IMPROVING CONSUMER PARTICIPATION IN LOCAL FOOD MARKETS: A CASE STUDY OF OKLAHOMA FARMERS' MARKETS

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Bachelor of Science Agribusiness

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Stillwater, Oklahoma

2009

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
May, 2011

IMPROVING CONSUMER PARTICIPATION IN LOCAL FOOD MARKETS: A CASE STUDY OF OKLAHOMA FARMERS' MARKETS

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ACKNOWLEDGMENTS

I would like to thank God. I thank God for all of the blessings my family and I have received.

We greatly appreciate funding for this research from the United States Department of Agriculture: Agriculture Marketing Service. I want to express my gratitude to my advisor Dr. Shida Henneberry for all hours of assistance given to me in this research. I thank my committee members Dr. Bailey Norwood and Dr. Dave Shideler for their comments and guidance during the research process. I would also like to extend my sincere appreciation to all the faculty members of the Agricultural Economics Department.

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PREFACE

This thesis discusses consumer and producer perceptions and actions surrounding locally produced food in central Oklahoma Farmers' Markets. In this study we discover factors affecting consumer non-participation in local food markets. This thesis is composed of three sections. The first essay discusses farmers' market consumer and producer descriptive statistics, along with a discussion of producers accepting food assistance program payments in exchange for their products. The second essay discusses consumers and producer perceptions of farmers' market products compared to those sold in the grocery stores. And the third essay discusses consumer willingness-to-pay for tomatoes and producer demographic perceptions of farmers' market consumers. These essays use data that was collected from a survey of farmers' market consumers and producers in central Oklahoma during the summer of 2010.

ESSAY I

Producer Participation in Food Assistance Programs & Consumer and Producer Descriptive Statistics

Abstract

Local food markets have grown significantly both in number and volume marketed (USDA-AMS 2010). However little is known about these markets. The purpose of this study is to form a descriptive overview of Oklahoma participants' demographics, attitudes, perceptions, experiences, and other factors that affect participation in farmers' markets. To accomplish the purpose of this study, in the summer of 2010, a consumer and producer survey was conducted at 19 farmers' markets in central Oklahoma. Consumers were asked questions about the value they place on the products offered at farmers' markets, respondent demographics, and their habits regarding local foods. Producers were asked about the products that they produce, perceptions of their consumers, ranking of their products' attributes, if they accept food assistance programs, and their demographics.

The results of the survey show that most consumers and producers value many attributes of Oklahoma farmers' markets, and also are a diverse group of individuals. The results of this study are expected to benefit Oklahoma consumers and producers in developing ways farmers' market producers can better promote the farmers' market to their customers. By promoting the farmers' markets better, more consumers will access the benefits of Oklahoma Farmers' Markets.

Introduction

Recently, the U.S. government has encouraged its' citizens to maintain healthy lifestyles by implementing and encouraging programs that promote healthy eating and exercise. This can be seen in programs such as My Pyramid, Dietary Guidelines for Americans, Healthy Eating Index, Presidents' Health Challenge, Let's Move, and as well as many others (U.S. Department of Health and Human Services 2011). With these initiatives Americans have been encouraged to eat healthier and exercise more. To coincide with these initiatives there has been an increased demand for farmers' markets (USDA-AMS 2010). With this study, we will investigate consumer and producer behaviors in Oklahoma farmers' markets.

Increased Demand for Farmers' Markets

Increased demand for farmers' market products can be seen in the sheer increase in the number of farmers' markets in the recent past. Between 2000 and 2010 the number of farmers' markets in the U.S. rose from 2,863 to 6,132 nationally (USDA-AMS 2010). Not only is the number of farmers' market producers have been increasing, but also the number of customers has greatly increased. A study done by Darby et al. (2008) shows that consumers' value the attribute of local separate from other attributes associated with locally produced foods. In another study, the attribute of "Colorado grown" was valued by customers more than the attributes of organic and GMO-free products for a Colorado based study (Loureiro and Hine 2002). Similarly, Thilmany, Bond, and Bond (2008) found that local produce was preferred by the consumers over that of pesticide free and organic food for most of the customers surveyed. These above studies have illustrated

that the local food attribute has the highest value to consumers and so this attribute should be used as a potential selling point of farmers' markets.

By better understanding consumers' preferences regarding local foods, we can in turn better promote farmers' markets and expect to increase consumer participation in farmers' markets. In a 2006 study in Scotland, Lyon, et al. (2009) suggest that consumers value the social experiences at farmers' markets and that these aspects should then be used to further promote farmers' markets. In this light, the objective of this study is to increase the existing knowledge on demographics and preferences of farmers' market participants. With this information producers will be better able to advertise to potential new customers, thus increasing consumer participation in farmers' markets.

Benefits of Promoting Farmers' Markets

By eating greater amounts of fruits and vegetables an individual could reduce their likelihood for chronic diseases while also maintaining healthier weight levels (CDC 2011). In 2009 31.4% of Oklahomans were obese, up from less than 10% in 1988 (figure I-1), (CDC 2009). Eating fruits and vegetables may not only increase the health of an individual, but also maybe essential to the function of the body. A study done by Hord, Tang, and Bryan (2009) suggest that "…nitrates and nitrites of plant origin play essential physiologic roles in supporting cardiovascular health and gastrointestinal immune function." So fruits and vegetables provide a valuable source for these nutrients that promote better health.

While the health benefits of fruits and vegetables are understood by a vast majority of people, Oklahomans still do not consume the recommended amounts of fruits and vegetables(Grimm,et al. 2010). On a 2,000 calorie diet, the USDA recommends the

consumption of four servings of fruits and five servings of vegetables per day (USDA 2005). In 2009, only 18.1% of Oklahomans consumed fruits two or more times per day, and only 23.5% of Oklahomans consumed vegetables three or more times per day, a decreasing trend from 2000 (Grimm,et al. 2010). This is comparable to the 2009 national average that shows 32.5% of Americans consumed fruits two or more times per day and 26.3% of Americans consumed vegetables three or more times per day (Grimm,et al. 2010). While Oklahomans fall behind the national averages, still no state in the study consumed the average recommended daily allotments of fruits and vegetables (Grimm,et al. 2010). For a country that is notorious for its extensive and affordable food supply, why aren't more people consuming fruits and vegetables?

