Who Does Not Attend Farmers Markets and the Community Supported Agriculture (CSA) Programs?

Jean Dominique Gumirakiza[1] & Autumn Milliner[1]

[1] Department of Agriculture & Food Science, Western Kentucky University, Bowling Green, USA

Correspondence: Jean Dominique Gumirakiza, Department of Agriculture & Food Science, Western Kentucky University, 1906 College Heights Blvd #41066 EST 237, Bowling Green, KY 42101, USA. E-mail: dominique.gumirakiza@wku.edu

Abstract

This study uses data from 172 consumers who participated in mail survey distributed in 2020 to within the Southcentral Kentucky region. The purpose was to analyze consumer habits of attending farmers markets focusing on characteristics of those who do not attend and analyze their likelihood to participate in the Community Supported Agriculture (CSA) program. We used both Multinomial and Ordered Logit models to analyze data. Results indicate that respective relative probabilities for "never attend", "attend occasionally", and "attend frequently" are 55%, 29%, and 16%, respectively. Male consumers, rural residents, primary shoppers, and those with a 2-year associate degree are less likely to attend farmers markets. This study finds that educated consumers and those who were satisfied with previous market experiences are more likely to attend a market frequently. Another finding is that consumers with interests in using an App to purchase fresh produce are more likely to attend farmers markets and participate in CSA programs. We further found that consumers are less likely to join a CSA program if they live in a rural area. This study contributes to the understanding of characteristics of consumers who do not use direct-to-consumer market outlets, particular farmers' markets, and CSA programs. It informs policy makers who seek to promote these two market outlets. This study is also useful to managers of farmers markets and CSA programs when making marketing decisions.

Keywords: farmers markets, CSA program, nonattendance, likelihood

1. Introduction

Locally grown fresh produce in direct-to-consumer market outlets offers important economic, health, and environmental benefits. Direct-to-consumer market outlets include farmers markets, Community Supported Agriculture (CSA) program, roadside stands, on-farm, agritourism, and U-Pick. Purchasing locally grown from these markets allows money to circulate within local economy and supports local farmers financially (Robinson & LaMore, 2010). Fresh produce provides healthy dietary benefits; including some protection from cancer, high blood pressure, diabetes, and help reduce weight gain (Farvid, Barnett, & Spence, 2021). Buying locally grown fresh produce supports environment because of short distance and therefore less carbon emission (Ferguson & Thompson, 2020). According to the USDA National Agricultural Library (2021), local food is the "direct or intermediated marketing of food to consumers that is produced and distributed in a limited geographic area." The most concrete definition of local food was set by the United States Congress in the 2008 Food, Conservation, and Energy Act. It states that a product is considered a "locally or regionally produced agricultural food product" if it is transported less than 400 miles from its origin, or within the state in which it was produced (Harris et al., 2008).

Although conventional markets continue to outnumber direct-to-consumer market outlets, the number of farmers markets rose from 5,274 markets in 2008 to 8,268 markets in 2014 (Martinez et al., 2010; USDA, 2014). The count indicates that there were 8,600 farmers markets in 2019 (Corwine, 2019). Low et al. (2015) estimated that 163, 675 farms (7.8 percent of U.S. farms) were marketing foods locally. Of those selling locally, 70 percent used only direct-to-consumer marketing channels like farmers markets and CSA programs. The remaining 30

percent used a combination of direct-to-consumer and intermediated channels, or only intermediated channels. The 2012 Agricultural Resource and Management Survey indicated that local food sales totaled approximately $6.1 billion in 2012 (Johnson, 2016). The state of Kentucky has also benefitted from the growth in local food markets. Kentucky farmers market sales topped $14 million in 2017, compared to just $7.6 million in 2008. In the same span, forty-one new markets have opened across the state (Pratt, 2018).

Whereas several studies (Giampietri et al., 2016; Gumirakiza, 2013; Wetherill & Gray, 2015; Wolf, Spittler, & Ahern, 2005) focused on reasons for consumers' attendance at farmers markets, this study sought to answer the following research question: Who does not attend farmers markets and who would use CSA programs in Southcentral Kentucky? This region has not been previously evaluated on this subject. In this region, there are approximately twenty operating farmers markets. The markets are mostly seasonal, but a few of them open year-round. Hours of operation, marketing techniques, and product offerings vary widely across the markets. There are also local farmers who offer CSA options to customers. The overall objective for this study is to assess consumer characteristics of those who do not attend farmers markets and those who are more likely to participate in CSA programs. Specifically, this study sought to (1) describe the consumer characteristics of consumers who do not attend farmers markets, (2) analyze habits of attending farmers markets, focusing on consumers who do *not* attend, and (3) estimate the likelihood for local consumers to subscribe to a Community Supported Agriculture program.

2. Literature Review

Farmers markets are one of the market spaces in which producers; especially those with locally grown fresh produce (fruits and vegetables) can sell their products directly to consumers in a relaxed environment. Consumer motivations for attendance, preferences for product availability and market amenities vary widely among farmers market attendees. Nonetheless, farmers markets continue to have significant social, economic, and environmental impacts on the local communities.

