for CSA to generate relationships in their communities. This includes the community variable (family, friends, and peers) and the farm connect variable, which is about

having a direct relationship with one's farmer. Farmer education and culturally appropriate products are the least important values for both groups.

### *Does Experience Matter to What Participants Value?*

In this section, we compare subscribers with three different levels of experience (Table 4). In other words, we compare people who know what they are getting based on experience versus people who are only informed by advertising, peer testimonials, or other information sources. Low experience subscribers are those with one year of previous experience at most. Medium and high experience subscribers have two to four years and five or more years of previous experience, respectively.

Low experience subscribers strongly value the

**Table 4. Relative Importance of Values of Shareholders with Different Levels of CSA Experience**

Shareholder with Low Experience (0–1 Year)		Shareholder with Medium Experience (2–4 Years)		Shareholder with High Experience (5 or More Years)	
Value	Mean SE	Value	Mean SE	Value	Mean SE
Quality	4.72*** 0.26	Sustainability	4.47*** 0.44	Quality	4.96*** 0.40
Nutritional Health	4.34*** 0.27	Quality	4.28*** 0.43	Sustainability	4.76*** 0.46
Variety	4.19*** 0.27	Local Impact	3.94*** 0.42	Variety	4.16*** 0.44
Local Impact	3.65*** 0.32	Variety	3.91*** 0.42	Affordability	4.08*** 0.51
Affordability	3.52*** 0.31	Nutritional Health	2.98*** 0.41	Local Impact	4.03*** 0.38
Sustainability	3.24*** 0.29	Farm Connection	2.54*** 0.39	Nutritional Health	3.88*** 0.40
Convenience	3.24*** 0.28	Affordability	2.43*** 0.44	Farm Connection	2.79*** 0.39
Community Relationships	2.23*** 0.23	Convenience	2.40*** 0.46	Convenience	2.41*** 0.55
Farm Connection	2.12*** 0.23	Community Relationships	2.02*** 0.38	Community Relationships	1.72*** 0.33
Farmer Education	1.45*** 0.25	Farmer Education	1.10*** 0.33	Farmer Education	0.66*** 0.30
Culturally Appropriate	Baseline	Culturally Appropriate	Baseline	Culturally Appropriate	Baseline
<b>Model Stats</b>		<b>Model Stats</b>		<b>Model Stats</b>	
Log Likelihood	-977.75	Log Likelihood	-813.21	Log Likelihood	-1908.71
N	45	N	37	N	22

Note: \*p<.05, \*\*p<0.01, \*\*\*p<0.001

quality and variety of the produce in their subscription as well as the potential health and economic impacts of CSA. They also care about affordability. As these shareholders are entering CSA through a voucher program promoted by a health group, these results may not be surprising (see Vasquez et al., 2016 for a similar observation). This group of subscribers may see the base price of CSA as expensive, but the voucher may make the cost seem like a reasonable deal.

Individuals with more CSA experience prioritize different values to some degree. Both experienced cohorts had sustainability as a top value. Affordability was not as important to subscribers with 2–4 years of experience, though this consumer value was relatively high for those with the most experience. This latter cohort continually resubscribes to CSA, so they may be interpreting CSA as an affordable option for receiving quality produce, especially when incentivized. The health impacts of CSA are relatively less important to the more experienced shareholders, though they still appear in the

top half of both cohorts' rankings. Quality and variety are critical to more experienced shareholders, though both values were important to those without previous experience.

These results suggest that the specific attributes of produce in CSA boxes become more visible, tangible, and important after experiencing multiple deliveries and seasons of participation. Similar to those with less experience, health, local impacts, and sustainability are important. Convenience is a relatively unimportant value to all segments. Finally, social connections—farmer connection and community relationships—are at the bottom of the relative rankings for all shareholder segments except for those with medium experience. This latter cohort values their connection to farmers more than the perceived affordability or convenience of CSA.

