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Primary Reasons for Not Attending Farmers' Market. Do Market Features and Consumer Characteristics Matter?

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PRIMARY REASONS FOR NOT ATTENDING FARMERS' MARKETS. DO MARKET FEATURES AND CONSUMER CHARACTERISTICS MATTER?

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PRIMARY REASONS FOR NOT ATTENDING FARMERS' MARKETS. DO MARKET FEATURES AND CONSUMER CHARACTERISTICS MATTER?

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Directed By: Dr. Dominique Gumirakiza, Dr. Martin Stone, and Dr. Todd Willian

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The number of farmers' markets has been growing, but consumer attendance does not appear to rise at the same rate. The overall purpose of this study was to investigate primary reasons for not attending. Specific objectives were: (1) describe the consumer characteristics of individuals who do not attend farmers' markets (2) investigate the consumer characteristics and market amenities that influence a consumer's choice to *not* attend a farmers market (3) estimate the variables that impact a consumer's level of interest in subscribing to a CSA and (4) assess and estimate the relationship between consumer characteristics and their willingness to pay for one pound of various locally grown produce items. A mail survey was distributed to 2,530 consumers in the South-Central Kentucky region. Consumer responses were analyzed using descriptive statistics, multinomial and ordered logit models, and a linear regression. Married, Caucasian males who live in a rural location and have a 2-year associate's degree are likely to choose to not attend a farmers market. Most of these non-attendants are the primary shopper of their household. This finding was confirmed when the multinomial regression found that the only consumer characteristic that increases the probability of choosing to Never Attend a farmers market is the consumer's primary shopper status (0.2274). A consumer's education and their satisfaction with previous market experiences make them more likely to attend a market Very Frequently. The probabilities of these factors are

.0463 and .1510, respectively. Consumers are less likely to subscribe to a CSA if they live in a rural area (0.1491). Yet, the likelihood of subscribing to a CSA is positively correlated with consumer interest in using an app to purchase fresh produce and household size. Respective marginal probabilities are 0.0472 and 0.0262. Finally, education is a consumer characteristic that increases a consumer's willingness to pay for three of the four surveyed produce items, while age and marital status negatively impact their willingness to pay.

INTRODUCTION

There is one device that embodies the transformation of culture, knowledge, and art becoming one: local food. According to the USDA, local food is the "direct or intermediated marketing of food to consumers that is produced and distributed in a limited geographic area." However, the USDA also notes that "there is no pre-determined distance to define what consumers consider local" (USDA/NAL, 2020). The most concrete definition of local food was set by the United States Congress in the 2008 Food, Conservation, and Energy Act. The act states that a product can only be 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). Since the physical and geographic bounds of local food is hard to define, the USDA finds it necessary to define two main *types* of local food markets. The first type is the direct-to-consumer market, where transactions take place directly between the producers and consumers. This type of local market includes farmers' markets, Community Supported Agriculture (CSA) programs, farm stands, and "pick your own" operations. The second type is a direct-to-retail market. In this market, producers sell to other business entities such as restaurants, school systems, hospitals, or government institutions. (Martinez et al., 2010).

Although conventional markets continue to outnumber local food markets, the number of farmers' markets rose from 5,274 markets in 2008 to 8,268 markets in 2014 (Martinez et al., 2010; USDA, 2014). 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).

Like several studies before, (Giampietri et al., 2016; Gumirakiza, 2013; Wetherill & Gray, 2015; Wolf, Spittler, and Ahern, 2005) the main focus of this research project are the consumers and attendees of local food markets. However, it's imperative to identify and understand the common characteristics of local food producers so that their impact on the local food movement can be accurately recognized. In that respect, Low & Vogel (2011) confirmed the idea that most producers who sell directly to the consumer operate on a small-scale. Secondly, the report states that produce farms are responsible for over half of the direct sales to consumers. Low et al., (2015) reports that 34% of all produce farms sold through direct marketing channels. This is in stark contrast to the 3% of all other crop farms and the 8% of livestock farms that use this model. It's also been shown that farmers and producers who engage in other entrepreneurial activities report higher incomes. The ERS reports that agritourism revenue grew from $704 million in 2012 to $950 million in 2017 (USDA/ERS, 2019). Each profitable service or good that a producer can add to their operation poses the possibility of attracting and retaining new consumers.

Several studies have investigated (Alonso and O'Neill, 2011; Martinez et al., 2010; Gumirakiza, Curtis, and Bosworth, 2014) consumer motivations for attending farmers' markets. Common motivations include improved produce freshness, supporting local businesses and the local economy, knowing the product's origin, and social connections. However, there are fewer studies (Ritter et al., 2019; Eastwood, Brooker, and Gray, 1999) that specify a consumer's motivation to *not* attend farmers' markets. Some common reasons to not attend local food markets include inconvenience, financial viability, and lack of knowledge about the markets and their locations.

Farmers' markets not only allow local producers to showcase and sell their fresh products, but they are also beneficial for the community and those who regularly attend. Two studies, Evans et al., 2012 and Jilcott et al., 2011, found that there is an inverse negative correlation between the proximity to farmers markets and a body mass index (BMI) for North Carolina youth. The American Fitness Index (2019) consistently uses the number of farmers' markets per capita as a factor that promotes community health, as it indicates the community's access to fresh fruits and vegetables.

This study is significant because it analyzes consumer preferences and reasons for non-attendance in the region of South-Central Kentucky. This region has not been previously evaluated on this subject and to the complexity of which this study encompasses. In this region, there are approximately twenty operating farmers' markets. The markets are mostly seasonal, but a few of them are open year-round. Hours of operation, marketing techniques, and product offerings vary widely among the list of farmers' markets. The overall objective is to assess the statistical relationship between

market attendance and consumer characteristics together, with market features and attributes. Furthermore, the specific objectives are to (1) describe the consumer characteristics of individuals who do not attend farmers' markets (2) investigate the consumer characteristics and market amenities that influence a consumer's choice to *not* attend a farmers market (3) estimate the variables that impact a consumer's level of interest in subscribing to a CSA and (4) assess and estimate the relationship between consumer characteristics and their willingness to pay for one pound of various locally grown produce items.

In relation to the objectives mentioned above, research questions include (1) What are the consumer characteristics of individuals who do not attend a farmers' market? (2) What consumer characteristics and market amenities impact a consumer's choice to not attend a farmers' market? (3) What are the factors that influence a consumer's level of interest of subscribing to a CSA? (4) What factors impact a consumer's willingness to pay for one pound of a locally grown produce item?

The null hypothesis is that there is no statistical relationship between market attendance and each one of the consumer characteristics together, with market features and attributes. The alternative hypothesis is that there is a significant statistical relationship between market attendance and each one of the consumer characteristics together, with market features and attributes.

