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Farmers' Market Consumer Preferences for Fresh Produce Attributes: Marketing and Policy Implications

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This study assesses farmers' market consumer preferences for fresh produce appearance, experience, credence, and pricing attributes through in-person survey data collected at farmers' markets. Results indicate experience attributes are most important to consumers, illustrating the extreme importance of product quality. Experience attributes were preferred by consumers with food safety and diet/health concerns, while credence attributes were preferred by those with strong environmental and food origin concerns. Appearance attributes were favored by older individuals with no environmental or product origin concerns. Target consumers for fresh produce include non-price sensitive, highly educated consumers, who frequent farmers' markets often, and with food safety concerns. Increasing the variety of products available through public assistance programs may improve participant fresh produce consumption.

Key words: consumer preferences, farmers' markets, fresh produce, local, quality

Farmers' markets have become a popular outlet for local, fresh produce and value-added products. The number of farmers' markets in the United States increased by 364% from 1994 to 2014 (U.S. Department of Agriculture-Agricultural Marketing Service (USDA-AMS), 2015), indicating rapidly growing consumer demand and a willingness to attend farmers' markets. Although there are various goods and services available at farmers' markets—including fresh produce, ready-to-eat foods, packaged foods, as well as music and other events—fresh, high-quality produce and interaction with growers attract the majority of consumers (Alonso and O'Neill, 2011; Murphy, 2011). In fact, Gumirakiza et al. (2014) found that consumer motivations for farmers' market attendance primarily center on purchasing fresh produce, followed by social interactions.

Fresh produce may seem straightforward, but this category actually exhibits many differentiating features based on production methods (such as conventional, pesticide-free, eco-friendly, or organic), place or farm of origin, freshness, variety or cultivar, taste, and appearance (such as size, texture, shape, or color), as well as sales venue and price. Previous studies have examined consumer demand for fresh produce in general (Rickard et al., 2011; Keeling-Bond et al., 2009; Akpinar et al., 2009; Govindasamy et al., 2006),

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but not its specific attributes, while others have focused on consumer willingness to purchase and pay for certain fresh produce items with an emphasis on local origin (Brown, 2003; Darby at al., 2008) or on organic or natural production methods (Roig et al., 2000; Huang and Lin, 2007; Bernard and Bernard, 2010; Lin et al., 2009; Henryks et al., 2014). Additional studies compare consumer attributes and purchase preferences between local and organic fresh produce (Curtis and Cowee, 2011; Jefferson-Moore et al., 2014).

The majority of previous studies have focused primarily on origin and production method differences. One exception is a study by Bond et al. (2008), in which U.S. consumer preference for fresh produce public and private attributes, based on a nation-wide survey conducted in 2006, were examined to identify target market segments. The current study extends the analysis to examine direct market consumer preferences for a number of fresh produce attributes grouped into four sets: appearance attributes, experience attributes, credence attributes, and pricing attributes. Data were collected through in-person consumer surveys conducted at farmers' markets in the Intermountain West from 2009 to 2011. An ordered logistic model was used to analyze the importance that farmers' market consumers place on various fresh produce attributes. Purchase probabilities associated with each attribute were estimated, as well as the consumer characteristics that influence these probabilities.

Understanding the product attributes that encourage consumer spending and consumption of fresh produce is important for developing effective direct-marketing strategies and policy options. For example, policy makers might use study results to more effectively implement local food promotional and labeling programs or implement and expand federal programs aimed at increasing fresh produce consumption. Fresh produce growers can use study results to target specific consumer types in order to increase revenues through direct market outlets.

Literature Overview

Consumers' demands and willingness to pay for fresh produce exhibiting credence attributes, such as organic production methods or local origin, have steadily increased over the last two decades. Consumer preferences for organic produce are well documented in the literature. Moser et al. (2011) conducted a summary of selected studies, concluding that regular consumers of organic produce were willing to pay a premium of 17–67% for organic fruit and 13–37% for organic vegetables, while occasional consumers would accept premiums of 3–16% for organic fresh produce. Roig et al. (2000) found that environmental attributes are more important in fresh and

perishable products and consumers were willing to pay a higher premium for organic fresh produce.