2.1 Consumer Motivations and Preferences

Gumirakiza, Curtis, and Bosworth (2014) used data collected from in-person surveys to assess consumer motivations for attending local farmers markets. The findings suggested that the top two primary reasons consumers in both Nevada and Utah attend are to purchase fresh produce and to partake in the social interaction that the market environment provides. Understanding the specific attributes of the market outlet and the market's product offering can help market coordinators and vendors maximize the effect of advertising and marketing efforts. Govindasamy et al. (1998) conducted a consumer survey with 336 attendees of New Jersey farmers markets. Most respondents reported that product quality and freshness were the most important factors driving their purchasing decisions. They also indicated that patrons of the markets expected farmers market produce to be of higher quality compared to the produce of other retail shops. Murphy (2011) found that price at eleven farmers markets in New Zealand was not a barrier to visiting or making purchases at the market.

Dodds et al. (2014) found that the main reason for attending a farmers market in Toronto, Canada is *not* just to fulfill grocery needs. Results from Murphy (2011) and Dodds et al. (2014) showed that the primary motivators for attending the market included product quality, social interactions, and the ability to support local business owners. Baker, Hamshaw, and Kolodinsky (2009) indicated that there were six main motivators for attending the farmers market. Their order of importance is as follows: availability of local food, availability of fresh food, support for local agriculture, availability of organic food, social benefits, and convenience. Giampietri et al. (2016) reported that consumers in Italy value direct contact with the producers, contributing to the farm's income, and the environmental benefits that farmers markets offer.

As the literature demonstrates, several factors impact consumer attendance of farmers markets. Alonso and O'Neill (2010) surveyed needs and wants of 356 visitors from two Alabama farmers markets. They reported that visitors attended due to more product variety, more vendors, and extended selling seasons. Approximately half of the respondents regularly visited the farmers markets. Of those who were surveyed, only 7 percent reported a negative experience, while 85 percent had a positive experience at the farmers market. The physical design of a market and its surroundings can impact how often a consumer frequents the market. Based on surveys piloted in Vermont, researchers Baker, Hamshaw, and Kolodinsky (2009) found that 28 percent of consumers who shopped at the markets decided to attend the market at the last minute. Bond, Thilmany, and Bond (2009) analyzed 1,549 surveys from across the United States. Their results suggested that producers should emphasize product attributes concerning quality, availability, nutrition, and localness to increase farmers market attendance and loyalty.

Farmer et al. (2011) revealed four central themes from consumer interviews, with recreation/leisure being the most common among four farmers markets in Indiana. Participants seemed to recall the "festival-type atmosphere" and the opportunity for children to play outdoors. Bowling et al. (2016) led a series of incentivized exposure activities (*i.e.*, fruit and vegetable tastings & cooking demonstrations) and surveys to track the change in participant's nutritional behaviors reported significantly higher vegetable consumption and lower soda consumption. Approximately 70 percent of participants reported significant increases in household consumption of fruits and vegetables.

2.2 Barriers to Market Attendance

A direct-to-consumer outlet would likely benefit from understanding who is not patronizing the outlets and why they are choosing not to. If researchers choose to only study established customers of the market, this might not benefit producers and farmers. Washington State testified that they did not shop at farmers markets because it was inconvenient, while 22 percent reported that it was not financially viable. Only, approximately 9 percent of SNAP participants reported no barriers to shopping at farmers markets.

After conducting 64 surveys among 8 focus groups in Oklahoma, Wetherill, and Gray (2015) found that some respondents were aware that the markets accepted SNAP (Supplemental Nutrition Assistance Program) as a payment option. They also found that few participants regularly ate fresh produce and that most respondents appreciated the convenience of shopping at a supermarket. Respondents perceived farmers markets as not being accommodating to needs of affordability and social acceptance. Eastwood, Farmer et al. (2017) distributed questionnaires to farmers market customers, CSA subscribers, and non-local food consumers throughout Indiana. They found that individuals who did not regularly engage in the local food scene identified five major barriers to participating: location of venues are inconvenient, costs could be cheaper, day and times are inconvenient, and local foods should be integrated into supermarkets where people commonly shop. Market personnel might also consider using consumer education as an avenue to increase consumer attendance. Brooker and Gray (1999) found that consumers in Tennessee had even more reasons for not shopping at direct market outlets, including: limited product availability, traveling distance, higher prices, inconvenient location and hours, and lack of cleanliness.

3. Methodology

3.1 Data Collection

This study was conducted in Southcentral Kentucky region. According to Bowling Green Chamber of Commerce (2020), there is a total population of 230,477 adults (at least 18 years old) in this 10-counties region. Using the sample size calculator developed by the Creative Research Systems (2012) with a confidence level of 95% and a margin error of 1.94%, this project used a stratified random sample of 2,530 participants. A 3% margin error is one of the lowest (better) margins used by survey researchers when 95% confidence level is involved (DataStar, 2008).

Data was collected using a mail survey in January 2020. Mailing information was purchased from InfoGroup, a firm that specializes in data and marketing services. This study uses data from 172 consumers who provided valid and complete responses to all survey questions. This response rate is 6.8 percent. As per the Creative Research Systems (2012), this represents with a confidence level of 95% and a margin error of 7.5%. Although authors recognize that this response rate is slightly lower than average [External mailed surveys typically generate response rates of 10 percent (PeoplePulse, 2019)], those who participated in this study provided an insight in understanding who never attends farmers markets and who would join CSA programs in the Southcentral Kentucky region.