REVIEW OF LITERATURE

Farmers' markets are spaces in which producers 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 consumers. Some non-market shoppers have experienced barriers to shopping at the market, or they may have perceived these barriers. Nonetheless, farmers' markets continue to have significant social, economic, and environmental impacts on the local communities in which they are a vital part of.

CONSUMER MOTIVATIONS & PREFERENCES

Consumer motivations and preferences are likely to vary based on location, demographics, and the time period in which consumers are surveyed. Gumirakiza, Curtis, & Bosworth (2014) used data collected from in-person surveys. The data was collected from Nevada in the summer of 2009. More data was collected from Utah in the summer of 2011. Data was used to assess consumer motivations for attending local farmers' markets. The findings suggest that consumers attend for two primary reasons: to purchase fresh produce and partake in the social interaction that the market 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. Similar to Brown (2003), a majority of respondents reported that product quality and freshness were the most important factors driving their purchasing decisions. Results also indicated that patrons of the markets expected farmers' market produce to be of higher quality compared to the produce of other retail shops. They also expected to see lower prices and a wider variety of produce. Murphy (2011) arranged a questionnaire to be completed by customers at

eleven farmers' markets in New Zealand. Based on the 252 responses, price, is not a barrier to visiting or making purchases at the market. Dodds et al., (2014) surveyed 300 individuals in Toronto, Canada during the fall of 2011. They found that the main reason for attending a farmers' market is *not* just to fulfill grocery needs. Results from Murphy (2011) and Dodds et al., (2014) show that the primary motivators for attending the market included product quality and the ability to support local business owners.

Some consumers prefer to shop local in order to positively impact the world around them. For example, results from Onozaka, Nurse, & McFadden (2011) show that consumers who see a personal role in improving sustainability seem to place more value on related product claims (organic, fair trade, etc.). They explored market conduct and consumer preferences by investigating the relationship between a food market's attributes, sustainability claims, social norms, and consumers' self-efficacy perceptions. They found that psychometrics such as health, economy, environment, social fairness, and social responsibility improve the consumer's ability to value specific product claims. Baker, Hamshaw, & Kolodinsky (2009) conducted a consumer survey in 2006 and 2007 at a northwestern Vermont farmers' market. Two separate locations of the regional market were surveyed. Results of the 230 responses 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.

Conner et al., (2010) measured farmers' market perceptions and motivations of Michigan consumers via telephone. Respondents reported that shopping at a farmers'

market was important due to three reasons: food quality, safety from food-borne illness, and supporting local farmers. The ability to identify locally grown food fosters the greatest opportunity to purchase more local food. However, results show that the greatest barrier to purchasing local food is its availability.

Giampietri et al., (2016) conducted a choice experiment of Italian consumers by means of an online survey. This survey set out to examine how the three facets of sustainability (i.e. social, economic, environmental) impact consumers preferences and the willingness to pay for apples at farmers' markets. Based on the 503 responses, consumers value direct contact with the producers, contributing to the farm's income, and the environmental benefits that farmers' markets offer. Results also indicated that marketgoers had a lower willingness to pay for apples if they were locally produced, were not handed to them directly by the farmer, or if they had little to moderate damage.

BARRIERS TO MARKET ATTENDANCE

Multiple studies confirm that it is vital for a successful direct-to-consumer outlet to understand who is not patronizing the outlets and why they are choosing not to. If researchers choose to only study established customers of the market, producers and farmers are likely to suffer and must forfeit any hope of true profit maximization. Ritter et al., (2019) found that out of 400 SNAP participants located in Washington state, a majority of them testified that they did not shop at farmers' markets because it was inconvenient (51%), while others reported that it was not financially viable (22%). Moreover, approximately 9% of SNAP participants reported no barriers to shopping at farmers' markets. Some responses were obtained by mailing out a survey to SNAP

participants, while other responses were acquired via telephone. The SNAP participants and their contact information was held by a database of the state's Department of Social and Health Services.

Barriers to participating in direct-to-consumer outlets vary based on the individual's surroundings. Personal or household income is far from the only inhibitor that consumers face when it comes to shopping from alternative outlets. Farmer et al., (2017) distributed questionnaires to farmers' market customers, CSA subscribers, and non-local food consumers throughout Indiana. Based on the 712 responses, there were four variables of privilege common among farmers' market and CSA participants: gender, education, income, and social connectedness. The responses of 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, Saturdays are inconvenient, and local foods should be integrated into supermarkets where people commonly shop.

Knowledge empowers people to try new things. Therefore, market personnel must consider using consumer education as an avenue to increase consumer attendance. Informing consumers about market payment methods, hours of operation, nutrition and food preparation, and market improvements are all methods of increasing market patronage. For example, after conducting 64 surveys among 8 focus groups in Oklahoma, Wetherill & Gray (2015) found that few 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, Brooker, & Gray (1999) found that their respondents 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. Responses for the study came from a series of surveys distributed to six farmers market across Tennessee. Some surveys were distributed on-site at the markets, while others were mailed to residents who lived within a 15-mile radius of each market.

IMPACT OF FARMERS MARKETS

When we can identify and understand the impact of farmers' markets, they become more than just a communal event or special occasion. The positive impacts can transform these direct-to-consumer outlets into essential businesses that our community should work to preserve. Farmer et al., (2011) studied four Indiana farmers' markets by conducting qualitative research that had two phases. Phase 1 included in-depth interviews of farmers' market participants (n=17) and market non-participants (n=8). Phase 2 was comprised of market observations, participant observations, and informal conversations with market management. Four central themes emerged from the interviews, with recreation/leisure being the most-common. Participants seemed to recall the "festival-type atmosphere" and the opportunity for children to play outdoors. The third most common reason to visit the market was to support local farmers; resulting in a strong local economy.

Healthy Foods, Healthy Families is a platform that has been implemented to six farmers' markets throughout Rhode Island. 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 a participant's nutritional behaviors and literacy during the course of the HFHF program. Post-intervention, HFHF participants reported significantly higher vegetable consumption and lower soda consumption. Those who reported the largest increase in fruit/vegetable consumption attended the market 6-8 times and received roughly $40 in incentives throughout the 16-week program. Approximately 70% of participants reported significant increases in household consumption of fruits and vegetables.