Experience also matters to nonshareholders (Table 5). For both groups, affordability is the most important consideration—and likely the reason folks are not subscribing according to open-

**Table 5. Relative Importance of Values of Nonshareholders with CSA Experience Differences**

Nonshareholder with CSA Experience		Nonshareholder with No Experience	
Value	Mean SE	Value	Mean SE
Affordability	4.88*** 0.41	Affordability	4.40*** 0.36
Quality	3.27*** 0.29	Quality	3.75*** 0.25
Nutritional Health	2.87*** 0.32	Convenience	3.07*** 0.36
Local Impact	2.57*** 0.29	Nutritional Health	2.95*** 0.26
Convenience	2.39*** 0.32	Variety	2.88*** 0.30
Sustainability	2.22*** 0.30	Sustainability	2.50*** 0.23
Farm Connection	1.80*** 0.30	Local Impact	2.44*** 0.24
Variety	1.58*** 0.30	Farm Connection	1.88*** 0.23
Community Relationships	1.46*** 0.26	Community Relationships	1.56*** 0.21
Farmer Education	0.76*** 0.23	Farmer Education	1.47*** 0.22
Culturally Appropriate	Baseline	Culturally Appropriate	Baseline
<b>Model Stats</b>		<b>Model Stats</b>	
Log Likelihood	-589.71	Log Likelihood	-872.12
N	28	N	40

Note: \* $p < .05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

ended feedback in the survey. In contrast to shareholders, both nonshareholder cohorts are interpreting CSA as unaffordable based on what they expect to receive. Quality matters to both groups, but the perceived cost likely outweighs their recognition that CSA products are high quality. Only nonsubscribers with experience value the local impact of a potential subscription.

Nonshareholders without experience are also concerned with CSA's convenience or lack thereof. This is less of a concern to those with previous CSA experience. It is possible that once an individual goes through a year of CSA, they are able to manage the pick-up process effectively and conveniently. Finally, both groups care about CSA's potential health impact. This attribute—along with quality—might be potential areas to emphasize when marketing CSA to nonshareholders, regardless of their experience level. However, it is clear that perceptions about affordability must change first.

### *What Values Motivate Future Subscriptions?*

In our survey, we asked respondents if they were planning to subscribe to a CSA in the following year. They were able to choose yes, no, or maybe. In Table 6, we present the mixed logit results for each of those consumer segments.

Individuals who planned on subscribing to a CSA considered produce quality as well as the health, economic, and environmental effects of their subscription. Those with no plans on subscribing were also interested in the quality of CSA products, but convenience and affordability were also important. In open-ended survey comments, this group mentioned CSA to be either inconvenient or too expensive. The next two values for future nonshareholders were the health and local economic impacts, which indicates they do see potential benefits of CSA but cannot justify the subscription at the current price point or pick-up structure.

Finally, a large portion of our survey pool was

**Table 6. Relative Importance of Values Based on Intent to Subscribe**

Intent to Subscribe 2023		No Intent to Subscribe		Undecided 2023	
Value	Mean SE	Value	Mean SE	Value	Mean SE
Quality	3.84*** 0.16	Quality	4.46*** 0.34	Affordability	5.93*** 0.37
Nutritional Health	3.32*** 0.16	Convenience	4.38*** 0.37	Quality	4.73*** 0.25
Sustainability	2.91*** 0.16	Affordability	3.93*** 0.40	Convenience	3.91*** 0.31
Local Impact	2.91*** 0.16	Nutritional Health	3.75*** 0.37	Nutritional Health	3.91*** 0.25
Convenience	2.89*** 0.19	Local Impact	3.59*** 0.32	Variety	3.83*** 0.29
Affordability	2.59*** 0.16	Variety	3.44*** 0.33	Local Impact	3.37*** 0.24
Variety	2.59*** 0.15	Sustainability	2.89*** 0.31	Sustainability	3.19*** 0.23
Farm Connection	1.94*** 0.14	Farm Connection	1.98*** 0.36	Farm Connection	1.85*** 0.23
Community Relationships	1.157*** 0.14	Farmer Education	1.83*** 0.28	Community Relationships	1.60*** 0.19
Culturally Appropriate	Baseline	Community Relationships	1.75*** 0.27	Farmer Education	1.26*** 0.20
Farmer Education	0.99*** 0.13	Culturally Appropriate	Baseline	Culturally Appropriate	Baseline
<b>Model Stats</b>		<b>Model Stats</b>		<b>Model Stats</b>	
Log Likelihood	-2254.78	Log Likelihood	-579.56	Log Likelihood	-1025.86
N	94	N	27	N	51