Accessing Food and SNAP Benefits

Some individuals have difficulty obtaining fresh fruits and vegetables. Accessing stores or farmers' markets for fresh produce may be difficult for some individuals on food assistance programs. In a study done by Rose and Richards (2004) they found that those individuals on food stamps with limited access to food stores, consumed one serving less of fruits compared to those who had ready access to food stores.

For those individuals on food assistance programs, promoting farmers' markets could prove beneficial in encouraging individuals to consume more fresh fruits and vegetables. Farmers' markets provide individuals with a source of nutritious, high-quality, and locally sourced food, while also giving income opportunities for farmers (Henneberry, Whitacre and Agustini 2009). Results from several studies show that farmers' markets have a positive economic impact. For example, a 2002 Oklahoma study showed the surveyed farmers' markets generated $3.3 million in revenues (Henneberry,

Whitacre and Agustini 2009). This study shows that farmers' markets are valuable and have a positive economic impact. Though farmers' markets are increasing, currently many Oklahomans are having problems obtaining food for themselves and or their families.

For many individuals in Oklahoma having enough food for themselves or their families is difficult. As of January 2010, there were 567,669 Oklahomans on SNAP (formerly food stamps). Just in the period of one month during December 2009, there was $73.5 million in SNAP benefits distributed in Oklahoma (OKDHS 2010). There are many food outlets for these individuals to redeem their SNAP benefits, but unofficial estimates state that only a small percentage of Oklahoma Farmers' Markets accept SNAP benefits. With this substantial number of individuals benefiting from supplemental nutrition programs, there is still limited access to farmers' markets for these individuals.

For farmers' market to accept SNAP benefits they need to have an EBT (Electronic Benefits Transfer) machine. These EBT machines can cost up to $1,000 and also require monthly service fees (Hahn 2008). Farmers' markets also need a central location where consumers can go and swipe their benefits card in exchange for tokens to be spent at individual producers' booths; in addition, the market must have the required FNS license issued by the USDA (USDA-AMS; USDA-FNS; Project for Public Spaces 2010). For some markets, the initial cost of the machine could be prohibitive, and for others having someone willing to operate the machine, are possible prohibitive aspects. Producers could benefit from accepting SNAP (USDA 2010). In FY 2009 participating farmers' markets received about $4 million of the available $50 billion in SNAP benefits (USDA 2010). That is why this study will determine the number of producers accepting

food assistance programs and reasons why some producers do not accept food assistance programs.

The overall objective of this study is to give a descriptive overview of Oklahoma farmers' market participants' demographics, attitudes, perceptions, experiences, and other factors that affect participation. The specific objectives of this study are to: (1) determine descriptive statistics of farmers' markets consumers, (2) determine descriptive statistics of farmers' market producers, and (3) determine why all producers don't accept food assistance programs such as SNAP.

This research identifies some of the complex traits of consumer participation and producer marketing. Also how producers can better serve their customers by knowing their preferences. The results of this study will be helpful to policy makers in determining appropriate policy to encourage healthier diets, local food producers in identifying marketing strategies to increase sales and profit, consumers by providing greater access to fresher more nutritious local foods, and therefore society in general.

Method of Analysis

While previous studies have considered consumer participation in farmers markets, none have evaluated Oklahoma farmers' market consumers and producers. In order to gain a more in-depth understanding of farmers' market consumer and producer traits, a survey was implemented. More specifically, the objective of this study is to determine the consumer and producer characteristics that might impact their participation. These characteristics include consumer and produce demographics, attitudes, perceptions, and experiences.

Geographic area of Interest

The focus of this study is central Oklahoma. More specifically, the geographic area which the research focuses is an area designated by the Oklahoma Department of Tourism as "Frontier Country", this area includes the Oklahoma counties of Canadian, Cleveland, Grady, Hughes, Lincoln, Logan, McClain, Okfuskee, Oklahoma, Payne, Pottawatomie, and Seminole. Within these counties there are 20 farmers' markets. We were able to survey 19 of these farmers' markets; the Norman Farmers' Market declined our request to survey. This area was selected because it had the most farmers' markets in one centrally located place in Oklahoma. We only surveyed the farmers' markets that were registered with the Oklahoma State Department of Agriculture. The size of the farmers' markets in this area varied greatly, from the two producer Stroud Farmers' Market to Edmond Farmers' Market which has forty-two producer participants. The age of these markets is the likely reason for this phenomenon; Stroud Farmers' Market was in its first year of business and the Edmond Farmers' Market was in its twenty-second year.

Survey Design

After consulting farmers' market managers, vendors, and consumers along with the relevant literature, a survey was designed. These consultations provided valuable insight into which consumer and producer demographics and values should be included in the survey. We specifically wanted to investigate consumers' and producers' specific demographics, attitudes, perceptions, experiences, and other factors that account for farmers' market participation. By gaining knowledge on these aspects, we believe that producers will be better able to serve their customers and advertise to potential customers.

This survey was modeled after the survey done by Zepeda and Li (2006) where they looked at a consumers actions rather than their stated preferences. By asking for consumer's actions rather than their preferences a more accurate representation of that consumer can be extrapolated. In this study we will evaluate consumers' actions and preferences towards farmers' markets as we believe that they are both important indicators of consumers' actual perceptions. To evaluate consumers' preferences and actions towards local food markets, we surveyed consumers who participate in local food markets, and vendors of local food markets. We used a survey to identify the factors impacting consumer participation in local food markets. More specifically, we asked these groups their attitudes towards local food markets, their preferences towards local food markets, and their demographics. Two surveys were then conducted which include consumers and producers. With this information we analyzed the responses given by consumers and producers, for all 19 farmers' markets in this study. The complete consumer and producer surveys can be found in appendix A.