It is recommended that farmers markets and other direct-to-consumer outlets utilize and participate in government programs in order to appeal to a broader customer base. McCormack, Laska, & Larson (2010) conduced a review of 16 studies that focused on the nutritional implications of farmers' markets and community gardens. One major conclusion among the reviewed studies is that education significantly improves attitudes about fruits and vegetables which subsequently increases consumption. A study found that more positive beliefs about the importance of fruits and vegetables, preparation, and price were seen in those who participated in the Women, Infants, and Children Famers' Market Nutrition Program (WIC FMNP). For seniors involved in a farmers' market nutrition program, attitudes regarding produce preparation and consumption increased among those who received a senior farmers' market basket. Studies show (Smith et al., 2003; Herman et al., 2008; and Roseman, 1990) that patrons enjoy attending the market, interacting with the farmers/producers, and feel more connected to the community. In a

single study, conducted by Racine, Laditka, & Vaughn (2010), the effects of farmers' market nutrition programs on African American women who participated in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) were analyzed. Surveys were distributed to applicable women in Washington, D.C. and Charlotte, North Carolina. In Washington D.C., the women who had previously been enrolled in the Farmers' Market Nutrition Program had higher farmers' market use rates. Previous participation in the FMNP program and previous redemption of FMNP vouchers were associated with increased farmers' market use, which subsequently increased fruit/vegetable consumption among respondents.

Guthrie, Guthrie, & Lawson (2006) mailed surveys to producers. After receiving 53 responses, researchers followed-up with semi-structured interviews. Twelve percent of stallholders relied on the farmers' market as their only distribution outlet. However, most producers utilized a combination of two or three outlets to distribute product. About 74% of producers reported that they were able to earn higher margins at the farmers' market. Lawson et al. (2008) studied cooperation among farmers' market vendors using surveys. Over 80% of the vendors reported being involved in some type of cooperation activity. This finding further suggests that farmers' markets are community-based activities that are highly dependent upon market participation. Common reasons for trading at the market include atmosphere of the market, product promotion, and supplementary income.

MARKET/EVENT ATTENDANCE

As the literature demonstrates, several factors impact consumer attendance of farmers' markets. The study of Westwood, Schofield, & Berridge (2018) broke down

consumer motivation for attendance into three dimensions: socialization and relaxation, new knowledge and experiences, and tradition. By using a questionnaire to assess attendance motivations for 825 individuals among four agricultural events/shows in the United Kingdom, authors suggest that the socialization and relaxation dimension be highlighted in event promotion in order to attract younger (<35 years old) visitors and families. Adding or improving venue amenities could also increase attendance of people under the age of 50, specifically those with children. Similarly, the study conducted by Alonso and O'Neill (2011) shows that although markets, and general agricultural events, might differ on location, consumer demographics, and initial formation, responses among attendants are similar. The needs and wants of 356 visitors from two Alabama farmers' markets were surveyed. Visitors want more product variety, more vendors, and extended selling seasons. Approximately half of the respondents regularly visited the farmers' markets. Of those who surveyed, only 6.65% reported a negative experience, while 85.35% 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. An outlet will inevitably suffer if it is hard to locate, has insufficient parking, or lacks space for efficient shopping. Based on surveys piloted in Vermont, researchers Baker, Hamshaw, & Kolodinsky (2009) found that 28% of consumers who shopped at the markets decided to attend the market at the last minute. Consumers reported that roadside advertising such as signs, flags, and a visually attractive market attracted them to shop there. The three advertising strategies that drove consumer attendance included road signs, newspaper, and word of mouth by family, friend, or market vendor. Bond, Thilmany, and Bond (2009) analyzed 1,549 surveys from

across the United States. Researchers were interested in questions related to production practices, preferences regarding location attributes, intrinsic/extrinsic produce attributes, and marketing methods. Results indicate that producers should emphasize product attributes concerning quality, availability, nutrition, and localness to increase farmers' market attendance and loyalty. Consumers respond best to booth displays, magazine ads, and electronic newsletters. In order to attract new customers, producers should set up in convenient venues, display a variety of colorful options, and enhance the "aesthetic appeal" of market locations

Several studies show that consumer demographics are also likely to influence how often someone attends a farmers' market. First, Lawrence et al. (2018) invited residents of Walton County, Georgia to complete a questionnaire and receive an ID number to track their market attendance, how much financial support was received, and how they learned about the market. Flyer distribution and word of mouth proved most effective to elicit market attendance. Households with above-average income attended the market more than households with below-average incomes. Increased market attendance was found in households where older, females with higher incomes were registering the household for the market. Attendance was also more frequent if the household had a Medicare or social security beneficiary. Furthermore, Adams & Adams (2011) surveyed patrons of two Florida farmers' markets. Researchers used a two-stage cluster analysis to identify three clusters of farmers' market patrons. Individuals in Cluster 1 are younger and less experienced shoppers. Their willingness to pay is lower and they offer less support for local foods. Cluster 2, meanwhile, is made up of wealthier individuals. They tend to be highly-educated females who are supportive of local foods, but they possess a

more-restricted definition of what "local" means. Individuals in Cluster 3 are the most-dedicated local shoppers. Although they are less wealthy, they are highly motivated to shop local. Compared to the other clusters, people in Cluster 3 reported that local food was less difficult to access and less costly.

FARMERS' MARKET VS. CONVENTIONAL GROCERY STORES

With many admirable pros and undeniable cons, it is tough to decide whether or not to shop at a farmers' market. Some markets might suffer from lack of proper amenities. Many farmers' markets are not equipped to be a "one-stop" shopping experience. Rather, farmers' markets are typically an extra stop for most consumers. Gumirakiza & VanZee (2017) conducted an online consumer study using Qualtrics. The study focused on online shoppers in the Southern region of the United States. Based on 1,205 responses, approximately 44% of respondents said that the most preferred venue to purchase locally/regionally grown fresh produce was the grocery store. Farmers' markets are the second most preferred market outlets (33%), followed by on-farm programs (7%). The online marketplace is the fourth most preferred venue to purchase locally/regionally grown fresh produce (5%). Murphy (2011) distributed a questionnaire to 252 farmers' market customers and 257 supermarket shoppers in New Zealand. Supermarket consumers said that price, location, and parking were more important at supermarkets than farmers' markets. Farmers' market customers reported that product quality is a key motivator for attending the farmers' market. Murphy (2011) also found that price was not a significant barrier to purchasing or attending a farmers' market.

Wolf, Spittler, & Ahern (2005) profiled produce consumers from San Luis Obispo County, California. They compared profiles of farmers' market shoppers to those who do not attend the farmers' market. Results indicate that farmer's market shoppers are more likely to be female, married, and more likely to have completed post-graduate work. Among both groups of shoppers, age, income, and employment status seem to be similar. Farmers' market consumers value cooking and family meals. Compared to supermarket produce, consumers perceive farmers' market produce to look fresher, taste fresher, be of higher quality, be more reasonably priced, and more likely to be grown locally. Yet, despite all the positive attributes, many consumers do not attend farmers' markets.