Note: \* $p < .05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

undecided on subscribing. This group, similar to future nonshareholders, was concerned about the price and convenience of the subscription, yet valued the quality of the items they would receive. In survey comments, undecided individuals with previous CSA experience mentioned that they found CSA to be convenient while inexperienced individuals perceived CSA as inconvenient. Given that our survey was anonymous, we cannot determine what proportion of this group ultimately chose to subscribe to a CSA. Nevertheless, undecided participants were generally concerned about the cost of CSA, even with the voucher offset.

### Discussion

What are the implications of these results? To ground our discussion, we present the top five values for each segment side by side in Table 7.

#### *Is CSA Participation Limited by Cost?*

First, CSA must become more affordable to attract new shareholders. In our analysis, all 2022 non-

shareholder segments ranked affordability as the primary concern. Additionally, affordability was a concern for future nonsubscribers and undecideds for 2023. Our group of nonshareholders was drawn from a pool of individuals who initially claimed a CSA voucher. As such, they had interest in CSA and recognized its high product quality. They also generally perceived CSA to potentially affect their biophysical and local economic health. Consequently, these individuals represent a portion of the population inclined to support a niche food acquisition model such as CSA, but who cannot justify the perceived high cost or lack of convenience. Without buy-in from these consumer segments, CSA farmers have limited potential for expanding their shareholder base.

Nevertheless, employers, community organizations, and other institutions might develop and fund different types of incentive programs that lower the cost of participation more effectively. UK offsets about one quarter of the share cost via a taxable benefit accessible to all employees. The voucher amount has not changed since 2015,

though production costs have increased the price of CSA. Changing criteria might bring new shareholders to the table. If employers and organizations such as UK increase the level of the incentive generally or tie the amount to income, then this might make CSA more accessible to nonsubscribers. Another option would be for the employer to bundle the incentive into a pre-tax payroll deduction, which pays the farm upfront but deducts the subscription cost from the employee's salary across a year.

A different approach might be to tie CSA to health benefits.

All segments in our study, except for the extremely experienced shareholders, ranked the health aspect of CSA in their top five values. As this value is most important to newer subscribers, it is likely drawing in consumers that fall outside the traditional shareholder base. Organizations have

**Table 7. Top Five Values for Each Consumer Segment**

2022 Nonshareholders			
All	Experience	No Experience	
Affordability	Affordability	Affordability	
Quality	Quality	Quality	
Health	Health	Convenience	
Convenience	Local Impact	Health	
Local Impact	Convenience	Variety	
2022 Shareholders			
All	Low Experience	Medium Experience	High Experience
Quality	Quality	Sustainability	Quality
Health	Health	Quality	Sustainability
Variety	Variety	Local Impact	Variety
Local Impact	Local Impact	Variety	Affordability
Sustainability	Affordability	Health	Local Impact
2023 Intent to Subscribe			
Yes	No	Maybe	
Quality	Quality	Affordability	
Health	Convenience	Quality	
Sustainability	Affordability	Convenience	
Local Impact	Health	Health	
Convenience	Local Impact	Variety	

effectively increased CSA enrollment by offering health insurance premium rebates for participants. Health care interventions that provide tangible financial incentives to CSA participation might broaden the model's shareholder base (Woods et al., 2017). Produce prescription plans have been touted for their ability to incentivize produce consumption and affect health outcomes. Similarly, CSAs tied to health care interventions have generated health improvements in participants and potential financial returns on investment for sponsors (Berkowitz et al., 2019; Rossi & Woods, 2021). Medical clinics, NGOs, employers, governments, and wellness organizations might benefit their constituents by providing cost offsets for fresh vegetable consumption to generate a broader culture of health.