Garmon et al. (2007) used Nielsen Homescan data from 2001 and 2004 to analyze consumer purchase patterns of fresh organic produce and found that Asian- and African-Americans tend to purchase organic over conventional produce more often than Whites and Hispanics. Additionally, residents in the western United States spent more on organic produce per capita than those residing in other regions.

Food safety is one of the primary documented reasons why consumers prefer organic produce. Curtis and Cowee (2011) and Loureiro and Hine (2002) found in their studies of willingness-to-pay for organic produce that organic consumers were concerned about food safety. Likewise, Gifford and Bernard (2004) reported that people who were concerned about the safety of their food (in terms of health risks associated with pesticide use) were more likely to be organic food shoppers. Huang (1996) used a two-equation bivariate logistic model to analyze consumer preferences and attitudes toward organically grown produce and found that consumers who were concerned about the use of pesticides prefer organically grown produce. These studies suggest clear evidence establishing a link between food safety concerns and organic purchase propensity.

Consumer interest in locally grown fresh produce has also been the subject of a number of academic studies. Previous research reports that consumers are willing to pay significant premiums for local produce. For example, Carpio and Isengildina-Massa (2009) used a contingent valuation framework to evaluate South Carolina consumers' willingness to pay for "locally grown" produce and animal products and to identify the socio-demographic characteristics affecting consumer preferences for these characteristics. Premiums were high for local produce; age, gender, income, perceived product quality, a desire to support the local economy, patronage of farmers' markets, and consumer ties to agriculture influenced respondents. Gumirakiza (2014) applied a conditional logistic model to data collected at farmers' markets in Nevada and Utah and reported that consumers were willing to pay the highest premiums for local, conventionally grown produce.

However, increased demand for locally grown foods has been linked to consumer perceptions that local foods are of higher quality in terms of taste and freshness, both of which are experience attributes (Glanz et al., 1998). For example, Darby et al. (2008) used stated preference data from a choice-based conjoint survey instrument and found that demand for locally produced foods exists, is dependent on attributes such as freshness, and is associated with "less corporate" production and marketing methods. Brown (2003) gathered information from the primary food buyer in random households in southeast Missouri to analyze consumer preferences for locally grown food. He found that, when purchasing produce, most consumers perceived local produce at farmers'

markets to be of higher quality and lower price. He suggested that marketing local products should stress quality, freshness, and price competitiveness,

Keeling-Bond et al. (2009) used a multinomial logit model to analyze a national dataset of consumers. They reported that public attributes—such as supporting local agriculture/business and promoting environmentally friendly products—and private attributes—such as superior quality, freshness, and safety—influenced consumers with a higher propensity to purchase locally produced goods.

Data Description

This study uses data collected through in-person consumer surveys conducted at farmers' markets in Nevada and Utah from 2009 to 2011. A total of 1,488 complete responses were collected. Just over half (819) of the surveys were completed at four farmers' markets in summer 2011 in Utah. The remainder, 669, were completed at 11 farmers' markets across Nevada in 2009. The survey locations were randomly chosen and every third person entering or leaving the market was asked to complete the survey. Data was collected six times at each market location: twice during the early season (May and June), twice midseason (July and August), and twice during the late season (September and October). Following procedures used by Pascucci et al. (2011), data collectors approached attendees, introduced themselves, explained the purpose of the survey, and asked them to take the survey. No gift or other incentive was offered to participants for completing the survey. A small booth with chairs and a covered awning was used as a staging area at each market.

The survey included a number of questions relating to consumer socio-economic and demographic characteristics, attitudes and lifestyle, preferences for fresh produce attributes, and farmers' market attributes. Survey questions regarding consumer socio-economic and demographic characteristics included age, gender, marital status, educational level, annual household income, and state of residence. The average respondent was 42 years old and had some college education. The sample included 66% females, and 62% of the sample was married. Just over half (55%) of the respondents were from Utah, with the rest from Nevada. All survey sample statistics are provided in Table 1 and relevant survey questions are presented in the Appendix.