3.2 Modeling Framework

This study uses choice models within a utility maximization framework. Choice models strive to predict the decision that an individual will prefer in a specific setting or context (Görür, 2009). Specifically, we used two types of regression models: a Multinomial Logit Model and an Ordered Logit Model. The Multinomial Logit regression was used to estimate relative probabilities for habits of attending farmers markets (never attend, attend occasionally, and attend frequently). The Ordered Logit was used to analyze a consumer's levels of interest in subscribing to a Community Supported Agriculture (CSA) program, which is another market outlet available for growers of locally grown fresh produce. These are choice models that exercise maximum likelihood estimation where coefficient estimates maximize the likelihood that an outcome will occur (Katchova, 2013c). It is assumed that individual *i* will choose the alternative that gives him/her the highest utility (satisfaction) among *J* alternatives. The utility equation takes the form of:

$$U_{ij} \;=\; X_{ij} \;+\; \varepsilon_{ij} \;\text{ for } i = 1, \dots I \text{ and } j = 1, \dots J \tag{1}$$

The deterministic component of the utility is represented by X_{ij}. The ε_{ij} is a random component of the utility. This analysis assumes that the random component is independently and normally distributed. The indirect utility U_{ij}^{*} for individual i choosing an alternative j is:

$$U_{ij}^{*} \;=\; \beta'X_{ij} \;+\; \mu_{ij} \tag{2}$$

In Equation (2), X_{ij} is a vector of K characteristics of the chooser and choice attributes. The parameter vector β is to be estimated. The μ_{ij} is the disturbance, which accounts for unobserved factors.

3.2.1 Multinomial Logit Model

As previously indicated, Multinomial Logit regression is used to estimate relative probabilities for the habits of attending farmers markets. Those are: (a) Never attend, (b) attend occasionally (1 to 3 times during a market season), and (c) attend frequently (at least 4 times during a market season). The "never attend" allows to explain reasons why some consumers do *not* attend farmers markets. In the Multinomial Logit Model, the βs are identified by setting the $\beta_j^* = 0$ for one reference category. If the parameter β_{jk} is positive, the relative probability of choosing j increases relative to the probability of choosing the reference category j^*. A negative β_{jk} indicates the opposite.   Equation below illustrates the probability that individual i will select alternative j:

$$p_{ij} \;=\; p(y_i = j) \;=\; exp(\beta_k'X_{ij})/\textstyle\sum_j \beta_k'X_{ij} \tag{3}$$

In Equation (3) above, the y_i is a specific outcome or the choice made by an individual. There are J sets of marginal effects for both the alternative-specific and case-specific regressors. The marginal effect of a unit-increase in a regressor on the probability of selecting j alternative is:

$$\partial p_{ij}/\partial \boldsymbol{x}_{ik} \;=\; p_{ij}(\delta_{ijk} - p_{ik})\beta, \text{ where, } \delta_{ijk} \;=\; 1 \text{ if } j = k \text{ and } 0 \text{ otherwise.} \tag{4}$$

The null hypothesis is that each independent variable has no impact on the relative probability of choosing to not attend a farmers market. The alternative hypothesis is that the variables in vector X have a statistically significant impact on the probability of choosing to not attend a farmers market; that is, H_0: $\beta_{jk} = 0 \;\forall\; k = 1, \dots K, j = 1, \dots J$ for K regressors and J alternatives and H_1: $\beta_{jk} \neq 0 \;\forall\; k = 1, \dots K, j = 1, \dots J$ for K regressors and J alternatives.

3.2.2 Ordered Logit Model

Similar to the Multinomial Logit model above, the Ordered Logit operates under the assumption that a consumer seeks to maximize utility. Therefore, a specific ordering indicates that its corresponding utility is greater than the one derived from any other orderings. This means that the probability of choosing a specific reason to be the first is equal to the probability that the utility derived from that reason is greater than the utility derived from all other reasons (Gumirakiza, 2013). As previously indicated, the Ordered Logit was used to analyze a consumer's level of interest in subscribing to a CSA program. We provided information about CSA programs and asked respondents to indicate their likelihood of subscribing. Choice alternatives were: (a) less likely, (b) somewhat likely, (c) very likely, and (d) extremely likely.

The following theoretical models will be used to develop the regression equation and analyze the results. Equation (5) below illustrates the basic concept behind an ordered-logit model. Let y^* be the latent dependent variable and α denote thresholds between the ordered outcomes in the dependent variable.

$$y^{*} \;=\; X\beta \;+\; \varepsilon, \text{ where, } y_i = j \text{ if } \alpha_{j-1} < y_i^{*} \le \alpha_j \tag{5}$$

Equation (6) below illustrates the probability that individual i will select alternative j to be the first:

$$p_{ij} \;=\; p(y_i = j) \;=\; p\;(\alpha_{j-1} < y_i^{*} \le \alpha_j) \;=\; F(\alpha_j - X_i'\beta) \;-\; F(\alpha_{j-1} - X_i'\beta) \tag{6}$$

For any logit model, it is uncommon to interpret the magnitude of a coefficient (Katchova, 2013b). Instead, we are often interested in the marginal effect and the sign of an independent variable. As in the multinomial logit, the marginal effects from different alternatives sum to equal zero (Katchova, 2013a). A marginal effect is shown below:

$$\partial p/\partial x_j \;=\; \Phi(X'\beta)\beta_j \quad \text{(Basic model)} \tag{7}$$

$$\partial p_{ij}/\partial x_{ri} \;=\; \{F'(\alpha_{j-1} - X_i'\beta) \;-\; F'\,(a_j - X_i'\beta)\}\cdot\beta \tag{8}$$

The null hypothesis is that no relationship exists between chooser characteristics or farmers market characteristics and the degree of likelihood of subscribing to a CSA program. The alternative hypothesis is that there is a statistical relationship between the chooser characteristics or market characteristics and the level of likelihood of subscribing to a CSA program; that is, H_0: $\beta_{jk} = 0 \;\forall\; k = 1, \dots K, j = 1, \dots J$ for K regressors and J alternatives and H_1: $\beta_{jk} \neq 0 \;\forall\; k = 1, \dots K, j = 1, \dots J$ for K regressors and J alternatives.