Understanding how the dynamics of a direct-to-consumer outlet and a conventional market converge provides researchers, consumers, and government officials with a proper assessment of a community's complete food environment. Lucan et al. (2015) organized a cross-sectional assessment that evaluated the contribution that the farmers' markets of Bronx County, New York could make to the urban food environment. Researchers assessed accessibility, variety, quality, and price of 26 farmers' markets and 44 stores. The average distance between a farmers' market and a grocery store was 0.15 miles. On average, farmers' markets offered 26.4 fewer fresh produce items than nearby stores. Farmers' market produce was more likely to be local and organic but was less likely to be of exotic varieties. On average, farmers' markets were more expensive. Lastly, approximately 32.8% of items at the farmers' markets were refined or processed products (jams, donuts, cookies, etc.). Valpiani et al. (2016) compared prices of 11 fruits and vegetables across 29 North Carolina market channels. The market outlets of question included farmers' markets, roadside stands, and

supermarkets. Farmers' markets with fewer vendors (<20) had lower prices compared to larger markets. Three fruits and one vegetable were cheaper at the direct-to-consumer outlet. On average, several items were larger at direct-retail outlets. Although four vegetables were cheaper at a supermarket, the majority of fruits and vegetables studied did not show significant price differences between supermarkets and direct-to-consumer outlets.

METHODOLOGY

Data Collection

This research study uses data collected from a mail survey that was distributed to a stratified random sample of 2,530 households in the South-Central Kentucky region. Based on the United States Census Bureau's 2014-2018 statistics, there are approximately 183,031 households in this region. The sixteen counties that were targeted include Adair, Cumberland, Grayson, Hardin, Larue, Edmonson, Butler, Warren, Barren, Allen, Monroe, Simpson, Logan, Todd, Green, and Metcalfe. Each of the counties is considered a stratum. A database of consumer names and their respective mailing addresses were purchased from a third-party company called InfoGroup. InfoGroup is a firm that specializes in large direct-mailing campaigns. With 172 responses, the response rate was 6.8%.

The survey has many questions of various formats (See Appendix 1). There are also questions regarding consumer characteristics including age, income, education, gender, ethnicity, and among others. These will be used as independent variables, along with market features/attributes. Questions about market features and attributes included

the hours of operation, amenities, events, location/distance, and availability of fresh produce.

Model Specification

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). Overall, three types of regression models were used: a Multinomial Logit Model, Ordered Logit Model, and Multiple Linear Model. First, a Multinomial Logit regression is used to estimate relative probabilities for reasons *not* to attend farmers' markets in unordered arrangement. Then, we use Ordered Logit to analyze the reasons for subscribing to a CSA, broken down by the different levels of habit. The Logit regressions are choice models and exercise maximum likelihood estimation; which chooses coefficient estimates that maximizes the likelihood that an outcome will occur (Katchova, 2013d).The Multiple Linear regression is used to analyze the factors that impact a consumer's willingness to purchase for fresh produce items. The foundation of these choice models rests in the random utility maximization framework. It is assumed that individual *i* will choose the alternative that gives them the highest utility (satisfaction) among *J* alternatives. The utility equation takes the form of

1) $U_{ij} = X_{ij} + \varepsilon_{ij}$ for $i = 1 \ldots I$ and $j = 1 \ldots J$

The deterministic component of the utility is represented by X_{ij} and ε_{ij} is the random component of the utility. The model assume that the random component is independently and normally distributed.

The indirect utility U_{ij}^{*} for individual *i* choosing an alternative *j* is

2) $U_{ij}^{*} = \beta' X_{ij} + \mu_{ij}$ for $i = 1...I$ *and* $j = 1...J$

In (2) equation, X_{ij} is a vector of K characteristics of the chooser and market attributes. The parameter vector β is to be estimated and differs across the alternatives (reasons). The μ_{ij} is the disturbance caused by unobserved factors.

Multinomial Logit

In the Multinomial Logit Model, the β's 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.

The equation below illustrates the probability that individual i will select alternative j:

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

There are j sets of marginal effects for both the alternative-specific and case-specific regressors. The marginal effects of each variable on the different alternatives sum up to zero. The marginal effect of a unit increase in a regressor on the probability of selecting j alternative is:

4) $\partial p_{ij}/\partial \boldsymbol{x}_{ik} = p_{ij}\,(\delta_{ijk} - p_{ik})\beta$

where $\delta_{ijk} = 1$ if j=k and 0 otherwise.

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 (Gumirakiza, 2013).

H_0: = $\beta_{jk} = 0 \;\forall\; k = 1\ldots K, j = 1\ldots J$ for K regressors and J alternatives.

H_1: = $\beta_{jk} \neq 0 \; \forall \; k = 1 \ldots K, j = 1 \ldots J$ for K regressors and J alternatives.

Ordered Logit

Like the multinomial logit, 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). The following theoretical models will be used to develop the regression equation and analyze the results.

5) $y_i^* = X\beta + \varepsilon$

6) $y_i = j$ if $\alpha_{j-1} < y_i^* \leq \alpha_j$.

Equation (5) illustrates the basic concept behind an ordered-logit model. Let y* be the latent dependent variable. The X represents a vector of the independent variables, and β is the vector of the regression coefficients that needs to be estimated. If a dependent variable has five options to choose from, there will be four thresholds. In equation (6), α represents those four thresholds.

The equation below illustrates the probability that individual *i* will select alternative *j* to be the first:

7) $p_{ij} = p(y_i = j) = p(\alpha_{j-1} < y^*_i \leq \alpha_j) = F(\alpha_j - X'_i\beta) - F(\alpha_{j-1} - X'_i\beta)$

For any logit model, it is uncommon to interpret the magnitude of a coefficient, (Katchova, 2013c). 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, 2013b). A marginal effect model is shown below:

8) $\partial p / \partial x_j = \Phi(X'\beta)\beta_j$ *(basic model)*

9) $\partial p_{ij} / \partial x_{ri} = \{F'(a_{j-1} - X'_i\beta) - F'(a_j - X'_i\beta)\} * \beta$

The left side of Equation 9 says that an increase in a regressor impacts the probability of selecting alternative *j*.

The null hypothesis is that no relationship exists between chooser characteristics or farmers' market characteristics and the degree of importance consumers assign to each reason. The alternative hypothesis is that there is a statistical relationship between the chooser characteristics or market characteristics and the level of importance consumers assign to each market reason.