Table 1: Sample Descriptive Statistics

Variable Name	Description	Mean (SD)
Pricing	Importance of product pricing (5 point scale)	3.92 (0.94)
Variety	Importance of product variety (5 point scale)	3.96 (0.92)
Appearance	Importance of product appearance (5 point scale)	4.10 (0.92)
Taste	Importance of product taste (5 point scale)	4.59 (0.64)
Freshness	Importance of product freshness (5 point scale)	4.60 (0.66)
Local	Importance of local production (in-state) (5 point scale)	3.99 (1.08)
Organic	Importance of organic production (5 point scale)	3.60 (1.19)
Farm origin	Importance of farm origin (5 point scale)	3.55 (1.19)
Age	Respondent age	42 (15)
Visits	Number of farmers' market visits per season	4 to 7
Grocery	Monthly grocery bill	$116 ($74)
Education level	1 = Middle school, 2 = High school, 3 = Some college, 4 = Associates, 5 = BA/BS, 6 = MS/PhD	4.41 (1.33)
Time to prepare meals	5 point scale degree of agreement on having little time to prepare meals	3.54 (0.72)
Food safety concerns	5 point scale degree of agreement on food safety concerns	3.66 (0.70)
Diet/health concerns	5 point scale degree of agreement on health/diet concerns	3.07 (1.22)
Environment impact	5 point scale degree of agreement with purchasing goods with low environmental impact	4.39 (0.81)
Ag-enthusiast	An average of the responses to (1) agricultural open space and (2) supporting local growers is important to me on a 5 point scale	4.38 (0.77)
Food origin	5 point scale degree of importance of product origin	4.16 (0.84)
Vegan	5 point scale degree of agreement on vegetarian/vegan	1.77 (1.18)
CSA	Would join a CSA program; No = 0, Yes = 1	0.44
Home garden	Has a home garden; No = 0, Yes = 1	0.58
WIC	Participates in the WIC program; No = 0, Yes = 1	0.03
Female	Respondents' gender; Male = 0, Female = 1	0.66
Married	Respondents' marital status; Single = 0, Married = 1	0.60
UT	Respondents' residence; Nevada = 0, Utah = 1	0.55
Farmers' market presence attributes	Index variable: average of the responses rated on a 5 point scale	3.55 (0.91)
Farmers' market convenience attributes	Index variable: average of the responses rated on a 5 point scale	4.18 (0.74)

CSA: Community Supported Agriculture; WIC: Women, Infant, and Children; SD: Standard Deviation

Consumer lifestyle and attitude questions included the number of farmers' market visits per season; monthly expenditures on groceries; willingness to participate in a community supported agriculture (CSA) program; participation in the Women, Infant and Children (WIC) program; and involvement in home gardening. About 58% of the

respondents had a home garden and 44% were willing to join a CSA program. Respondents completed four to seven farmers' market visits per season, about one-third to one-half of the potential 14 weekly visits across the season. On average, respondents spent $116 monthly on groceries, independent of household size.

Additional lifestyle and attitude questions covered preferences for cooking and eating at home, concerns about food safety and diet/health, environmental priorities, support for local agriculture and concerns about food origin, and a vegan or vegetarian diet. Respondents demonstrated a clear interest in buying products with low environmental impacts, knowing the origins of the fresh produce they purchase, and supporting agricultural open space and local growers. Consumers at farmers' markets in Nevada and Utah were slightly less concerned about diet/health than they were about food safety, which was a strong concern.

Respondents were asked to indicate the level of importance (on a scale of 1 to 5) of eight product attributes when shopping for fresh produce. The levels were 1 = not important, 2 = slightly important, 3 = somewhat important, 4 = very important, 5 = extremely important. The fresh produce attributes rated included pricing, variety, appearance, taste, freshness, local, organic, and farm origin. On average, consumers attached extreme importance to product freshness and taste. Consumers believed that product appearance, locally grown produce, and product variety are very important in shaping their purchasing decisions. Pricing, organic produce, and farm origin were also important, but less so. There were high standard deviations in the consumer ratings of these attributes, suggesting high degrees of heterogeneity among sample consumers regarding the importance of these attributes.