4. Results and Discussion

4.1 Characteristics of Consumers Who Never Attend Farmers Markets

Table 1, column 3 presents descriptive statistics about consumer characteristics of those who never attended farmers markets. Column 4 (Yes) indicates statistics for those who attend either occasionally or frequently. Subsequent tables are related to results from data on all 172 respondents using the Multinomial Logit and Ordered Logit regressions. Of the total respondents (172 consumers), 91 (*i.e.*, 53 percent) indicated they never attended a farmers market. The remaining 81 attend either occasionally or frequently.

Results indicate that 60 percent of consumers who never attend farmers markets live in a rural area. Within the context of this study, a rural area was defined as a town with less than 10,000 residents. This aligns with the fact that many farmers markets tend to locate in populated cities and towns. Approximately 64 percent of those who do not attend farmers markets are male and 59 percent are married. The average non-attendee has a 2-year associate degree and falls into the third age category (between 40 and 49 years old). There is an average of approximately 3 people per household. We also included the "Citizenship" variable because we were curious weather citizens would respond differently from non-citizens. We found that 85 percent of those who do not attend farmers markets are U.S. citizens. This is not a surprising statistic because most study participants are citizens. An average consumer who does not attend farmers markets made annual income between $51,000 and $75,000 in 2019. Only 18 percent of these consumers know what a Community Supported Agriculture (CSA) program is. Respondents are very interested in using an App to purchase fresh produce.

Table 1. Descriptive statistics

Variable Name	Description	Mean	
		Never	Yes
Rural	Rural = 1 and 0 otherwise	0.60	0.63
Male	Male = 1, Female = 0	0.64	0.68
Education	Level of education; 1 = high school or less, 2 = two-year associate degree, 3 = four-year bachelor's degree, 4 = graduate degree or higher	2.06	2.05
Household	Total number of people in a household	2.56	2.5
Citizenship	Citizen = 1, non-citizen = 0	0.85	0.89
AgeCategory	1 = 18-29, 2 = 30-39, 3 = 40-49, 4 = 50-59, 5 = 60-69, 6 = 70+	3.78	3.9
Married	Married = 1, Single = 0	0.59	.62
IncomeCategory	1 = Less than $25,000, 2 = $26,000-$50,000, 3 = $51,000-$75,000, 4 = $76,000-$100,000, 5 = $100,000+	2.68	2.69
Ethnicity	African American = 1, Asian = 2, Hispanic = 3, Caucasian = 4, Other = 5	3.85	4.0
PrimaryShopper	Is a primary shopper; Yes = 1, No = 0	0.80	0.82
CSAAwareness	Knows what a CSA is; Yes = 1, No = 0	0.18	0.21
InterestinUsingApptoBuy	1 = Not interested at all, 2 = Slightly interested, 3 = Moderately interested, 4 = Very interested, 5 = Extremely interested	3.56	4.21
ActualSpentMonth	Estimated monthly expenditure on fresh produce.	$76.67	$92.78
SupportFarmers	1-5 scale regarding respondent's willingness to purchase locally grown fresh produce to support local farmers	2.69	4.48
SatisfactionOverallExp	1 = Extremely Dissatisfied, 2 = Dissatisfied, 3 = Moderately Satisfied, 4 = Satisfied, 5 = Extremely Satisfied	N/A	3.59
SatisfactionPrices	1 = Extremely Dissatisfied, 2 = Dissatisfied, 3 = Moderately Satisfied, 4 = Satisfied, 5 = Extremely Satisfied	N/A	3.35
SatisfactionProduceQual	1 = Extremely Dissatisfied, 2 = Dissatisfied, 3 = Moderately Satisfied, 4 = Satisfied, 5 = Extremely Satisfied	N/A	3.70
SatisfactionHours	1 = Extremely Dissatisfied, 2 = Dissatisfied, 3 = Moderately Satisfied, 4 = Satisfied, 5 = Extremely Satisfied	N/A	2.88
SatisfactionSocialInteract	1 = Extremely Dissatisfied, 2 = Dissatisfied, 3 = Moderately Satisfied, 4 = Satisfied, 5 = Extremely Satisfied.	N/A	3.10

Among those who attend farmers markets either occasionally or frequently, results indicate that 63 percent live in a rural area. Approximately 68 percent are male, and 62 percent are married. The average farmers market

attendee has a 2-year associate degree, is between 40 and 49 years old, makes between $51,000 and $75,000 income in 2019, and lives in a household with approximately 3 individuals. Results show that 89 percent of those who attend farmers markets are citizens. Approximately 21 percent of these consumers know what a CSA program is. Overall, we found that those consumers who previously attended farmers markets are satisfied with four of the five market attributes. Produce quality scored highest. They are moderately satisfied with social interactions and produce prices at the farmers markets. We found that they are slightly dissatisfied with markets' hours of operation.