H_0: = $\beta_{jk} = 0 \; \forall \; k = 1 \ldots K, j = 1 \ldots J$ for *K* regressors and *J* alternatives

H_1: = $\beta_{jk} \neq 0 \; \forall \; k = 1 \ldots K, j = 1 \ldots J$ for *K* regressors and *J* alternatives

Multiple Linear Regression

In the ordinary least squares model, the dependent variable is a continuous variable. The independent variables can be continuous or discrete (Katchova, 2013a). In this project, many questions regarding consumer demographics had discrete responses (male or female, single or married, etc.) while other questions had continuous responses (a consumer's willingness to pay). The linear regression model describes how the dependent variable is related to the independent variable(s) where β_0 is the constant or intercept term. It indicates the value of Y when X equals zero, while β is the slope

coefficient. The slope represents the amount that Y will change when X increases by one unit. The epsilon symbol *(ε)* is the error term. This term introduces all variation in Y that cannot be explained by the X's (Studenmund, 2010). Other common symbols to represent the error term are the letters u or v.

$$10)\ y = \beta_0 + \beta_i x_j + \varepsilon$$

Equation 11 is the estimated regression equation. This equation shows how to calculate predicted values of the dependent variable using the values of the independent variable(s) (Katchova, 2013c). Note that there is no error term when the model is predicted.

$$11)\ \hat{y} = \beta_0 + \beta_i x_j = x'\beta$$

Equation 12 shows how regression residuals (*ε)* are calculated. They are calculated as the difference between the actual and the predicted values of the dependent variable.

$$12)\ E = y - \hat{y} = y - \beta_0 - \beta i x_j = y - x'\beta$$

The null hypothesis in the multiple linear regression model is that each independent variable has no impact on an individual's willingness to pay for a pound of produce item. The alternative hypothesis is that each independent variable has a significant impact on an individual's willingness to pay for a pound of a produce item (Gumirakiza, 2013).

$H_0: \equiv \beta_{jk} = 0;\ \forall\ k = 1,\ldots K, j = 1,\ldots J$ for K regressors and J alternatives

$H_1: \equiv \beta_{jk} \neq 0;\ \forall\ k = 1,\ldots K, j = 1,\ldots J$ for K regressors and J alternatives

RESULTS

This section will present and discuss four different types of data analysis. First, there will be a review of descriptive statistics for those consumers who reported that they do not attend farmers' markets. Then, the analysis of the multinomial logit and ordered logit regressions. Finally, an examination of how consumer demographics impact a consumer's willingness to pay for various fresh produce items.

Consumer Demographics

Table 1

Variable Name	**Description**	**Mean**
Rural	Rural=1, Small sized City=0	0.63
Male	Male=1, Female=0	0.68
Education	Level of Education; 1=High School, 2=2-year associate's degree, 3=4-year bachelor's degree, 4=graduate degree or higher	2.05
Household	Total number of people in a household	2.5
Citizenship	Citizen=1, Non-citizen=0	1.0
Age Category	Age Category; 1=18-29, 2=30-39, 3=40-49, 4=50-59, 5=60-69, 6=70+	3.9
Married	Married=1, Single=0	.62
Income Category	Income Category; 1=Less than $25,000, 2=$26,000-$50,000, 3=$51,000-$75,000, 4=$76,000-$100,000, 5=$100,000+	2.69
Ethnicity	African-American=1, Asian=2, Hispanic=3, Caucasian=4, Other=5	4.0
PrimaryShopper	Is primary shopper; Yes=1, No=0	0.82
LikelyToSubscribeToCSA	Would join a CSA program; Yes=1, No=0	1.97
CSAAwareness	Knows what a CSA is; Yes=1, No=0	0.21
SatisfactionOverallExp	1=Extremely Dissatisfied, 2=Dissatisfied, 3=Moderately Satisfied, 4=Satisfied, 5= Extremely Satisfied	3.59
SatisfactionPrices	1=Extremely Dissatisfied, 2=Dissatisfied, 3=Moderately Satisfied, 4=Satisfied, 5= Extremely Satisfied	3.35

SatisfactionProduceQual	1=Extremely Dissatisfied, 2=Dissatisfied, 3=Moderately Satisfied, 4=Satisfied, 5= Extremely Satisfied	3.7
SatisfactionHours	1=Extremely Dissatisfied, 2=Dissatisfied, 3=Moderately Satisfied, 4=Satisfied, 5= Extremely Satisfied	2.88
SatisfactionSocialInteract	1=Extremely Dissatisfied, 2=Dissatisfied, 3=Moderately Satisfied, 4=Satisfied, 5= Extremely Satisfied	3.1

Results indicate that 63% of respondents that never attend farmers markets live in a rural setting. Approximately 68% of respondents in this category are male and 62% are married. The average respondent has a 2-year associate's degree and falls into the third age category (40-49). There is an average of 2.5 people per household. All respondents in this category reported that they held citizenship status. On average, these consumers selected the second income level ($26,000-$50,000) and everyone in this category was in the fourth category for ethnicity (Caucasian). Approximately 82% are their household's primary shopper and only 21% know what a CSA program is. On average, after reading the definition of a CSA, respondents were somewhat likely to subscribe to a CSA program.

Responses indicate that this group of consumers are moderately satisfied with four of the five market attributes that were analyzed. Produce quality scored highest, while satisfaction with social interaction scored lowest. However, they were slightly dissatisfied with their local market's hours of operation.

Multinomial Logit

This study used a multinomial logit to estimate the impact of consumer demographics on the different habits of attendance. The three habits of consumer

attendance were Never Attend, Occasionally Attend (1-3 visits), and Frequently Attend (4-7+ visits). Multinomial logits are estimated relative to a referent category. For this study, the base/reference category in this study was Never Attend.

Standard interpretation of the multinomial logit is that for an increase in the independent variable, the probability that dependent variable equals 1 increases or decreases, given that other variables in the model are held constant. However, due to the non-linear nature of the logit model, we often analyze the marginal effects instead. The regression coefficients are beneficial in indicating the sign and significance of the variable, but not the magnitude. A positive coefficient increases the likelihood of an individual never attending and a negative coefficient indicates a decrease in the likelihood of a respondent never attending. Table 2 displays the multinomial logit regression coefficients.