'Food as medicine' is emerging as a focus for organizations seeking to merge food security and community health, though more evidence is needed to demonstrate the health impacts of various programs (Downer et al., 2020; Hager et al., 2023; Little et al., 2022; Mozaffarian et al., 2022). CSA programs focused on healthy food access can be designed to provide more insights into how this approach might be effectively deployed in different contexts. In this vein, employers and farmers might work with food access organizations to bundle their own incentive programs with SNAP and other food assistance measures. While local food products may be more expensive than commodities, they should not be excluded as a possible source of produce in food access arrangements. Programs such as Double Up Food Bucks that multiply the value of existing SNAP benefits at farmers markets have been associated with increased measures of food security (Durward et al., 2019; Garner et al., 2020). This approach, translated to CSA, can reduce the subscription cost to manageable levels. While these programs are limited geographically and rely on funding, similar programs could be developed via charitable organizations.

To some extent, CSA is not as expensive as it may appear. In our region, the most typical, full-size share (i.e., feeds 3-4 people) costs about \$20-30 per week if you include the voucher. Compared to the cost of a similar quality vegetable at the

supermarket, especially organic products, the prices are relatively competitive. Additionally, as mentioned above, some studies indicate that CSA subscriptions have clear health benefits that potentially lead to diet-related healthcare savings (Rossi & Woods, 2021). Organizations might benefit from translating these studies into clear messages about wellness and cost effectiveness, which may appeal to consumers and organizations that fund healthcare plans or interventions.

### *Is CSA Inconvenient?*

CSA is a unique method for acquiring food as it generally relies on picking up produce at a set location and time each week. The pickup process can be confusing or daunting if an individual has no experience with the CSA model. For households with variable schedules, this can be a barrier to subscribing. Pick-up locations might not cover certain locales at a convenient time for certain individuals. Nonshareholder segments, for the most part, had convenience as a top consideration in our analysis. Yet convenience was relatively less important to nonshareholders with previous CSA experience. For all shareholder segments, convenience was much less important than other factors.

Inconvenience, then, may be a perception to overcome rather than a reality. Participants (shareholders and nonshareholders) with previous CSA experience have much lower relative rankings of this interpretation. With at least a year of experience, participants have more knowledge about how to navigate the model. It may be also that shareholder segments are positioned to have convenient access to CSA and thus continue to subscribe.

The presence of convenience in the 'intending to subscribe in 2023' group might also be interpreted in a positive manner. In focus groups with new subscribers, which were used to develop this survey, most agreed that CSA was a very convenient way to access fresh vegetables even though they initially worried it might be difficult. This was surprising to the authors and suggests varying perceptions of convenience, especially between shareholders and nonshareholders. Open-ended responses within the survey also note convenience is an attribute of those intending to subscribe in 2023.

Issues of convenience can be addressed in multiple ways. By locating pick-up sites in areas that lack easy access to fresh food and are a reasonable distance from many existing subscribers, CSA might become a more convenient option. Additionally, when CSA programs are designed to meet food access or community health needs, existing community groups or social service providers can help facilitate home delivery or convenient pick-up sites (Hanson et al., 2024). Home delivery models for CSA, in particular, became more common during COVID, especially through food hubs due to their logistical expertise (Bomstein, 2021).

### *Do Shareholders Value Community in CSA?*

One of the more striking results across all segments is that respondents do not generally value CSA as a way to develop relationships with others in their community or with their farmers. The two variables directly related to these relationships—community relationships and farm connection—are in the bottom half of the values in our model<sup>2</sup>. Only subscribers with more experience had the latter value in the top seven values. This result may be explained by our respondent population which is comprised of participants in an employer-funded CSA voucher promoted by a health and wellness organization.

Instead of valuing the relationships established through CSA, shareholders are generally more concerned with quality, nutritional health, local impacts, and sustainability. While the latter two values point to relationships that extend beyond individual consumption, they are focused on more nebulous, less direct effects to environments and economies rather than relationships with humans. The local impact value highlights the economic benefits of the CSA's relationship with local producers. Sustainability is related to farmers' work facilitating environmental benefits. In other words, there is a recognition of CSA's beneficial environmental, social, and economic outcomes, but this is dis-

tanced from the producers and other consumers that make this possible. While these values are not purely instrumental or transactional—a trend in CSA arrangements that has been noted by others (Feagan & Henderson, 2009; Pole & Gray, 2013)—they point to a critical distance between CSA and its idealized form as a mediator of community relationships.