4.2 Attendance Habits Relative to "Never Attend": Results from Multinomial Logit

This study uses a multinomial logit to estimate the impact of consumer characteristics on the different habits of attendance: (a) never attend, (b) attend occasionally (1 to 3 visits per market season), and (c) attend frequently (more than 4 times per market season). Table 2 shows coefficient estimates for the "attend occasionally and attend frequently" categories with reference to "never attend"; which is the base category.

Table 2. Coefficient estimates from the multinomial regression

Variables	Occasionally: 1-3 visits	Frequently: 4+ visits_
Rural	-0.287	-0.0194
Male	**1.023****	0.0802
Education	0.148	**0.361***
Household	-0.132	-0.0397
Citizenship	1.050	1.631
AgeCategory	0.238	0.0844
Married	-0.0887	0.749
IncomeCategory	0.0781	-0.0884
Ethnicity	**0.606***	1.307
PrimaryShopper	**-1.192****	-0.570
CSAAwareness	0.481	0.583
ActualSpentMonth	**0.0107****	0.00774
SupportFarmers	0.256	0.150
InterestinUsingApptoBuy	**0.389****	0.0467
SatisfactionOverallExp	-0.267	**0.992***
SatisfactionPrices	0.0356	-0.437
SatisfactionProduceQual	**0.625***	0.0612
SatisfactionHours	0.388	0.304
SatisfactionSocialInteract	**-0.581***	0.265
Constant	**-7.799****	**-14.08*****

Note. *** p < 0.01, ** p < 0.05, * p < 0.1.

Results in Table 2 indicate that when we hold all factors constant at their mean values, males are more likely to attend farmers markets occasionally. Educated consumers are more likely to attend frequently. An obvious finding is that a prior overall satisfactory experience at farmers market corresponds with frequent attendance and therefore leads to loyal customers. We further found that Caucasians are more likely to attend occasionally than other ethnic groups. Those consumers with high monthly grocery bills are also more probable to attend farmers markets on occasional basis. Similarly, consumers with interests in using a sort of App to purchase their fresh produce are more likely to attend farmers markets occasionally. On the other hand, this study found that primary shoppers and socially oriented consumers are less likely to attend farmers markets occasionally.

Table 3 displays the marginal effects for each of the three habits of attendance. Results indicate that respective relative probabilities for the three habits are 54.5 percent (never attend), 29.3 percent (attend occasionally), and 16.3 percent (attend frequently). Results show that primary shoppers are 23 percent more likely to never attend farmers markets. When comparing "occasionally attend" relative to "never attend", a total of six variables were significant. Males, primary shoppers, monthly spending on fresh produce, interest in using a mobile app to purchase fresh produce, produce quality, and market-stimulated social interactions were all significant. The marginal probabilities were .1631, .2007, .0015, .0615, .0993, and .1035, respectively.

When comparing "frequently attend" relative to "never attend", education and the consumer's overall satisfaction with past farmers market experiences were significant. The probabilities were .0463 and .1510, respectively. This means that one additional level of education increases the probability of attending a farmer's market by almost 5 percent. One additional level of overall satisfaction at farmers markets increases the likelihood of coming back by 15 percent. Furthermore, we found that for $100 additional dollars consumers spend per month on fresh produce, the probability of choosing to never attend a farmers market decreases by 22 percent.

Table 3. Marginal effects from the multinomial regression

Variable	Y = Pr(Never Attend) = 54.5 percent	Y = Pr(Occasionally Attend) = 29.3 percent	Y = Pr(Frequently Attend) = 16.2 percent
Rural	0.0391	-0.0467	0.0075
Household	0.0209	-0.0199	-0.0010
Citizenship	-0.3089	0.1129	0.1961
Male	-0.1386	**0.1631***	-0.0245
AgeCategory	-0.0394	0.0357	0.0037
Married	-0.0622	-0.0391	0.1014
Education	-0.0577	0.0113	**0.0463***
IncomeCategory	-0.0004	0.0158	-0.0153
Ethnicity	**-0.2177***	0.0524	0.1653
PrimaryShopper	**0.2274****	**-0.2007***	-0.0266
SatisfactionOveralExpFM	-0.0729	-0.0781	**0.1510****
SatisfactionPrices	0.0425	0.0211	-0.0636
SatisfactionProduceQual	-0.0860	**0.0993***	-0.0132
SatisfactionHours	-0.0820	0.0522	0.0298
SatisfactionSocialInterac	0.0452	**0.1035***	0.0583
CSAAwareness	-0.1265	0.0576	0.0690
ActualSpendingMonth	**-0.0022***	**0.0015*****	0.0007
SupportFarmers	-0.0486	**0.0362***	0.0124
InterestinUsingApp	**-0.0545***	**0.0615****	-0.0070

Note. *** p < 0.01, ** p < 0.05, * p < 0.1.

4.3 Consumers' Likelihood to Participate in CSA: Results From the Ordered Logit

Included in this study is an analysis of respondents' likelihood to subscribe to CSA program; another direct-to-consumer market outlet. After understanding consumer habits regarding attendance to farmers markets, we were curious to elicit their likelihood to participate in this other type of market opportunity for locally grown-grown fresh produce. Table 4 below shows coefficient estimates from the ordered logit model. As previously mentioned, respondents were provided with information about CSA programs and asked to indicate their likelihood to subscribe. They chose from this choice set: (1) less likely, (2) somewhat likely, (3) very likely, and (4) extremely likely.