Consumers' preferences for farmers' market attributes were also included. Respondents were asked to rate farmers' market attributes on a scale of 1 to 5 (1 = not important, 2 = slightly important, 3 = somewhat important, 4 = very important, 5 = extremely important). The attributes related to physical setup and services available at farmers' markets (number of vendors, family/child activities, variety of products, concerts/music, and food/beverage vendors) were condensed into a farmers' market presence attributes index variable. The attributes that make a farmers' market convenient for shoppers (convenient location, hours of operation, and free parking) were condensed into a farmers' market convenience attributes index variable. The most important farmers' market attributes included convenient location, product variety, free parking, hours of operation, number of vendors, and food and beverages. Attributes with lower importance ratings included music/concerts and family/child activities. Overall, each of the two condensed index variables, presence and convenience, are very important for farmers' markets shoppers, with convenience rated slightly higher on average at 4.18.

Conceptual Model

We model the importance that farmers' market consumers place on each of the fresh produce attributes as a function of the characteristics of the respondent. We are interested in understanding which types of consumers are more likely to attach higher levels of importance across the eight fresh produce attributes. Respondents were asked to rank each attribute on a scale of 1 to 5, from not important to extremely important. As a result, an ordered logistic model was deemed appropriate. We refer to Kennedy (2008), who posited that an ordered choice model is preferred for polychotomous dependent variables with a natural order. The model provides a measure of the variable's impact on the chances of a specific product attribute falling into higher levels of importance.

The analysis falls within a random utility framework, where an individual respondent i is faced with J ordered alternatives from which to choose. We assume that the individual will indicate an option that gives him or her the highest utility among the alternatives. In this study, the ordered levels were: 1 not important, 2 somewhat important, 3 important, 4 very important, and 5 extremely important. The utility function takes the form

$$U_{ij} = V_{ij} + \varepsilon_{ij} \text{ for } i = 1, \ldots, I \text{ and } j = 1, \ldots, J, \tag{1}$$

where V_{ij} is the deterministic component of the utility and ε_{ij} is the random component. The analysis assumes that the random component term is an independently and identically distributed (iid) extreme value $F(\varepsilon_{ij})=exp(-exp(-\varepsilon_{ij}))$ such that the logistic model becomes appropriate (Kennedy, 2008). Higher levels of U mean that the respondent feels the specific produce attribute is very important in the purchasing decision and lower levels mean he or she feels it is less important. The indirect utility V_{ij}^{*} for individual i choosing an alternative j (in this case, a given level of importance for specific produce attributes) is

$$V_{ij}^{*} = \beta' X_{ij} + \mu_{ij} \text{ for } i = 1, \ldots, I \text{ and } j = 1, \ldots, J, \tag{2}$$

where X_{ij} is a vector of characteristics of the consumer i, parameter vector β is to be estimated and differs across alternatives, and ε_{ij} is the disturbance that accounts for unobserved factors. In practice, V_{ij}^{*} cannot be observed. We instead observe the response y:

$$y = \begin{cases} 1 \; if \; 0 < V_{ij}^{*} \leq \mu_{1}, \\ 2 \; if \; \mu_{1} < V_{ij}^{*} \leq \mu_{2}, \\ \ldots, \\ J \; if \; \mu_{J-1} < V_{ij}^{*} \leq \mu_{J} \end{cases} \tag{3}$$

whereby the μs are the unknown threshold parameters to be estimated along with the parameter vector β, and j is the number of alternatives of the dependent variable (there are five alternatives in this specific model). The probability (P) that an individual i indicates a given level of importance j among the J ordered alternatives is

$$P_j = \frac{\exp(k_j - \beta' X)}{1 + \exp(k_j - \beta' X)}. \tag{4}$$

This model results in ordered log-odds that provide a measure of the impact that the explanatory variable has on the chances for a specific product attribute to be in the category of higher importance (extremely important) over chances of it falling into categories of lower importance, such as very important, important, somewhat important, and not important.