Data Collection

The farmers' market surveys were conducted at the markets' place of business; both consumers and producers were surveyed. All producers at the farmers' markets were asked to participate in the survey. The consumer surveys were randomized by the asking that every other available customer participate. A survey crew of six individuals was assembled to assist in the collection of data. This enabled more than one farmers' market to be surveyed on a given Saturday. Some farmers' markets are only open on Saturdays. If a market was open more than one day a week the manager of that market was asked which day was their busiest day and that was the day that we surveyed that market;

usually, this was Saturday. With the larger farmers' markets two surveyors were sent to that market, and the smaller ones received only one surveyor. The only market that was surveyed during both days of operation was the OSU-OKC farmers' market, since the farmers' market had two separate locations for each day (Saturday: 400 N. Portland, Wednesday: N.W. 63rd and Western). We felt as though these locations were far enough apart that there would be a difference in the customer surveys, though the producers would be the same.

Consumers and producers were approached by a surveyor and asked to participate in the survey. If the participant accepted they were asked to read the cover letter to the survey. The cover letter described: the purpose of the study, participation was completely voluntary, no known risks greater than everyday life, and withdrawing from the study at any time was at no penalty. Often, many customers were filling out the survey at the same time, this allowed for a larger sample size to be taken. The survey crews remained at the market for the entirety of the market day's hours. The hours of operation varied greatly by the individual market. Producers were given the surveys at the beginning of the market day and the surveys were collected at the end of the day, so that the producer had ample time to fill out the survey. If producers were unable to complete their survey during the market hours they were given a self-addressed business reply envelope to return the survey. The surveys were kept filed by the location of the survey. We experienced a response rate of 92% of producers were surveyed at the markets. While an accurate representation of the consumer response rate would be difficult because there were no counts of the total number of consumers at the market for the given day that we

were there. A full list of response numbers and percentages by location is given in Table I-1.

Survey Findings/Analysis

In this study we looked to form descriptive overview of Oklahoma farmers' market participants' demographics, attitudes, perceptions, experiences, and other factors that affect participation. In the first part of this section we will discuss the above items for consumers, followed by a section that will discuss these items for producers. In this study there were 624 consumer surveys, and 166 producer surveys. While almost all surveys were complete, some respondents left questions such as household income blank. Since in this analysis we are not comparing one question to another or drawing opinions about a segment of questions all respondent answers were included in this analysis. This concludes that the responses may not add to the total number of surveys, also and in some questions like fourteen and sixteen of the consumer survey there were multiple answers for some surveys.

Farmers' Market Consumers

Consumers Demographic Analysis

Consumers were asked an array of questions pertaining to their personal demographics. It was found that a large number, 255 customers, have only one person that is older than 18 years living with them, while 197 customers have two; from now on individuals older than 18 will be referred to as adults. While 110, 38, 15, 6, and 1 responded that they had 0, 3, 4, 5, and 6 adults living with them respectively. Consumers were also asked how many people lived with them that were less than 18 years of age and henceforth this group will be referred to as children. A majority, 475 of consumers

responded that they had no children living with them. Also 81, 48, 16, 3, and 1 individuals stated that they had 1, 2, 3, 4, 5 children living with them respectively.

Consumers were given four age categories and asked to pick which one described them. The categories were 1) 18-25 years 2) 26-45 years 3) 46-65 years 4) 66 and older there were 25, 142, 311, and 140 respondents respectively. There were was a higher majority of females compared to males that were surveyed, 427 and 192 respectively. Also there were more urban consumers as compared to rural consumers 396 and 228 respectively. Slightly more consumers were college graduates (357) as compared to non-college graduates (263). Consumers were given five household income categories 1) low income $0.00-$15,000; 2) low middle income $15,001-$30,000; 3) middle income $30,001-$50,000; 4) high middle income $50,001-$80,001; 5) high income $80,000 and above. The consumer responses for income levels were 1) 51, 2) 67, 3) 136, 4) 161, and 5) 163.

Consumer Actions and Perceptions

In this section consumers were asked about their specific actions and perceptions surrounding Oklahoma farmers' markets. Consumers responded on how much they like to cook, their responses were 350 for very much, 241 for somewhat, and 32 for not at all. There were also 512 responses to purchasing organic food and 111 consumers that had not purchased organic food. When consumers were asked if they shop at health food stores 354 stated yes and 267 no. Consumers were asked if they had a CSA (Community Supported Agriculture) membership, 32 said yes, 144 said no they choose not to, and 474 said no they are not familiar with any. A slight majority of consumers responded that they grow food in their own garden for family consumption, 319, as compared to 302 who do

not. Also consumers were asked about their household weekly food expenditures, they were given four options: 1) less than $100 2) $200 3)$300 4) more than $400. The responses for food expenditures were 1) 316 consumers 2) 232 consumers 3) 47 consumers and 4) 14 consumers.

Consumers were given multiple options to the question where did they hear about the farmers' market, and they responded: 175 newspaper, 43 radio, 13 television, 36 internet, 124 billboard/roadside stand, 23 paper fliers, and 135 other. Also 162 consumers wrote in the survey that they heard about the market through "word of mouth." When consumers were asked how often they came to the market, their responses were: 71 every market day, 215 for once a week, 128 for twice a month, 73 for once a month and 114 said a couple times a year, also 10 individuals wrote in that this was their first time at the market. It was found that 361 consumers would not use an ATM if available at the farmers' market, while 223 consumers said that they would. There were 425 consumers who thought that the markets permanent structures were adequate, while 196 did not.

There were three different questions that asked about price, quality and freshness of farmers' market products as compared to those products in grocery stores. The answers to these questions were similar and varied a little. In the question about price the consumers responded to the question as follows: 110 for farmers' market prices are higher by more than 25%, 154 for farmers' market prices are higher by less than 25%, 70 for no difference, 58 for farmers' market prices are lower by less than 25%, 25 for farmers' market products are lower by more than 25%, 134 for grocery stores offer the same product but not the same quality, and 47 for other. When consumers were asked how quality of farmers' market products compares to grocery store products, they

responded: 479 for farmers' market products are better by more than 25%, 99 for farmers' market products are better by less than 25%, 20 for no difference, 1 for farmers products are worse by less than 25%, and 1 for farmers' market products are worse by more than 25%. Also when consumers were asked of their preferences towards freshness of farmers' market products as compared to grocery store products they responded: 516 for farmers' market products are fresher by more than 25%, 73 for farmers' market products are fresher less than 25%, 13 for no difference, 2 for farmers' market products are less fresh by less than 25%, and 0 for farmers' market products are less fresh by more than 25%. There was also a consumer Willingness-to-Pay study done, but this will be discussed in essay III.