Table 4. Coefficient estimates from the ordered logit

Variables	LikelyToSubscribeToCSA
Rural	**-0.668***
Household	**0.293****
Citizenship	-0.452
Male	-0.169
AgeCategory	-0.234
Married	0.395
Education	-0.127
IncomeCategory	-0.0120
Ethnicity	-0.0759
PrimaryShopper	0.716
SatisfactionOverallExp	0.269
SatisfactionPrices	0.274
SatisfactionProduceQual	0.0556
SatisfactionHours	-0.176
SatisfactionSocialInteract	0.197
ActualSpendingMonth	-0.000152
SupportFarmers	-0.172
InterestinUsingApptoBuy	**0.530*****
/cut1	**1.134*****
/cut2	**2.675*****
/cut3	**3.970*****

Note. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Unlike in previous studies (D. C. Adams & A. E. Adams, 2011; Wolf, Spittler, & Ahern, 2005), this study found that being male was linked to an increase in the likelihood of occasionally attending a farmers market, relative to never attending. In line with Ritter et al. (2019), Wetherill and Gray (2015), and Alonso and O'Neill (2010) who found that primary shoppers are more appreciative and receptive to the convenience and variety offered by traditional supermarkets, we found that primary shoppers are less likely to attend farmers markets. To transition consumers from never attending to occasionally attending, local agriculture personnel and farmers market managers should strive to increase hours of operation and product variety to make the market more of a "one-stop" shopping space. It is natural to observe that as a consumer's satisfaction with the market improves, they're likely to frequent the market more often. This analysis also found that as a consumer's education increases, they'll frequent the market more often. This finding supports the results found in previous studies (McCormack, Laska, & Larson, 2010; D. C. Adams & A. E. Adams, 2011; Wolf, Spittler, & Ahern, 2005).

Table 4 shows respective marginal probabilities associated with variables included in the analysis. For the less likely habit, the significant variables in determining consumer interest in a CSA are rural living, number of individuals in the household, and their interest in using a mobile app to purchase fresh produce. The respective probabilities were .1491 -.0666, and .1203. For example, for each additional person in a household, the probability of being less likely to subscribe to a CSA decreases by 6.66 percent. Table 5 illustrates marginal effects.

Table 5. Marginal effects from the ordered logit model

Variable	Y = Pr(Less Likely) = 35 percent	Y = Pr(Somewhat Likely) = 37 percent	Y = Pr(Very Likely) = 19 percent	Y = Pr(Extremely Likely) = 10 percent
Rural	**0.1491***	-0.0116	**-0.0760***	**-0.0615***
Household	**-0.0666****	0.0067	**0.0338****	**0.0262****
Citizenship	0.1026	-0.0103	-0.0520	-0.0403
Male	0.0384	-0.0039	-0.0195	-0.0151
AgeCategory	0.0532	-0.0053	-0.0270	-0.0290
Married	-0.0910	0.0121	0.0450	0.0339
Education	0.0288	-0.0029	-0.0146	-0.0113
IncomeCategory	0.0027	-0.0003	-0.0014	-0.0011
Ethnicity	-0.0172	-0.0017	0.0087	0.0068
PrimaryShopper	-0.1702	0.0383	0.0777	0.0541
SatisfactionOveralExp	-0.0612	0.0061	0.0310	0.0240
SatisfactionPrices	-0.0622	0.0062	0.0315	0.0244
SatisfactionProduceQual	-0.0126	0.0013	0.0064	0.0050
SatisfactionHours	0.0400	-0.0040	-0.0203	-0.0157
SatisfactionSocialInteraction	-0.0446	0.0045	0.0226	0.0175
ActualSpendingFP	0.0000	0.0000	0.0000	0.0000
SupportFarmers	0.0390	-0.0039	-0.0198	-0.0153
InterestinUsingApp	**-0.120****	0.0120	**0.0610****	**0.0472****

Results in Table 5 show that respondents are 35 percent less likely to participate in the CSA programs. An additional level of interests in using an app to purchase fresh produce diminishes the probability participating in CSA programs by 12 percent. Likewise, one additional member of a household decreases this likelihood by almost 7 percent. Results further suggest that rural residents are 15 percent less likely to join CSA programs. This finding aligns with the fact that residents in rural areas have land and/or gardens to grow fresh produce for their own. Consumers who live in a rural setting might decide that they would prefer to grow their own fresh produce instead of pre-purchasing their produce from a CSA. These results resemble those found in the previous literature (Farmer et al., 2017; Lucan et al., 2015). We found that consumers are 37 percent likely to somewhat agree on joining a CSA program. Interestingly, we found no factor that could change this likelihood. Furthermore, findings indicate a 19 percent probability of being very interested in the program. Those consumers who are interested in using an App when shopping for fresh produce are 6 percent more likely to participate. An additional household member increases this probability by 3 percent. Contrary, rural residents are 6 percent less likely to be extremely interested in this program. Finally, there is a 10 percent likelihood that consumers are extremely interested in participating in the CSA market arrangement. Those consumers who are interested in using an App when shopping for fresh produce are 5 percent more likely to participate. An additional household member increases this probability by 2.6 percent. On the other hand, rural residents are almost 8 percent less likely to be extremely interested in this program.