The null hypothesis is that there is no relationship between consumer characteristics and the degree of importance consumers assign to each of the product attributes. The alternative hypothesis is that there are significant relationships between consumer characteristics and the levels of importance consumers assign to each product attribute. That is

$$H_0 \equiv \beta_{ki} = 0; \forall k = 1,\ldots,K; \; i = 1,\ldots,I \quad \text{and} \quad H_1 \equiv \beta_{ki} \neq 0; \forall k = 1,\ldots,K; \; i = 1,\ldots,I, \tag{5}$$

where i and k denote product attribute and explanatory variable, respectively.

Modeling Results

Results for the utility parameters of the ordered logit models are presented first, followed by the overall predicted probabilities for each of the fresh produce attributes. Lastly, the interpretation and application of both sets of results are discussed.

Estimated Model Coefficients

Table 2 presents coefficients for each of the eight equations corresponding with the eight attributes under consideration. The coefficients can be interpreted as utility parameters—the sign and degree of statistical significance are directly interpretable, but the magnitude of the coefficient is not. Thus, a statistically significant (at the 90% level or better) positive coefficient can be interpreted to indicate that a higher level of the respondent characteristics associated with a higher probability of indicating greater levels of importance for the specific product attribute (while the other variables in the model are held constant). These results are used to identify which produce attributes are most important to specific consumer types.

In Table 2, the produce attributes (other than price) are organized into three categories: appearance attributes, experience attributes, and credence attributes. The appearance attributes include variety and appearance. These attributes are discernible by the shopper without actually consuming the product. Experience attributes, in contrast, are only discernible by consumers upon consuming the product. These attributes include taste and freshness. Finally, the attributes local, organic, and farm origin fall under credence attributes. These produce attributes are distinctly different in that they describe produce features that are not necessarily discernible by either the appearance or through experience. Nevertheless, some consumers may be willing to pay premiums for the knowledge that the produce is organic, locally grown, or grown by a certain farm, even if the product is not significantly different on other attribute measures.

The results show patterns in the types of produce attributes that are reported as relatively more important. The patterns between respondent attributes and ratings of produce attribute importance are discussed below. In addition to the variables describing respondent characteristics, the indices of respondent ratings of the importance of the farmers' market presence and convenience attributes are included as controls. Unsurprisingly, respondents who rate market attributes as more important are also more likely to rate fresh produce attributes as more important in general. Note that all of the coefficients on these variables are positive and all but one are statistically significant.

Table 2: Ordered Logistic Coefficient Estimates

	Appearance Attributes		Experience Attributes		Credence Attributes			Pricing
Respondent Characteristics	Variety	Appearance	Taste	Freshness	Local	Organic	Farm Origin	
Age	0.0078**	0.0106***	-0.0007	0.0015	0.004	-0.0044	-0.0001	-0.0049
Visits	0.027	-0.0805*	0.1153**	0.0645	-0.0117	-0.0558	0.0824*	-0.1291***
Grocery	0.0012	0.001	0.0016*	0.0012	-0.0014*	0.0022***	0	-0.0005
Education level	-0.0578	-0.1487***	-0.0023	-0.0203	-0.0416	0.0089	-0.0699*	-0.1154***
Time to prepare meals	-0.0993**	0.0381	-0.0744	0.0011	0.0022	-0.0293	-0.1245***	0.0444
Food safety concerns	0.1121	0.1091	0.2060**	0.2114***	0.0892	0.3238***	0.0502	0.2585***
Diet/health concerns	0.2074***	0.2839***	0.1790**	0.2830***	-0.0043	0.0153	0.0655	0.0595
Environment impact	0.0452	-0.3005***	-0.0004	0.0715	0.2633***	0.4859***	0.3010***	-0.0275
Ag-enthusiast	0.0678	-0.0203	0.1587	0.1817*	0.6936***	0.0173	0.4342***	0.0548
Food origin	0.0761	0.1032	0.1692*	0.0736	0.1192	0.4441***	0.1653**	-0.115
Vegan	-0.0609	-0.1067**	-0.1470***	-0.2476***	-0.0254	0.2034***	0.0212	-0.0409
CSA	-0.0457	-0.2588**	0.083	-0.0344	0.2298**	0.1456	-0.0095	-0.2266**
Home garden	-0.1898*	-0.1759*	0.0937	-0.071	0.0973	-0.3059***	-0.2236**	-0.2276**
WIC	0.9648***	-0.4711	0.3954	0.8214*	0.2456	0.8416**	0.2343	-0.0525
Female	0.0696	0.4511***	0.2589**	0.3845***	0.3255***	-0.1505	0.0656	0.1109
Married	-0.1019	0.2904***	0.0165	0.1467	0.1013	-0.2114**	-0.1594	0.1847*
Market Indexes								
Presence attributes	1.1608***	0.7684***	0.5583***	0.5197***	0.3636***	0.4866***	0.7026***	0.6730***
Convenience attributes	0.3949***	0.6518***	0.6162***	0.5424***	0.2205***	0.1816**	0.0637	0.6520***
UT	-0.0182	0.1284	-0.0113	0.0622	1.1512***	0.0427	0.2253**	0.1959*
Ancillary Parameters								
Cut1	2.73***	1.45**	1.77**	1.88***	3.93***	4.24***	3.45***	0.1067
Cut2	4.29***	2.70***	2.32***	2.65***	5.02***	5.65***	4.59***	1.81***
Cut3	6.32***	4.51***	4.33***	4.41***	6.45***	7.13***	6.00***	3.92***
Cut4	8.41***	6.62***	6.82***	6.65***	8.15***	8.63***	7.57***	5.74***
c^2	391.31	378.42	226.78	216.66	403.27	432.77	308.57	308