Farmers' Market Producers

Producer Demographic Analysis

In this study we were able to collect 166 producer surveys from the 19 farmers' market surveyed. Of these producers 82 were female, 73 were male and 11 reported both, assuming that these producers were husband and wife. The average age of these producers varied; there were 3 producers between the ages of 18-25 years, 39 for ages 26-45, 74 for ages 46-65, and 33 for 65 and up. Producers also responded to which education level best represented themselves, there was 1 producer for grade school, 37 for high school, 45 for some college, 45 for college graduates, 4 for some graduate school, 19 for masters degree, and 8 for doctoral degrees. It was found that most producers participate in the farmers' market 100% of the time (74), while 41 participate 75% of the time, 16 participate 50% of the time, and 17 participate 25% of the time. Although there are a high number of producers who participate 100% of the time, no producer in this study reported

that they were 100% reliant on the farmers' market for their household income. There were 126 producers reported that they relied on the market for less than 25% of their household income, 18 reported 50% , and 6 reported 75%.

Producer Actions and Perceptions

A majority of the producers surveyed reported that they produced fruits and/or vegetables (99), also producers responded to 33 for bedding plants and/or herbs, 16 for baked goods and/or canned goods, 15 for soaps and/or lotions, 22 frozen meats and/or eggs, and 60 for other products. There was an outstanding 47 producers that reported that they did not participate in the market last year. But of those producers who did, 16 reported an increase in customers by more than half, 35 for an increase in customers by less than half, 32 for no change in customers, 17 for decreased by less than half, 3 for decreased by more than half, and 15 for uncertain if there was an increase or decrease. Producers were asked that for an average summer day how many customers visit your booth, 51 responded less than 50, 62 for 51-100, 15 for 101-150, 15 for more than 151, and 20 for don't know. Also most producers reported that more than half of their customers are repeat customers (106), 18 for less than half of their customers are repeat customers, and 40 for they are uncertain the number of repeat customers.

Producers were asked how much of a price difference there is between their products and those in the grocery stores. 23 responded my prices are higher by more than 25%, 39 for my prices are higher by less than 25%, 15 for no difference, 18 for my prices are lower by less than 25%, 12 for my prices are lower by more than 25%, 39 for grocery stores offer the same product but not the same quality, 29 for grocery stores do not offer my product, and 7 for other. When producers were asked if the quality of their products

differed from those of the grocery stores, they responded 127 for my products are better by more than 25%, 12 for my products are better by less than 25%, 9 for no difference, 2 for my products are worse by less than 25%, and 0 for my products are worse by more than 25%. Also producers were asked to rank the quality of their products as compared to the grocery stores, their responses were 122 for my products are fresher by more than 25%, 6 for my products are fresher by less than 25% 10 for no difference, 0 for my products are less fresh by less than 25%, and 1 for my products are less fresh by more than 25%.

A large number of producers responded that they had increased production by more than 25% from last year (45), also 22 producers reported increased production by less than 25%, 29 for have kept production the same, 14 for decreased production by less than 25%, 1 for decreased production by more than 25%, 3 for uncertain if there was an increase or decrease in production, and 26 did not participate in the market last year.

Producers Marketing Tactics

The following represents how producers responded to questions about how they market their products. Producers were asked if all the products that they produce cover their cost of production. Their responses were 112 for yes and 41 for no; out of these 41 no responses 23 responded the reason was for customer attraction and 14 to recover some cost. When producers were asked if they ever change their prices during the growing season they responded: 16 for increase price when product is less available, 1 for increase price when other producers do, 83 for keep prices the same the whole season, 10 for decrease prices when other producers do, 8 for decrease price when a product is more available, and 11 for other reasons. When producers were asked how they determine what

price they will charge for their product 44 replied that they use a percentage mark-up over cost, 49 for charge the same as other vendors do, 5 for charge the same as the grocery stores do, 15 for they are not really sure and 32 for other reasons.

Most producers believed that the summer hours were long enough for all customers to attend (122), while 15 neither agree nor disagree, 15 disagree, and 6 were undecided. Also most producers strongly agree that the market is in a good location, 44 somewhat agree, 9 neither agree nor disagree, 8 somewhat disagree, 4 strongly agree, and 2 undecided. When producers were asked if they agree or disagree that the market would benefit from an ATM or debit machine, the most responses were that they strongly agree (54), 44 for somewhat agree, 29 for neither agree or disagree, 2 for somewhat disagree, 11 for strongly disagree, and 14 for undecided. Then producers were asked if there should be an increase or decrease in the number of products sold, the responses were: 42 for increase in all items, 54 for increase in some items, 55 for stay the same, 7 for decrease in some items, and 0 for decrease in all items.

A number of producers strongly agreed that the market should have concession stands (43), the other responses were: 40 for somewhat agree, 22 for neither agree nor disagree, 15 for somewhat disagree, 18 for strongly agree and 16 for undecided. When producers were asked the possible reasons that the market may lack some of the needed structures the responses were: 55 for a lack of funding, 11 for a lack of local government cooperation, 3 for lack of vendor agreement, 40 for no reason the current market structures are fine, and 10 for other reasons. Then producers were asked if they would like to be a part of Buy Fresh Buy Local (BFBL) project their responses were: 21 for yes

I would like to become a member of BFBL, 18 for yes I would like to be listed in the guide, 62 for maybe but would like to have more information, and 36 for no thank you.

Producers Perceptions of Their Customers

In this section producers were asked their perceptions of their customers' demographics. Essay III will discuss how closely these producers predicted their customers' demographics. Most producers (74) responded that their customers were middle aged (46-65 years) the other responses were: 1 for young college age (18-25 years), 39 for young adult age (26-45), 4 for senior citizen (66 years and older), and 1 for uncertain. When producers were asked about their average customers' household income, 3 responded low income ($0.00-$15,000), 23 for low middle income ($15,001-$30,000), 50 for middle income ($30,001-$50,000), 20 for high middle income ($50,001-$80,000), 3 for high income ($80,001- and above), and 41 for uncertain. Many producers (64) felt as though their customers on average were college graduates, though the other responses were 3 for elementary school, 52 for high school, and 2 for masters/doctoral degree recipients.