Table 2: Multinomial Regression Output

Variables	**Occasionally__1_3_visits_**	**Frequently__4_7_visits_**
Rural	-0.287	-0.0194
	(0.477)	(0.463)
Household#	-0.132	-0.0397
	(0.224)	(0.190)
Citizenship	1.050	1.631
	(1.014)	(1.189)
Male	1.023**	0.0802
	(0.506)	(0.520)
Respondents' Age Categories	0.238	0.0844
	(0.194)	(0.156)
Married	-0.0887	0.749
	(0.632)	(0.562)
Education	0.148	0.361*
	(0.246)	(0.216)

Respondents' Income Categories	0.0781	-0.0884
	(0.222)	(0.213)
Consumer Ethnicity	0.606*	1.307
	(0.348)	(0.913)
PrimaryShopper	-1.192**	-0.570
	(0.521)	(0.649)
SatisfactionOverallExp	-0.267	0.992*
	(0.513)	(0.536)
SatisfactionPrices	0.0356	-0.437
	(0.364)	(0.427)
SatisfactionProduceQual	0.625*	0.0612
	(0.385)	(0.405)
SatisfactionHours	0.388	0.304
	(0.330)	(0.290)
CSAAwareness	0.481	0.583
	(0.519)	(0.539)
SatisfactionSocialInteract	-0.581*	0.265
	(0.406)	(0.368)
ActualSpentPerMonth	0.0107**	0.00774
	(0.00439)	(0.00741)
SupportFarmers	0.256	0.150
	(0.271)	(0.234)
InterestinUsingApptoBuy	0.389**	0.0467
	(0.165)	(0.163)
Constant	-7.799**	-14.08***
	(3.607)	(4.538)
Observations	172	172

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2.1 displays the marginal effects of each variable for each of the three habits of attendance. Results indicate that respective relative probabilities of the three habits are 62.3%, 20.3%, and 17.3%. When comparing Occasionally Attend relative to Never Attend, a total of six variables were significant. Four of the variables were consumer characteristics while the other two variables were market features. A consumer's gender (Male), primary shopper status, monthly spending on fresh produce, interest in using a mobile app to purchase fresh produce, produce quality and market-

stimulated social interaction were all significant. The marginal probabilities were .1631, .2007, .0015, .0615, .0993, and .1035, respectively. When comparing Frequently Attend relative to Never Attend, consumer education and the consumer's overall satisfaction with past farmers market experiences were significant. The probabilities were .0463 and .1510, respectively. An example interpretation is, as consumers spend one additional dollar per month of fresh produce, the probability of choosing to never attend a farmers market decreases by 0.22%.

Table 2.1: Marginal Effects of Independent Variables

Variable	Y=Pr(Never Attend)=62.3%	Y=Pr(Occasionally Attend)=20.3%	Y=Pr(Frequently Attend)=17.3%
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
Primary Shopper	**0.2274****	**-0.2007***	-0.0266
SatisfactionOveralExp	-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
ActualSpendingFP	**-0.0022***	**0.0015*****	0.0007
Support Farmers	-0.0486	0.0362	0.0124
InterestinUsingApp	**-0.0545***	**0.0615****	-0.0070

Ordered Logit

The survey provided respondents with a definition of a CSA (See Appendix I). The habits of interest were coded in Microsoft Excel as 1= Less Likely, 2=Somewhat Likely, 3= Very Likely, and 4= Extremely Likely. Then, an ordered logit model was used to estimate the relationship between consumer characteristics, market features, and what level of interest that respondent would have in joining a CSA program. By using an ordered model, we have to assume that the observed outcome is always increasing by the value of the latent variable. That is, as the value of the latent variable increases, the outcome should never go down in rank order. Therefore, we look to the "cuts" in the table to see at what values the threshold variable would cause the outcome to change (Tan, 2018).

Note that in the regression output table, the dependent variable is "Less Likely." Results indicate that three independent variables were statistically significant. However, as previously stated, the magnitude of the regression coefficients is not explicitly analyzed. Rather, the marginal effects will be used for analysis.

Table 3: Ordered Logit Output

Variables	LikelyToSubscribeToCSA
Rural	-0.668*
	(0.389)
Household#	0.293**
	(0.128)
Citizenship	-0.452
	(0.835)
Male	-0.169
	(0.435)
Respondents' Age Categories	-0.234

	(0.154)
Married	0.395
	(0.456)
Education	-0.127
	(0.191)
Respondents' Income Categories	-0.0120
	(0.162)
Consumer Ethnicity	-0.0759
	(0.333)
PrimaryShopper	0.716
	(0.547)
SatisfactionOverallExp	0.269
	(0.351)
SatisfactionPrices	0.274
	(0.252)
SatisfactionProduceQual	0.0556
	(0.325)
SatisfactionHours	-0.176
	(0.270)
SatisfactionSocialInteract	0.197
	(0.300)
Actual	-0.000152
	(0.00336)
SupportFarmers	-0.172
	(0.202)
InterestinUsingApptoBuy	0.530***
	(0.148)
/cut1	1.134
	(2.760)
/cut2	2.675
	(2.810)
/cut3	3.970
	(2.803)
Observations	152

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3.1 shows respective marginal probabilities of the variables. 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%. Table 3.1 illustrates that no variable from the model was significant in determining the probability that a consumer would be somewhat likely to subscribe to a CSA.

Table 3.1: Marginal Effects of Significant Variables

Variable	Y=Pr(Less Likely)= 35%	Y=Pr(Somewhat Likely)= 37%	Y=Pr(Very Likely)=19%	Y=Pr(Extremely Likely)=10%
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
Primary Shopper	-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	0	0
Support Farmers	0.0390	-0.0039	-0.0198	-0.0153
InterestinUsingApp	**-0.1203*****	0.0120	**0.0610*****	**0.0472*****

The same three variables that were significant in the less likely habit are also significant in the very likely and extremely likely habits. An example interpretation of these results would be that as a respondent's interest in using an app to purchase produce

increases by one unit, the probability of them being extremely likely to subscribe to a CSA increases by 4.72%.

Willingness to Pay

The same factors evaluated in the logit regressions were also used in a linear regression model to measure their degree of impact on a consumer's willingness to pay for one pound of a locally grown produce item. This open-ended question asked respondents to write-in the amount they would be willing to pay for one pound for four *locally* grown produce items. The produce items of question were tomatoes, peaches, green beans, and green peppers. On average, respondents were willing to pay $1.50 per pound for tomatoes, $2.39 per pound for peaches, $1.65 per pound of green beans, and $1.48 per pound of green peppers. Since this model is linear, the regression coefficients will be directly analyzed. Table 4 states the model's output.