A few factors have likely accelerated the evolution of CSA in this manner. First, competition from other CSA-like products, such as food delivery services, meal kits, and retail aggregators, create a similar box of food products but without strict requirements for sourcing items locally. These arrangements often offer more choice and convenience to consumers than a single-farm CSA. Food hub boxes and multi-farm CSAs occupy a middle ground as they can take advantage of scaled production to flexibly maintain a supply of diverse items and potentially reach consumers concerned with the CSA's high perceived cost and lack of choice. They are also valuable to smaller farms that want to focus on scaling up a few products rather than managing 30+ varieties over the course of a season. However, they may also pull products out of regional supply chains to meet different demands of consumers, such as fruit that is out of season or ungrowable in the production area.

As CSA-like arrangements intensify their focus on meeting consumers' demands or preferences, single-farm CSAs have increased their embrace of customization and online ordering. In these arrangements, farms offer more choice to the product array in each customer's box. E-commerce and customization schemes became more prominent during the initial stages of the pandemic when farmers encountered unprecedented demand for subscriptions (CSA-IN, 2020). With the influx of first-time subscribers, CSA operators needed strategies to make the experience positive for nontraditional shareholders in hopes of retaining a portion of these individuals in future years.

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<sup>2</sup> The least important value in all segments is *culturally appropriate* which ties food choices to specific cultural connections. While this value is likely more important in diasporic, ethnic, or multi-cultural communities, our respondent population reflected the broader racial demographics of our state. If we conducted this sample at a specific CSA drop site that focused on international communities—for example, this value would likely be more prominent.

However, Galt et al. (2019) note many former shareholders in customizable CSAs are not satisfied with their ability to choose items despite having a choice. Additionally, CSAs with customization have not seen increased retention rates. The authors posit that there are ‘CSA People’ that have particular characteristics that make them amenable to subscribing long-term and that there are limited opportunities for expanding the CSA shareholder base. While our analysis can be read to support this theorization, others note that CSA’s iterative structure that promotes a reinterpretation of a subscriber’s relationship to their food (Hayden & Buck, 2012; Zoll et al., 2021). In other words, there is potential for individuals to engage with CSA as a learning space that reshapes food-related consumer values through embodied experiences. Whether these experiences instill a greater sense of community or connection to producers is unclear and likely depends on the individual.

Regardless of retention trends, CSA has evolved to be more responsive to the demands of different consumer segments. This may point to the loss of ‘community’ as one of the main tenets of CSA as farmers disproportionately bear the burden of the financial transaction (see Galt, 2013). By developing a CSA approach that serves food access needs, farmers (including multi-farm CSA) might develop mutual relationships that are mission-driven, serve multiple social needs, and go beyond simple financial transactions.

## Conclusion

CSA has the potential to grow and diversify its membership as long as farms and farm-support organizations continue to meet the needs of new shareholder types. The results presented in this manuscript have a few broad implications for shareholder recruitment and retention. First, making CSA more affordable is a paramount concern for potential shareholders. Many survey comments from nonshareholders mentioned that cost was a limiting factor, while some shareholders noted that CSA is only affordable to them because of existence of the cost-offset voucher. In recent years, inflation increased production costs and farmers were forced to raise subscription prices. Affordability might be increased by pairing CSA with pro-

grams and funds that have a wellness or food access mission. By leveraging institutional support, farms might find external sources to bring subscription costs down while still providing a significant up-front payment to improve farm viability. Additionally, farms and supporting institutions might offer payment plans and other structures that make payments more manageable. Multi-farm efforts—either through coalitions or food hubs—can also take advantage of scalar efficiencies of farmers who specialize in certain products.