Farmers' Market Producers' Perceptions towards Food Assistance Programs

When producers were asked if they accept food assistance programs, 105 reported that they do not, and 46 reported that they do accept food assistance programs. Out of the 46 that responded to be accepting food assistance programs 14 accepts SNAP (food stamps), 17 accepts WIC, 28 accepts Chickasaw Nation, and 1 accepts other food assistance programs. Then producers were asked what percentage of your customers pay with food assistance programs, their responses were: 2 for more than 25%, 35 for less than 25%, 12 for uncertain of the number of customers, 93 for non applicable – I do not

accept food assistance coupons. Also producers were asked if they would be willing to accept food assistance programs if given the opportunity, they responded 57 for no and 89 for yes. Out of the 89 responses for yes, 37 producers responded that they already accept food assistance, 20 for do not have the ability to take the coupons or cards, 24 for do not know how to sign up to accept food assistance programs, and 4 for other responses.

These results show that there are 44 producers willing to accept food assistance programs, but they do not because they either do not have the ability to accept them, or they do not know how to sign up to accept food assistance programs. The most likely reason for the lack of producer participation in the SNAP program is there are several barriers to participation. For a producer or farmers' market to accept SNAP benefits the market must first have an EBT machine, and as earlier discussed this presents many barriers in itself. For example the Stillwater Farmers' Market has opted not to accept SNAP benefits even though they were offered an EBT machine free of charge, because they had no one dedicated to operate the machine (Personal interviews 2010). Where we do see more producers accepting food assistance programs are through those of the Chickasaw Nation.

The Chickasaw Nation provides food assistance checks to its' WIC and senior citizen members, and these individuals can then use the checks to purchase locally grown fresh fruits and vegetables at participating producers stands at farmers' markets. From a producer stand point these checks are an easier system than the EBT machines. When a participating producer accepts one of these checks they, are able to deposit them like they would personal checks. With this system there is no need for a person to operate the

machine and write reimbursement checks to the producers at the farmers' market. The OSU-OKC market does not have the EBT machine system because this market is run through Oklahoma State University and they are unwilling/unable to have an account were the money would be transferred from the cards to the producers (Personal interviews 2010). While producers at the OSU-OKC farmers' markets are unable to accept SNAP benefits, many accept the Chickasaw Nation checks. It is clear to see that more farmers' markets and producers would participate in these programs, if they were more available and accessible to them.

Conclusion

This study was useful in discovering many aspects of Oklahoma farmers' market participants' demographics, attitudes, perceptions, experiences, and other factors that affect participation in farmers' markets. With this information producers will be better able to market to interested segments of the population and also better serve their current customers. Consumers will also be benefited by having their needs met to a greater extent by producers.

Specific Conclusions

Firstly, this study was useful in discovering consumer attitudes, perceptions, and actions surrounding Oklahoma farmers' markets. A large number of farmers' market customers are female, like to cook, and have household income above $80,001. These aspects should be used to advertise to these individuals. For example, recipes and cooking demonstrations would be a positive way to access more sales, and connect with consumers' interest in cooking. By including recipes in advertising materials, this could

be useful especially if the recipe requires ingredients that could only be obtained from the farmers' market.

Secondly, farmers' market producers seemed to have a grasp on basic marketing techniques, though we do believe there is improvement to be made. The most producers responded that they price their products the same as other vendors do, though using cost accounting to set prices is a more efficient and more profitable way to set prices. Producers should charge prices that accurately reflect their time and input cost, rather than going off of other producers prices. This process may actually decrease the price of some products, and raise the price of others. Also some producers may find that they are losing money on some products and would be better off by not producing them, and likewise could find that they could be making more money on other products by producing more.

Thirdly, while most farmers' market producers attend the market 100% of the time, they still only rely on the market for less than 25% of their income. These producers are fully committed with their time but are not financially tied to the market, so they may not completely employ all marketing tactics and price incentives available to them. Those producers who fall into this category may view the farmers' market as more of a hobby rather than a profit making venture. This mode of action may not hurt the producer engaging in this activity, though it does possibly hurt the increase in the number of producers and may in the future serve as a barrier to entry of new producers. Because these producers may hold prices below cost of production, they inhibit other producers from selling at profitable prices. Also these producers may be unresponsive to consumers' preferences and rather only produce what they enjoy doing.

Finally, there are producers willing to accept food assistance programs, but these programs need to be more easily accessible and more user friendly, particularly the SNAP benefits. Producer participation in food assistance programs could be expanded by increasing the availability and ease of these programs for producers. Producers need food assistance programs that are easy to use, do not require a dedicated individual to operate, and do not require cooperation from other producers. Also there is a need to promote the existing programs and their benefits, because some lack of participation may be due to a lack of knowledge of these programs and their benefits. Producers could benefit from accepting SNAP benefits through increased sales and SNAP benefit recipients could benefit from the added availability of fresh fruits and vegetables.

Limitations and Future Research

This research was limited because only a portion of this survey was dedicated to the examination of producer acceptance of food assistance programs. Future research could be beneficial in discovering more in-depth aspects of producer participation in these programs. Also future research should investigate what possible features producers would want in a food assistance program that would make it more assessable to the producer. Further research is also needed to discover how much producers could possibly benefit from adding the acceptance of SNAP benefits to their market.

ESSAY II

Consumer and Producer Perceptions of Price, Quality, and Freshness of Farmers' Market Products

Abstract

Trendy consumers are always looking for the next "in" thing, and the recent increase in the size and number of farmers' markets pose the question: What are consumers and producers preferences towards farmers' markets products? The purpose of this study is to evaluate consumer and producer perceptions of farmers' markets products. In the summer of 2010, a consumer and producer survey was conducted at 19 farmers' markets in central Oklahoma. Consumers and producers were asked to rank the attributes of price, quality, and freshness for products sold at the studied farmers' markets, as compared to the same products sold in local grocery stores. The survey also included a section on the respondent demographics.