5. Concluding Remarks

The literature about consumers who do not attend farmers markets and other direct-to-consumer market outlets is still limited. This study sought to identify consumer characteristics of those who do not attend farmers markets within Southcentral Kentucky, analyze market attendance habits, and explain the likelihood for participating in CSA programs. We used data collected from 172 consumers and employed descriptive statistics, Multinomial Logit, and Ordered Logit regressions. The average consumer who does not attend farmers markets is most likely to be a married, a primary shopper for the household, and a Caucasian male who lives in a rural location with a 2-year associate degree. Most of these non-attendants are the primary shoppers. Few consumers knew what a CSA program is but once they learned, they were likely to subscribe to one. Therefore, producers who run a CSA should focus marketing efforts on educating consumers about what a CSA is, what products are offered in their CSA, and the benefits of having a CSA subscription.

Based on the results, we recommend that farmers markets find a way to make their vendor's products available on online platforms, such as mobile apps. Improving overall satisfaction needs to continue being the goal of every farmers market. In this regard, it is also important to implement ways to measure satisfaction among

shoppers. Finally, we recommend directing advertising activities on specific groups of consumers who are likely to attend the market. For producers who offer CSA market arrangement, we recommend targeting urban consumers and large households. They should also find ways to put their CSA programs online, specifically targeting mobile app users. Authors believe that following these suggestions would allow farmers markets and other direct-to-consumer market outlets like CSA programs to experience growth. Finally, further research studies are recommended to elicit a clear understanding of factors that would attract the "never attend" consumers to attend farmers markets and/or other direct-to-consumer market outlets like CSA, roadside, U-pick, agritourism, and on-farm.

References

Adams, D. C., & Adams, A. E. (2011). De-Placing Local at the Farmers' Market: Consumer Conceptions of Local Foods. *Journal of Rural Social Sciences, 26*(2), 74-100.

Alonso, A. D., & Oneill, M. A. (2010). A Comparative Study of Farmers Markets Visitors Needs and Wants: The Case of Alabama. *International Journal of Consumer Studies, 35*(3), 290-299. https://doi.org/10.1111/j.1470-6431.2010.00931.x

Baker, D., Hamshaw, K., & Kolodinsky, J. (2009). Who Shops at the Market? Using Consumer Surveys to Grow Farmers' Markets: Findings from a Regional Market in Northwestern Vermont. *Journal of Extension, 47*(6).

Bond, J. K., Thilmany, D., & Bond, C. (2009). What Influences Consumer Choice of Fresh Produce Purchase Location? *Journal of Agricultural and Applied Economics, 41*(1), 61-74. https://doi.org/10.1017/s1074070800002558

Bowling Green Chamber of Commerce. (2020). *Southcentral Kentucky, Central for Business, Southern for Living*. Retrieved from https://www.southcentralky.com/demographics

Bowling, A. B., Moretti, M., Ringelheim, K., Tran, A., & Davison, K. (2016). Healthy Foods, Healthy Families: Combining Incentives and Exposure Interventions at Urban Farmers markets to Improve Nutrition among Recipients of US Federal Food Assistance. *Health Promotion Perspectives, 6*(1), 10-16. https://doi.org/10.15171/hpp.2016.02

Corwine, B. (2019). *Celebrating America's Farmers' Market, and Farmers' Markets Everywhere*. Retrieved from https://www.fb.org/news/celebrating-americas-farmers-market-and-farmers-markets-everywhere

Creative Research Systems. (2012). *Sample Size Calculator*. Retrieved from http://www.surveysystem.com/sscalc.htm

DataStar. (2008). *What every researcher should know about statistical significance*. Retrieved from http://www.surveystar.com/startips/oct2008.pdf

Dodds, R., Holmes, M., Arunsopha, V., Chin, N., Le, T., Maung, S., & Shum, M. (2014). Consumer Choice and Farmers markets. *Journal of Ag and Environmental Ethics, 27*(3), 397-416. https://doi.org/10.1007/s10806-013-9469-4

Eastwood, D. B., Brooker, J. R., & Gray, M. D. (1999). Location and Other Market Attributes Affecting Farmer's Market Patronage: The Case of Tennessee. *Journal of Food Distribution Research, 30*(1), 64-72.

Farmer, J. R., Chancellor, C., Gooding, A., Shubowitz, D., & Bryant, A. (2011). A Tale of Four Farmers' Markets: Recreation and Leisure as a Catalyst for Sustainability. *Journal of Park and Recreation Administration, 29*(3), 11-23.

Farmer, J., Chancellor, C., Robinson, J. M., West, S., & Weddell, M. (2017). *Farmers Markets, CSAs, and the Privilege in Eating Local*. Retrieved from https://www.tandfonline.com/doi/abs/10.1080/00222216.2014.11950328

Farvid, M. S., Barnett, J. B., & Spence, N. D. (2021). Fruit and Vegetable Consumption and Incident Breast Cancer: A Systematic Review and Meta-Analysis of Prospective Studies. *British Journal of Cancer, 125*, 284-298. https://doi.org/10.1038/s41416-021-01373-2

Ferguson, B., & Thompson, C. (2020). Why Buy Local? *Journal of Applied Philosophy, 38*(1), 104-120. https://doi.org/10.1111/japp.12459

Giampietri, E., Koemle, D., Yu, X., & Finco, A. (2016). Consumers' Sense of Farmers markets: Tasting Sustainability or Just Purchasing Food? *Sustainability, 8*(11), 1157. https://doi.org/10.3390/su8111157

Görür, D. (2009). *An Overview of Choice Models*. University College London, UK.