Table 4: Linear Regression Output

Variables	WTPTomat	WTPPeac	WTPGB	WTPGreenPep
Market Attendance Frequency	0.0423	0.0747	-0.0200	0.0811
	(0.0739)	(0.103)	(0.0657)	(0.0751)
Rural	0.141	-0.00324	-0.0438	0.00475
	(0.142)	(0.198)	(0.123)	(0.136)
Household#	0.0244	-0.0230	0.0846	0.0119
	(0.0532)	(0.0737)	(0.0821)	(0.0498)
Citizenship	0.287	1.436	0.487	0.223
	(0.497)	(1.001)	(0.610)	(0.187)
Male	-0.110	-0.0500	-0.131	-0.138
	(0.115)	(0.160)	(0.120)	(0.113)
Respondents' Age Categories	-0.0212	-0.0937	-0.0323	**-0.0833****
	(0.0451)	(0.0626)	(0.0580)	(0.0402)
Married	**-0.366***	0.107	-0.147	0.0248
	(0.187)	(0.222)	(0.166)	(0.131)
Education	**0.187****	0.157	**0.165****	**0.115***

	(0.0849)	(0.109)	(0.0692)	(0.0657)
Respondents' Income Categories	-0.00116	0.0191	0.0319	0.000639
	(0.0466)	(0.0733)	(0.0462)	(0.0523)
Consumer Ethnicity	0.0662	0.264	0.0983	0.0207
	(0.0876)	(0.219)	(0.101)	(0.0830)
PrimaryShopper	-0.0603	-0.191	-0.0316	-0.00689
	(0.147)	(0.183)	(0.142)	(0.136)
SatisfactionOverallExp	-0.00329	-0.170	0.0521	-0.0898
	(0.0872)	(0.108)	(0.103)	(0.0744)
SatisfactionPrices	0.00922	-0.0616	-0.0510	-0.00381
	(0.0723)	(0.108)	(0.0760)	(0.0720)
SatisfactionProduceQual	0.0545	**0.398*** **	0.0409	-0.00326
	(0.104)	(0.147)	(0.0951)	(0.0891)
SatisfactionHours	-0.0360	-0.0683	-0.0498	0.0511
	(0.0801)	(0.106)	(0.0592)	(0.0866)
CSAAwareness	0.231	0.160	0.119	0.166
	(0.142)	(0.215)	(0.124)	(0.153)
SatisfactionSocialInteract	-0.134	-0.197	0.00334	-0.0233
	(0.135)	(0.149)	(0.0894)	(0.0944)
Actual	0.00106	0.000614	-0.000531	0.000188
	(0.00112)	(0.00133)	(0.000624)	(0.000796)
SupportFarmers	-0.0902	-0.162	-0.0786	-0.104
	(0.0656)	(0.114)	(0.0598)	(0.0724)
InterestinUsingApptoBuy	-0.0132	-0.0108	-0.0690	-0.0116
	(0.0336)	(0.0585)	(0.0433)	(0.0466)
Constant	1.154	0.224	0.639	1.536**
	(0.913)	(1.854)	(1.065)	(0.617)
Observations	108	103	103	103
R-squared	0.250	0.299	0.235	0.193

Education was found to be significant in the regressions analyzing the willingness to pay for tomatoes, green beans, and green peppers. The education coefficients are 0.187, 0.165, and 0.115, respectively. Education was the *only* statistically significant factor when analyzing the willingness to pay for a pound of green beans. Aside from education, the regression for tomatoes found that if a consumer was married, compared to being not married, their willingness to pay for a pound of tomatoes was expected to decrease by $0.366.

The regression that modeled the willingness to pay for a pound of locally grown green peppers found that a respondent's age was also significant in determining a consumer's willingness to pay. As respondents move from one age category to another (Ex: moving from 18-29 to 30-39) they're expected to decrease spending by $.0833 per pound. A consumer's satisfaction with their local market's produce quality was the only significant in determining a consumer's willingness to pay for a pound of peaches. Therefore, as a consumer's satisfaction with produce quality increases by one unit, their willingness to pay for a pound of peaches increases by $0.398.

Finally, the software used existing data to predict the average price per pound a consumer would be willing to pay for each of the surveyed produce items. When predicted and actual values are closer together, it is an indication that the right model was used for analysis. The predicted price per pound was $1.52 for tomatoes, $2.35 for peaches, $1.62 for green beans, and $1.44 for green peppers. Within each category, there is less than a five cent difference between the actual averages and predicted averages. Based on these results, the correct model was used.

DISCUSSION

The average consumer that does not attend a farmers market is most likely to be a married, Caucasian male who lives in a rural location and has a 2-year associate's degree. A majority of these non-attendants are the primary shopper of their household. Few of these consumers (21%) knew what a CSA program was 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.

Three of the four significant variables from the "Never Attend" habit decreased the probability that a consumer would choose to not attend a farmers' market. Four of the six significant variables from the multinomial logit regression had a positive impact on attending a farmers market occasionally, compared to never attending. A consumer's primary shopper status had a negative impact on shopping at a farmers market. Unlike in previous studies (Adams & 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. Perhaps primary shoppers are more appreciative and receptive to the convenience and variety offered by traditional supermarkets, such as Ritter et al. (2019), Wetherill & Gray (2015), and Alonso and O'Neill (2011) found. In order to transition consumers from never attending to occasionally attending, local agriculture personnel and farmers market managers should strive to transfer the farmers' market platform to a mobile app and increase product variety in order to make the market more of a "one-stop" shopping space.

The multinomial logit found that two variables had a positive impact on attending a farmers market very frequently, compared to never attending at all. It is natural to observe that as a consumer's satisfaction with the market improves, they're likely to frequent the market more often. The model 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; Adams & Adams, 2011; Wolf, Spittler, & Ahern, 2005).

The ordered logit model found that two variables, interest in a mobile app and household number, have a positive relationship in increasing a consumer's likelihood of subscribing to a CSA. The model also found that the consumer's geography had a negative relationship with a consumer's likelihood of obtaining a CSA subscription. 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 are similar to those found in the previous literature (Farmer et al, 2017; Lucan et al, 2015).

An OLS regression indicated that different factors impacted a consumer's willingness to pay for a different fresh produce item. For example, a respondent's age was a significant variable when determining their willingness to pay less for a pound of fresh, local green peppers. This is opposite from what was found by Adams & Adams (2011). That study found that the younger a consumer was, the less they were willing to pay for fresh produce. Unlike Giampietri et al. (2016), which found that consumers valued direct contact with the producers and contributing to the farm's income, the support for a farmer was not a significant factor when analyzing a consumer's willingness to pay for fresh produce.

This study was limited by the fact that it only surveyed consumers from sixteen Kentucky counties. Due to the small region, there are likely to be differences among respondents in other regions of Kentucky and the entire Southeastern region of the United States. There are also some limits related to the methods of survey distribution. Mail

surveys can have low response rates and administration errors. Mail surveys are also ineffectual for certain groups of adults such as those who are disabled and those who have language barriers or are marginally literate (National Public Research, 2017).

Overall, the results of this study indicates that we should accept all alternative hypothesis that were previously stated. All models and regressions were shown to have statistically significant results. 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 is the goal of every farmers market but 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 not to attend the market. For producers who manage a CSA program, we recommend targeting urban consumers who have an increased number of individuals in the house. They should also find ways to put their CSA purchasing and processing online, specifically on mobile apps. By following these recommendations, as they are directed by the results of this study, direct-to-consumer market outlets should experience growth as the local food movement continues to thrive.