The results of the study show that most consumers and producers believe that The quality and freshness of farmers' market products are superior to the same products sold in grocery stores. Though when producers and consumers were asked if prices of local food was higher or lower than the grocery stores, neither group consistently answered one way or the other. This study contributes to existing knowledge regarding consumers' and producers' preferences towards products offered at Oklahoma farmers' markets. The results of this study could be used in the promotion of farmers' market products to the general public, through education and promotion. Increased sales of

farmers' market products are expected to have a positive impact on the local economy (Henneberry, Whitacre, and Agustini 2009).

Introduction

Increasing Consumer Demand for Local Food Markets

It has been long understood that a diet rich in fruits and vegetables are beneficial in promoting and maintaining good health. Consuming fruits and vegetables on a regular basis has been shown to reduce the rates of chronic disease and help maintain healthier weights (Blanck, et al. 2008). Oklahomans have high rates of obesity and consume far less than the recommended daily intakes of fruits and vegetables (CDC 2009; USDA 2005; Grimm, et al. 2010). While the health benefits are understood, consumers still struggle with consuming enough nutritious-high-quality food.

However, in recent years there has been a significant increase in demand for specialty products, such as locally grown, organic, or reduced pesticide, causing an increase in local food markets in Oklahoma and across the nation. Along with the increase in demand, farmers' markets in the United States have experienced an increase in size and number. From 2009 to 2010 there was a 16% increase in the number of farmers' markets in the U.S., bringing the total number of farmers' markets nationwide to 6,132 (USDA-AMS 2010). The U.S. consumers will benefit from the availability of fresh produce through farmers' markets and increased access to fresher, higher-quality, locally grown or produced products. Producers supplying to farmers' markets would benefit from an increased understanding of what attributes consumers place value on.

Evaluating Local Food Attributes

Although the general perception may vary across individuals, it is generally assumed most farmers' market shoppers perceive farmers' market product attributes to be superior to those products offered at conventional marketing outlets. However, deciding which farmers' market attribute(s) consumers' place value on might be difficult. As consumers place value on many aspects of local foods; isolating those aspects and then in turn advertising those traits to non-participants, could help improve consumer participation in farmers' markets. Toler, et al. (2009) describes that a segment of consumer value is in support for local farmers' wellbeing. However, Andreatta and Wickliffe (2002) suggest that price may not be a customer's only concern, and producers may be looking for more than the highest return to investment.

For successful marketing of local foods, one must first understand the reasons for the increase in demand for locally grown foods. Some consumers believe that by purchasing local foods, they are not only enjoying safe, nutritious, high quality, and environmentally friendly produce, but they are also supporting the local economy (Thilmany, Bond and Bond 2008). A producer needs to understand consumers' preferences towards locally-sourced marketing channels, reasons for participation in farmers' markets, and the value that consumers place on locally grown foods. The producer is also interested in knowing what other attributes of farmers' markets consumers place value on. All of these questions can be reduced to simply: Why aren't there a higher percentage of people shopping at farmers' markets? Where previous studies have left to discover what attributes to consumers place value on. This research will explore consumer preferences regarding products offered at Oklahoma farmers' markets and ways to increase consumer interest. This essay will explicitly look at

consumer and producer perceptions of price, quality, and freshness differences of Oklahoma Farmers' Market products as compared to those products sold in conventional marketing outlets. In doing so, we will be able to provide producers with specifics about their consumer base and their consumer demographics. Additionally, this information is expected to be helpful to producers in designing marketing strategies to effectively promote their products to non-farmers' market participants.

The overall objective of this research is to determine consumer preferences towards products offered at Oklahoma farmers' markets and producer preferences for selling their products at farmers' markets. The specific objectives of this study are to (1) determine consumers and producers rankings of farmers' market products quality and freshness as compared to similar products offered at other marketing outlets, (2) determine consumers and producers ranking of farmers' market products prices as compared to similar products offered at other marketing outlets, and (3) compare these findings to these groups' respective demographics. This research identifies some of the complex traits of consumer participation and producer marketing. Also this study will address how producers can better serve their customers by knowing their preferences. The results of this study will be helpful to policy makers in determining appropriate policy to encourage healthier diets by determining current consumers' preferences of farmers' market products and then in turn advertising them to the general public. The results are also expected to be helpful to local food producers by identifying marketing strategies to increase consumer participation. This study will also help consumers by providing greater access to fresher more nutritious local foods.

Conceptual Framework and Hypothesis

While previous studies have considered consumer participation in farmers markets, none have looked at consumer and producer perceptions of price, quality, and freshness differences in products sold at farmers' markets compared to those sold at traditional grocery stores. There is a common misconception that farmers' market products are higher priced compared to grocery store food when in fact this is has been found to be untrue in Oklahoma (Kerr Center 2007). Also, it is generally perceived that consumers and producers more than likely believe that farmers' market products have positive attributes, compared to those sold at grocery stores. In order to determine the farmers' market participant demographics and, the attributes of farmers' market products most valued by consumers and producers, a survey was implemented.

By evaluating consumers' actions rather than stated preferences, a more accurate representation of consumer behavior can be extrapolated (Zepeda and Li 2006). We evaluated consumer and producer perceptions of price, quality, and freshness differences regarding farmers' market products compared to the same products sold in traditional grocery stores. And then, we compare the perceptions of price, quality, and freshness to the demographics of consumers and producers respectively. We will use an interval censored regression to evaluate actual percentages of variables. In doing so we would be able to determine which customers and/or producers value price, quality and freshness of farmers' market products and to what degree they value them at.

The first hypothesis of this study is that both consumers and producers respond positively towards farmers' market products being fresher and having higher quality compared to the same products offered in traditional grocery stores. That is, consumers and producers perceive quality and freshness of farmers' market products to be higher

than that of the grocery stores' products. The following null hypotheses will be tested to determine if consumers and producers perceptions of quality and freshness is higher than the grocery stores:

(A) H_0: Consumers' Perceived Ranking of Farmers' Market Products Quality > Consumers' Perceived Ranking of Grocery Stores Products Quality

H_0: Consumers' Perceived Ranking of Farmers' Market Products Freshness > Consumers' Perceived Ranking of Grocery Stores Products Freshness

H_0: Producers' Perceived Ranking of Farmers' Market Products Quality > Producers' Perceived Ranking of Grocery Stores Products Quality

H_0: Producers' Perceived Ranking of Farmers' Market Products Freshness > Producers' Perceived Ranking of Grocery Stores Products Freshness

(B) H_A: Otherwise

If the null is rejected then this would indicate that consumers and producers perceive quality and freshness of farmers' market products to be equal to or lower than those offered at the grocery stores.