*Significance levels: * = .10 level (10%), ** = .05 level (5%), *** = .01 level (1%).*

Appearance Attributes

Both types of appearance attributes (variety and appearance) are relatively more important to older respondents and to those who are concerned about diet/health. Although it is unclear why older respondents may have these preferences, concerns for diet/health may motivate a desire for greater variety. Home gardeners are relatively less concerned about appearance attributes, possibly due to a lack of interest in variety as they are typically looking to supplement what is grown at home and more likely to be aware that appearance is not necessarily an indicator of quality.

Respondents with higher education levels, concern for the environment, females, and vegetarians were not concerned about product appearance and variety was statistically insignificant, indicating a lack of overall importance of appearance attributes for these consumers.

Experience Attributes

Individuals concerned with food safety and those concerned about diet/health are more likely to rate experience attributes (taste and freshness) as important. Female respondents are also more likely to rate these attributes as important; however, vegetarian respondents are less likely to report taste and freshness as relatively more important.

Credence Attributes

Results for the relative importance of credence attributes are relatively intuitive. For example, credence attributes appear to be most important to individuals concerned about the environmental impact of food production, those who are enthusiastic supporters of agricultural open space and local growers, and those who are concerned about the origins of their food. Vegetarians are more likely to report that "organic" is an important produce attribute. Females are also more likely to rate local origin as important. Interestingly, consumers who spend more on groceries and those who are receiving government assistance from WIC are more likely to rate "organic" as relatively important. Some consumers are less likely to rate credence attributes as important. For example, home gardeners are less likely to rate "organic" or farm origin as important product attributes. Married respondents are also less likely to rate "organic" as relatively important.

Pricing

Finally, results show that consumers vary in the degree to which price is reported as a relatively important attribute. Individuals who are concerned about food safety or are married are more likely to report pricing as an important attribute. However, frequent visitors, highly educated individuals, those involved in community-supported agriculture, and home gardeners appear less concerned about pricing.

Predicted Probabilities

The results shown in Table 3 predict a 67% probability that "product taste" is "extremely important" for a given consumer. This probability is over 70% for "product freshness." No other attribute is predicted to be "extremely important" for a majority of consumers. Moreover, respondents are predicted to rate product taste and product freshness as "very important" or "extremely important" over 95% of the time. In contrast, the model suggests that relatively large portions of consumers can be expected to place the

importance of product variety, appearance, pricing, organic produce, and knowing the grower below the level of "very important."