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APPENDIX A

1. Are you the primary grocery shopper in your household?

- Yes
- No

2. When shopping for fresh produce (vegetable and/or fruits), please rate the importance of the following characteristics from 1 to 5. (1 being the most and 5 being the least):

_____ Price
_____ Brand
_____ Preferred seller
_____ Quality of produce
_____ Origin of produce

3. If you usually shop at a conventional grocery store, which of the following places do you shop the most?

- Walmart
- Kroger
- Dollar General
- Save-a-Lot
- Meijer
- Aldi
- Other (please specify) _____

4. How often do you attend farmers' markets?

- Never attend
- Occasionally (1-3 visits)
- Frequently (4-7 visits)
- Very frequently (8+ visits)

Skip to #7 if you did not answer "Never attend"

5. If you have never attended a farmers' market, please indicate ONE primary reason for not attending:

- I am not aware of their existence in my area
- I don't know what a farmers' market is
- Inconvenience (hours of operation, limited parking, long distance, do not like the location)

6. If your primary reason is "Inconvenience", please indicate your rank your concerns (1 being the most and 5 being the least)

_____ Days and Hours of Operation
_____ Not attractive (lack of amenities, events, etc)
_____ Don't like the location (limited parking space, small...)
__ ____ Because it's not a full-service grocery store
_____ Other (please specify) _____

7. Based on your experience at the farmers' market you last attended, what is your level of satisfaction with the following?

	Extremely dissatisfied	Slightly dissatisfied	Satisfied	Very satisfied	Extremely satisfied
Overall Experience	○	○	○	○	○
Parking Space	○	○	○	○	○
Quality of the produce	○	○	○	○	○
Price level (higher or lower)	○	○	○	○	○
Conducive for social interactions and/or entertainment	○	○	○	○	○
Location of the market	○	○	○	○	○
Hours of operations	○	○	○	○	○

8. Online shopping is increasing its popularity even for groceries, please indicate your level of interest regarding purchasing produce online or through a mobile app:

- Extremely interested
- Very interested
- Moderately interested
- Slightly interested
- Not interested at all

9. Do you know what a CSA program is?

- Yes
- No
- I am already a CSA subscriber/participant

10. On average, how much money do you spend MONTHLY on locally grown fruits/vegetables?

_____

11. On average, how much money do you (or would you like to) spend per visit at the farmers' market?

_____

12. Which of the following market types is you MOST PREFERRED when purchasing fresh, local produce?

- Farmers' markets
- Community supported agriculture programs
- On-Farm (road-side stands, pick your own, agritourism)
- Online shopping
- Grocery stores (Please check this ONLY IF YOU READ LABELS to make sure the produce is grown locally and is fresh)
- None (You do not buy local food products)

13. Please indicate the level of your interests in the following market options for locally grown fresh produce.

	Extremely interested	Very interested	Moderately interested	Slightly interested	Not interested at all
Shop at Farmers' Markets in my community	○	○	○	○	○
Community Supported Agriculture (CSA) program	○	○	○	○	○
On-Farm and/or U-Pick your own fresh produce	○	○	○	○	○
Agritourism	○	○	○	○	○
Roadside stand	○	○	○	○	○

14. On a scale of 1-5; 1 being most preferred and 5 being the least preferred, please rank the following reasons for you to attend (or would attend) direct-to-consumer market outlets for locally/regionally grown fresh produce.

_____ Support local farmers
_____ Availability of fresh fruits/vegetables
_____ Social interactions with my friends and/or relatives
_____ Outdoor/entertaining market outlet
_____ Other (Please specify) _____

15. Imagine shopping for Grapes where the following are three types with attributes, and prices. Which option would you purchase?

- Option A: Green Grapes, $2.09 per pound
- Option B: Black Grapes, $2.18 per pound
- Option C: Red Grapes, $2.00 per pound
- None of the above

16. Please look at the following options and indicate which one you would purchase?

- Option A: Green Seedless LOCAL grapes, Sold ONLINE at $1.98 per pound
- Option B: Green Seedless LOCAL Grapes, sold OFFLINE (at any direct-to-consumer market outlet) at $1.98 per pound
- None of the above

17. Imagine shopping for locally grown fresh tomatoes directly from a local farmer. The following are three types with attributes and prices. Which option would you purchase?

- Green Tomatoes, $2.09 per pound
- Red Tomatoes at $2.00 per pound
- Yellow Tomatoes at $2.19/pound
- None of the above

18. Please indicate which of the following options you would purchase:

- Option A: Red LOCAL tomatoes, Sold ONLINE at $1.97 per pound
- Option B: Red LOCAL tomatoes, sold OFFLINE (at any direct-to-consumer market outlet) at $1.97 per pound
- None of the above

19. How much money would you be willing to pay (WTP) for one pound of the following products if they are LOCALLY GROWN? Please refer to the average prices. Please be realistic so that the amount of money you indicate reflects the value you attach to a pound of that specific product. Pretend that you are actually buying that product.

- Green Beans (Note: The average market price is $1.50 per pound) $_____
- Tomatoes (Note: The average market price is $1.25 per pound) $_____
- Peaches (Note: The average market price is $2.25 per pound) $_____
- Green pepper (Note: The average market price is $1.50 per pound) $_____

20. Community Supported Agriculture (CSA) is a membership program in which a local farmer offers consumers a certain number of "shares" of a weekly box/basket of fresh produce. A CSA consists of a community of individuals who pledge to support a farm operation so that it becomes the community's farm. The growers and consumers provide mutual support and share risks and

benefits of food production. Typically, the payment is made early in the season, but some farmers accept weekly or monthly payments. How likely are you to consider subscribing to a CSA program?

- Extremely likely
- Very likely
- Somewhat likely
- Less likely

21. The location you live in is considered as:

- Rural
- Small or mid-sized city (a town of more than 5,000 people)

22. Do you participate in any of the food-related government benefits (WIC, SNAP, Senior Nutrition Program)

- Yes
- No

23. How many people are in your household?

_____

24. What is your citizenship status?

- Citizen
- Permanent resident (with a Form I-551)
- Visa Status

25. What is your gender?

- Male
- Female

26. Which of the following age category do you belong in?

- 18 - 29
- 30 - 39
- 40 - 49
- 50 - 59
- 60 - 69
- 70 or older

27. What is your marital status?

- Married
- Single

28. What is the highest degree or level of education that you have completed?

- High school
- 2-year associates degree
- 4-year college degree
- Graduate degree or higher

29. What was your total household income before taxes in 2018?

- Less than $25,000
- $26,000-$50,000
- $51,000-$75,000
- $76,000-$100,000
- $100,000+

30. What is your ethnicity?

- African-American
- Asian
- Hispanic
- Caucasian
- Other