The second hypothesis is that consumers and producers will respond that prices of farmers' market products are higher than those comparable products sold in traditional grocery stores. That is, consumers and producers perceptions of farmers' market prices will be higher compared to those of traditional grocery stores. The following null hypotheses will be tested to determine if consumers and producers perceptions of price is higher than the grocery stores:

(C) H_0: Consumers' Perceived Ranking of Farmers' Market Products Price > Consumers' Perceived Ranking of Grocery Stores Products Price

H_0: Producers' Perceived Ranking of Farmers' Market Products Price > Producers' Perceived Ranking of Grocery Stores Products Price

(D) H_A: Otherwise

If the null is rejected then this would indicate that consumers and producers perceive prices of farmers' market products to be equal to or lower than those offered at the grocery stores.

The third hypothesis is that consumer and producer demographics will influence their rankings of price, quality, and freshness differences. That is, when demographics are tested against the perceptions of price, quality, and freshness we should be able to determine which consumers and producers, by their demographics, perceive price, quality, and freshness of farmers' market products to be higher or lower as compared to grocery stores. The following null hypotheses will be tested to determine if consumers and producers demographics play role in their perceptions of farmers' market products:

(E) H_0: There will be significant parameters for the demographics

(F) H_A: There will be no significant parameters for the demographics

If the null is rejected then this would indicate that consumers and producers demographics do not indicate consumers and producers perceptions of price, quality, and freshness.

Methodology

The goals of this study are accomplished by analysis of a survey of producers and consumers in Oklahoma.

The Geographic area of Surveys

The focus of this study is central Oklahoma. More specifically, the geographic area which this research focuses on is an area designated by the Oklahoma Department of Tourism as "Frontier Country", which includes the Oklahoma counties of Canadian, Cleveland, Grady, Hughes, Lincoln, Logan, McClain, Okfuskee, Oklahoma, Payne, Pottawatomie, and Seminole. Within these counties there are 20 farmers' markets. We were able to survey 19 of these farmers' markets; the Norman Farmers' Market declined our request to survey. This area was selected because it had the most farmers' markets in one centrally located place in Oklahoma. We only surveyed the farmers' markets that were registered with the Oklahoma State Department of Agriculture. The size of the farmers' markets in this area varied greatly, from Stroud Farmers' Market which is a two producer market, to Edmond Farmers' Market with a forty-two producer participants. The age of these markets is the likely reason for this phenomenon. Stroud Farmers' Market was in its first year of business and the Edmond Farmers' Market was in its twenty-second year.

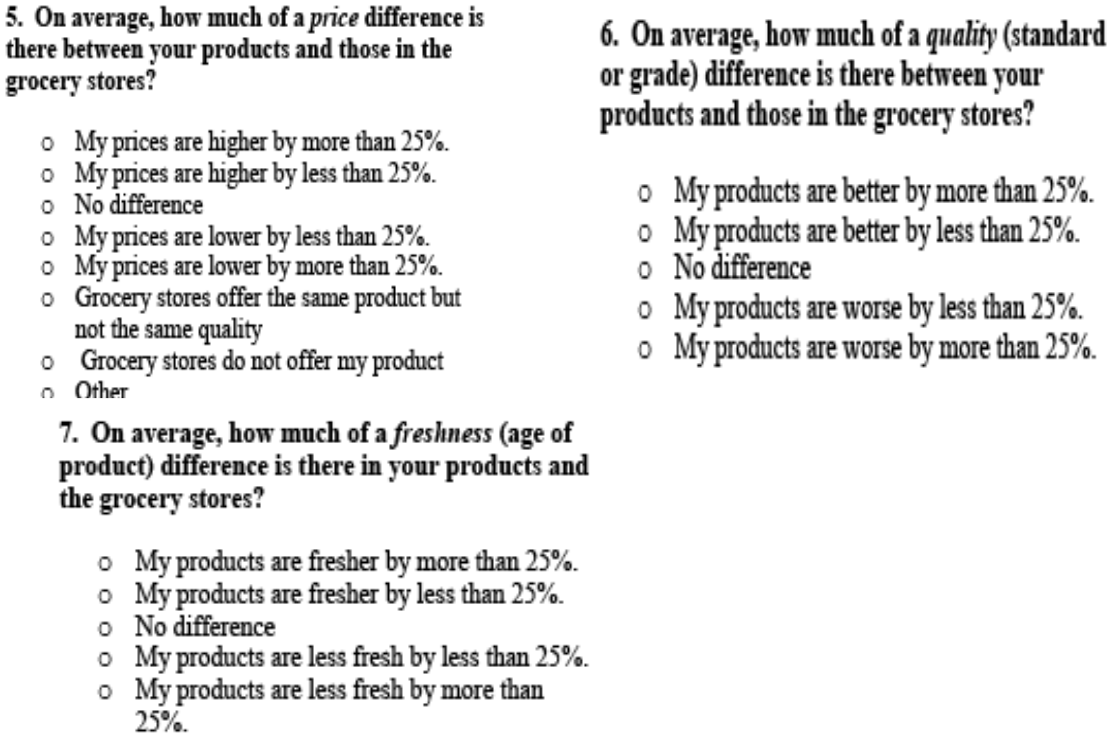
Survey Design

By consulting farmers' market managers, vendors, and consumers along with the relevant literature, a survey was designed. These consultations provided valuable insight into which consumer and producer demographics and values should be included in the survey. In considering perceptions of price, quality, and freshness we were interested in discovering which consumers and producers value these attributes. To evaluate which consumers valued the attributes of price, quality, and freshness, we asked these consumers about their actions regarding local foods, instead of their preferences.