Results suggest that the primary preferences of farmers' market shoppers are product quality in terms of taste and freshness. This finding supports Brown (2003), who suggested that marketing local products should stress quality and freshness, and Keeling-Bond et al. (2009), who found that most consumers perceive local produce at farmers' markets to be of higher quality and freshness. This result also supports Glanz et al. (1998), who reported that taste was the most important consideration when purchasing produce. These results are also similar to Darby et al. (2008), who found that the importance consumers assign to locally grown produce is lower than that assigned to product freshness. The fact that local produce has a higher probability than organic produce of falling under the "very important" category is consistent with a couple studies (Onozaka et al., 2010; Curtis and Cowee, 2011) in which the number of respondents who favored organic fresh produce was lower than that of locally grown fresh produce. The results in Table 2 show that the likelihood for any product attribute to fall into the "not important" or "somewhat important" ranking is extremely small. The vast majority of consumers who attend farmers' markets believe that all of the features are at least important.

Table 3: Ordered Logistic Probabilities

	Probability Levels				
Product Attribute	**Not Important**	**Somewhat Important**	**Important**	**Very Important**	**Extremely Important**
Pricing	.0088	.0378	.2419	.4270	.2846
Variety	.0087	.0311	.2026	.4783	.2794
Appearance	.0098	.0238	.1434	.4645	.3585
Taste	.0031	.0023	.0333	.2874	.6740
Freshness	.0036	.0041	.0350	.2535	.7038
Local (in-state)	.0236	.0438	.1676	.3950	.3701
Organic	.0381	.1028	.2769	.3470	.2352
Farm origin	.0532	.0975	.2697	.3590	.2207

The results contrast in some ways with results obtained in previous studies. For example, a few studies (Byrne at al., 1991; Dettmann and Dimitri, 2010; and Thompson and Kidwell, 1998) concluded that age, education, and gender are determinates of organic produce demand, but here there is no statistically significant effect for any of these three characteristics on the probability of a higher importance ranking for organic produce. Also, age is not positively (or negatively) associated with greater importance of local origin for produce. However, Brown et al. (2006) and Carpio and Isengildina-Massa (2009) found that age has a positive influence on premiums for local products.

However, the results do correspond closely to those of Loureiro and Hine (2002) and Gifford and Bernard (2004), who found that concerns for food safety and demand for oganic produce were positively correlated. This study's findings are also consistent with Carpio and Isengildina-Massa (2009), who report that 71% of respondents chose South Carolina-grown produce to primarily support local farmers and the local economy, and with the findings of Keeling-Bond et al. (2009), who found that supporting local agriculture influenced consumers with a higher propensity to purchase locally produced goods.

Finally, the results indicate that WIC participants place relatively high importance on product variety, freshness, and organic production. While preferences for organic produce may exist, the willingness to actually purchase organic produce among WIC participants is questionable. Trainer and Gradziel (2013) found that 34.6% of their California WIC respondents felt that organic produce was better for them, but only 2% stated that the WIC program should offer organic food.

Conclusions and Discussion

Previous studies examining consumer preferences for fresh produce have primarily focused on origin and production method differences. This study expands the analysis by examining a slate of fresh produce attributes. An ordered logistic model was employed using data collected from 1,488 consumers at farmers' markets in Nevada and Utah from 2008 to 2011. Eight fresh produce attributes are initially analyzed and then grouped into four attribute categories which include appearance attributes, experience attributes, credence attributes, and pricing attributes.

Results show that the likelihood for any produce attribute to fall into the "not important" or "somewhat important" ranking is extremely small. The vast majority of consumers who attend farmers' markets believe that all of the fresh produce attributes examined are at least important. Experience attributes such as product taste and freshness are the most important and are preferred by females, consumers with strong food safety and diet/health concerns, and those who place a higher importance on farmers' markets attributes.

Appearance attributes were rated second to experience, but were most favored by older respondents and those with diet/health concerns. These consumers were less educated, married, females, lacked a home garden, or had little interest in environmental issues or local foods. While local origin was rated very highly among respondents, credence attributes as a whole were slightly less important than the previously mentioned groups. The results for the three attributes in this category are not as consistent as the other two categories. However, respondents with strong environmental concerns and

those who value local agriculture and open space placed a high importance on these attributes. Additionally, individuals who were unmarried, female, concerned with food origin, or had no home garden were more likely to rate these attributes as more important.