Another barrier to initial subscription—according to the nonshareholders in this survey—was general confusion from how CSA programs work. The CSA process—from sign-up to delivery structure—was noted to be somewhat opaque to those with no previous experience. To make CSA more accessible, support institutions might focus on developing resources that improve consumer awareness of CSA. As discussed above, there is a divide among shareholders and nonshareholders regarding whether CSA is convenient. Shareholders tend to see CSA as an easy way to receive quality produce, while nonshareholders, especially those without previous experience, feel that the logistics of CSA pick-up are inconvenient. However, given the latter group’s lack of process knowledge, inconvenience is perceptual and can be overcome by better messaging and experience. Negative perceptions about affordability can also be assuaged with infographics or explanations about the weekly cost and composition of the produce box. For instance, one subscriber noted: “It helped us when we decided that the cost with voucher only equaled about \$22/week. When compared to what we were spending on fresh produce at the grocery, it was close.” As such, consumer education about what to expect from a CSA is paramount to inducing participation.

Institutions that sponsor cost-offset CSA programs have the added benefit of providing supplementary programs and services. For instance, UK has incorporated participant feedback to provide a variety of resources for potential and existing shareholders. We have developed a peer promotion program where shareholders involve nonshareholders in CSA experiences such as farm visits, potlucks, and box pick-ups. Promoters also

mentor new shareholders in navigating different moments of the CSA process and answer questions from potential shareholders who need information when deciding to subscribe. We have also developed some short video clips that detail different aspects of the CSA experience to make it easier to understand. Finally, we have partnered with regional and national TA providers to

develop promotional materials and ad campaigns focused on recruitment and retention. With an increasing focus on ‘food as medicine’, potential health benefits factor prominently in marketing messages. In short, the most effective strategies for broadening participation in CSA are centered on making the model more affordable and understandable.



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## Appendix

In this appendix, we describe the analytic model in more detail. As noted, our survey employed a best-worst scaling (BWS) approach that forces respondents to choose two options (i.e., consumer values) from each choice set. Their choices for best and worst options are assumed to maximize the difference in importance of chosen values related to their decision on whether to subscribe to a CSA (see Louviere et al., 2015). The mixed logit model approach is appropriate for this analysis since it involves choice data (Train, 2009) and presumes that values related to these choices are heterogenous for different groups of individuals (Lusk & Briggeman, 2009).

If we denote  $J$  as the number of options in each BWS question, then  $J(J-1)$  choices are possible for each question. With five CSA-related consumer values in each set, our survey has 20 possible best-worst pairs per question. Following this BWS approach, the data analysis was conducted using random utility framework (McFadden, 1974). In this framework, the indirect utility  $U$ , which participant  $n$  gets from the selected best-worst pairs in each question  $t$ , is the difference in utility between the  $j$  best and  $k$  worst values plus the error term.  $\beta$  is the vector of estimated importance parameters of the best and worst attributes, relative to a reference attribute normalized to zero for identification purposes.

$$U_{njt} = \beta_{jt} - \beta_{kt} + \varepsilon_{njt}, \quad (1)$$

Once respondents completed the 11 choice sets, we analyzed their choices using a mixed logit model which is appropriate for data displaying preference heterogeneity (Train, 2009). Specifically, for  $T$  choice sets (i.e., 11 questions per respondent), in the mixed logit model the probability that an individual  $n$  selects  $j$  as best and  $k$  as worst is expressed as:

$$P_{nj} = \int_{\beta} \prod_{t=1}^T \frac{e^{[\beta_{njt} - \beta_{nkt}]}}{\sum_{l=1}^J \sum_{m=1}^J e^{[\beta_{nlt} - \beta_{nmt}] - J}} f(\beta_n) d\beta_n, \quad (2)$$

where  $f(\beta)_n$  is the density of the importance parameters  $\beta_n$ . The model parameters are assumed to follow a normal distribution.

The results of the mixed logit model are presented as estimated coefficients. It is important to understand that these coefficients represent the relative utility or importance of each value rather than probabilities from 0 to 1. We set one value's coefficient to zero in each analysis, and all other coefficients are interpreted relative to that baseline. Consequently, higher coefficient values are interpreted as more important to a group's CSA description decision.