Govindasamy, R., Zurbriggen, M., Italia, J., Adelaja, A., Nitzsche, P., & VanVranken, R. (1998). *Farmers Markets: Consumer Trends, Preferences, and Characteristics*.

Gumirakiza, J. D. (2013). *Assessment of Consumer Motivations to Attend Farmers' Markets, Their Preferences, and Their Willingness to Pay for Differentiated Fresh Produce: Three Essays* (PhD-thesis, Utah State University, Logan, UT, USA). Retrieved from https://digitalcommons.usu.edu/etd/1758

Gumirakiza, J. D., Curtis, K. R., & Bosworth, R. (2014). Who Attends Farmers markets and Why? Understanding Consumers and their Motivations. *International Food and Agribusiness Management Review, 17*(2), 65-82.

Harris, W. L., Lubben, B., Novak, J. L., & Sanders, L. D. (2008). *The Food, Conservation, and Energy Act of 2008: Summary and Possible Consequences*. Retrieved from https://digitalcommons.unl.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1021&context=ageconworkpap

Johnson, R. (2016). *The Role of Local and Regional Food Systems in U.S. Farm Policy*. Retrieved from https://fas.org/sgp/crs/misc/R44390.pdf

Katchova, A. (2013a). *Multinomial Probit and Logit Models*. Econometrics Academy.

Katchova, A. (2013b). *Ordered Probit and Logit Models*. Econometrics Academy.

Katchova, A. (2013c). *Probit and Logit Models.pdf*. Econometrics Academy.

Low, S. A., Adalja, A., Beaulieu, E., Key, N., Martinez, S., Melton, A., ... Jablonski, B. R. (2015). *Trends in U.S. Local and Regional Food Systems, AP-068*.

Lucan, S. C., Maroko, A. R., Sanon, O., Frias, R., & Schechter, C. B. (2015). Urban Farmers Markets: Accessibility, Offerings, and Produce Variety, Quality, and Price Compared to Nearby Stores. *Appetite, 90*, 23-30. https://doi.org/10.1016/j.appet.2015.02.034

Martinez, S., Hand, M., Pra, M. D., Pollack, S., Ralston, K., Smith, T., & Vogel, S. (2010). *Local Food Systems: Concepts, Impacts, and Issues*.

McCormack, L. A., Laska, M. N., Larson, N. I., & Story, M. (2010). Review of the Nutritional Implications of Farmers Markets and Community Gardens: A Call for Evaluation and Research Efforts. *Journal of the American Dietetic Association, 110*(3), 399-408. https://doi.org/10.1016/j.jada.2009.11.023

Murphy, A. J. (2011). Farmers Markets as Retail Spaces. *SSRN Electronic Journal, 39*(8), 582-97. https://doi.org/10.2139/ssrn.1337483

National Public Research. (2017). *Mail Surveys: Applicability & Advantages of Mail Surveys*. Retrieved from https://nationalpublicresearch.com/services/mail-surveys

PeoplePulse. (2019). *Survey Response Rates*. Retrieved from https://peoplepulse.com/resources/useful-articles/survey-response-rates/#:~:text=Internalpercent20surveyspercent20willpercent20generallypercent20receive,responsepercent20ratepercent20forpercent20externalpercent20surveys

Pratt, K. (2018). *Strong Demand for Local Foods in Rural Kentucky* (Lane Report). Kentucky Business & Economic News. Retrieved from https://www.lanereport.com/103728/2018/07/strong-demand-for-local-foods-in-rural-kentucky

Ritter, G., Walkinshaw, L. P., Quinn, E. L., Ickes, S., & Johnson, D. B. (2018). An Assessment of Perceived Barriers to Farmers market Access. *Journal of Nutrition Education and Behavior, 51*(1), 48-56. https://doi.org/10.1016/j.jneb.2018.07.020

Robinson, N., & LaMore, R. L. (2010). Why Buy Local? An Assessment of an Economic Advantages of Buying at Locally Owned Businesses. Retrieved from https://ced.msu.edu/upload/reports/why%20buy%20local.pdf

USDA, Agriculture Marketing Service. (2014). *New Data Reflects the Continued Demand for Farmers Markets*. N Retrieved from https://www.usda.gov/media/press-releases/2014/08/04/new-data-reflects-continued-demand-farmers-markets

USDA, National Agricultural Library. (2021). *Local Foods*. Retrieved from https://www.nal.usda.gov/aglaw/local-foods#quicktabs-aglaw_pathfinder=1

Wetherill, M. S., & Gray, K. A. (2015). Farmers Markets and the Local Food Environment: Identifying Perceived Accessibility Barriers for SNAP Consumers Receiving Temporary Assistance for Needy Families (TANF) in an Urban Oklahoma Community. *Journal of Nutrition Education and Behavior, 47*(2). https://doi.org/10.1016/j.jneb.2014.12.008

Wolf, M. M., Spittler, A., & Ahern, J. (2005). A Profile of Farmers' Market Consumers and the Perceived Advantages of Produce Sold at Farmers' Market. *Journal of Food Distribution Research, 36*(1), 193-200.