Findings from this study have a number of policy and marketing implications. Marketing strategies targeting agriculture enthusiasts and consumers with environmental, food safety, and diet or health concerns will likely lead to increased sales of fresh produce. Also, grower revenues may be increased by targeting consumers who attend farmers' markets frequently, are highly educated, unmarried, or have food safety concerns as price is less important to them than other farmers' market consumers.

While study results support the continued need for origin and production method labeling and certification programs by both consumers and producers, they point to the importance of the experience the product provides to the consumer above all else. Hence, if product quality, in terms of taste and freshness, are not maintained, the credence aspects of the product, which are less important, won't be able to support continued sales and premium pricing of fresh produce at farmers' markets. Thus, farmers' market managers should implement policies to ensure produce quality, variety, and appearance at their markets. Local produce growers are encouraged to ensure high quality, fresh produce, and to cultivate good relationships with customers. This is especially true for consumers who attend farmers' markets frequently and are very concerned about food origin but do not have a garden themselves.

Finally, the results show that the expansion of public programs, such as the Farmers' Market Nutrition Program, to include additional products may assist the program in achieving its goals of increasing fruit and vegetable consumption among participants. In this study, WIC participants placed a high importance on fresh produce variety and organics.

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Appendix – Relevant Survey Questions

How many visits do you make to farmers' markets on average each summer (May to September)?

- o 1 visit
- o 2-3 visits
- o 4-7 visits
- o 8-12 visits
- o More than 12 visits

How important are the following farmers' market attributes/features?

Farmers' Market Attributes	Not important	Slightly important	Somewhat important	Very important	Extremely important
Concerts/Music	1	2	3	4	5
Free parking	1	2	3	4	5
Hours of operation	1	2	3	4	5
Convenient location	1	2	3	4	5
Number of vendors	1	2	3	4	5
Child/Family activities	1	2	3	4	5
Cultural events	1	2	3	4	5
Educational events	1	2	3	4	5
Certified farmers' market	1	2	3	4	5
Product variety	1	2	3	4	5
Food/beverage vendors	1	2	3	4	5

When making fresh produce purchases, how important are the following product features?

Product Attributes	Not important	Somewhat important	Important	Very important	Extremely important
Product variety	1	2	3	4	5
Product taste	1	2	3	4	5
Product value	1	2	3	4	5
Product appearance	1	2	3	4	5
Produced locally (in-state)	1	2	3	4	5
Specialty item	1	2	3	4	5
Product pricing	1	2	3	4	5
Produced organically	1	2	3	4	5
Product freshness	1	2	3	4	5
Product taste	1	2	3	4	5
Farm origin specified	1	2	3	4	5

Do you participate in any of the following federal nutrition programs? (Check all that apply)

- o WIC (Women, Infant, & Children
- o SNAP (Food stamp program)
- o Senior farmers' market nutrition program

In which of the following activities do you participate or have you participated? (Check all that apply)

- o Composting
- o Home gardening
- o Recycling
- o Food canning/preserving
- o Home beer/wine making
- o 4-H or FFA
- o Master gardener
- o Youth groups
- o CSA program
- o Earth Day

On average, how much do you spend per visit at the farmers' market? _____ dollars per visit

On average, what is your weekly household grocery bill? _____ dollars per week

A CSA (Community Supported Agriculture) is a subscription program where consumers purchase upfront a weekly basket of fresh produce from a local farm for a period of 12-20 months. Would you consider subscribing to a local CSA program?

- o Yes
- o No
- o Need further information _____

Please specify if you agree or disagree with each of the following statements.

Statement	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
I am concerned about the safety of my food	1	2	3	4	5
I have little time to prepare meals	1	2	3	4	5
I am concerned about my health/diet	1	2	3	4	5
I buy products with low environmental impact	1	2	3	4	5
I eat out frequently	1	2	3	4	5
Physical activity is an important part of my routine	1	2	3	4	5
Eating out is an event in my family	1	2	3	4	5
Supporting local farmers is important to me	1	2	3	4	5
Agricultural open space is important to me	1	2	3	4	5
I am concerned about the origin of my food	1	2	3	4	5
I am a vegetarian or vegan	1	2	3	4	5