In this study we will evaluate both consumers' actions and preferences towards farmers' markets as we believe that they are both important indicators of consumers' actual perceptions. The consumer actions that we are interested in are: if consumers like to cook at home (favor cooking), purchase organic foods, shop at health food stores, have a CSA (community supported agriculture) membership, and grow food for family consumption. To evaluate consumers' preferences and actions towards local food markets, we surveyed consumers who participate in local food markets, and vendors of local food markets. We used a survey to identify the factors impacting consumer participation in local food markets. More specifically, we asked these groups their attitudes and preferences towards local food markets and products offered at these markets, and about their demographics.

Two surveys were then conducted which included consumers and producers. We asked these questions in a way so that we could use interval censored regression to analyze the results. Consumers and producers were asked to rank the attributes of price, quality, and freshness. In the question pertaining to price (#5 for producers and #16 for consumers) participants were asked their opinion if farmers' market prices were higher or lower than grocery stores. Also, there were options that allowed the participant to not rank their product if it was not offered in the grocery stores. The following are the questions for price, quality, and freshness as they appeared in the producer survey.

Figure II-1 Survey Examples of Price, Quality, and Freshness Questions



5. On average, how much of a *price* difference is there between your products and those in the grocery stores?

- o My prices are higher by more than 25%.
- o My prices are higher by less than 25%.
- o No difference
- o My prices are lower by less than 25%.
- o My prices are lower by more than 25%.
- o Grocery stores offer the same product but not the same quality
- o Grocery stores do not offer my product
- o Other

6. On average, how much of a *quality* (standard or grade) difference is there between your products and those in the grocery stores?

- o My products are better by more than 25%.
- o My products are better by less than 25%.
- o No difference
- o My products are worse by less than 25%.
- o My products are worse by more than 25%.

7. On average, how much of a *freshness* (age of product) difference is there in your products and the grocery stores?

- o My products are fresher by more than 25%.
- o My products are fresher by less than 25%.
- o No difference
- o My products are less fresh by less than 25%.
- o My products are less fresh by more than 25%.

The consumer survey was almost identical to the producer survey, but the wording was changed to reflect their role as consumers rather than producers. Also, question of price varied slightly in the consumer survey there was no option for the equivalent to “Grocery stores do not offer my product”. Quality was defined as a standard or grade and freshness was defined as the age of the product.

With this information we analyzed the responses given by consumers and producers against their demographics respectively, for all 19 farmers’ markets in the study. The consumer actions that we were interested in were: favor cooking, purchase organic, shop at health food stores, CSA membership, and grow food for family consumption. The consumer demographics we were interested in were: gender, urban, college, and income level. The producers were asked about their demographics specifically the: percentage of household income came from the farmers’ market, participation rate in farmers’ market, education, and gender. By knowing these

consumers and producers actions, preferences, and demographics we hope to gain a better understanding of the value that these groups place in the attributes of local food.

A number of binary and non-binary variables were included in the model in order to test consumers' perceptions of price, quality, and freshness. These variables include a binary variable for each of the following:

1) Female compared to male consumers
2) Urban compared to rural consumers
3) College educated consumers compared to otherwise
4) Purchases organic compared to does not purchase organic
5) Purchases food from health food stores compared to does not purchase food from health food store
6) Grows food in one's garden for family compared to does not grow food in one's garden for family

Consumer dummy variables were also included to measure the impact of the following:

1) Four dummy variables for household income were used: low income ($0.00-$15,000), low middle income ($15,001-$30,000), middle income ($30,001-$50,000), and high middle income ($50,001- $80,000). The high income ($80,001 – and above) category was used as the comparison.
2) Two dummy variables for desire to cook at home: "very much" and "somewhat", was compared to "not desired at all."
3) Two dummy variables for CSA memberships: "Yes" and "No, I choose not to" was compared to "No, I am not familiar with any."

The producer perceptions and demographics we test are: percentage of household income that comes from farmers' markets, education level, gender, and level of participation at farmers' market. A number of binary and non-binary variables were included in the model in order to test producers' perceptions of price, quality, and freshness as compared to the grocery stores. The binary variables for producers' demographics include college graduates compared to non-college graduates and female compared to male.

Producer dummy variables were also included to measure the impact of the following:

1) Two dummy variables were used for percentage of a producers' household income that comes from farmers' markets: less than 25% and 50% was compared to 75%. (The 100% category was removed from evaluation because there were no producers that reported their income was 100% reliant on the farmers' market.)
2) Three dummy variables were used for producers' participation in the farmers' market in percentage of time: 25% (8 weeks), 50% (16 weeks), and 75% (24 weeks) were compared to 100% (31 weeks) participation. (Most markets were open approximately 31 weeks of the year.)

In linking consumer and producer attitudes and demographics, this will enable us to identify which consumer segment to better target with advertising and thus direct attention to consumer preferences regarding Oklahoma farmers' markets products and marketing atmosphere. Also we identify what traits are positively linked to consumer participation in Oklahoma farmers' markets and are able to target those traits with advertising.

The consumer survey was completed in two versions; the demographical and attitudinal questions were identical on the two versions, the only differing questions were

the willingness-to-pay questions. The willingness-to-pay study will be discussed in essay III, and so for this essay all questions were the same on both versions. The complete consumer and producer surveys can be found in appendix A.

Data Collection

The farmers' market surveys were conducted at the markets' place of business; both consumers and producers were surveyed. All producers at the farmers' markets were asked to participate in the survey. The consumer surveys were randomized by the asking that every other available customer to participate. A survey crew of six individuals was assembled to assist in the collection of data. This enabled more than one farmers' market to be surveyed on a given Saturday. Some farmers' markets are only open on Saturdays. If a market was open more than one day a week the manager of that market was asked which day was their busiest day and so that was the day that we surveyed that market, usually this was Saturday. With the larger farmers' markets two surveyors were sent to that market, and the smaller ones only one surveyor was sent. The only market that was surveyed during both days of operation was the OSU-OKC farmers' market, since the farmers' market had two separate locations for each day (Saturday: 400 N. Portland, Wednesday: N.W. 63rd and Western). We felt as though these locations were far enough apart that there would be a difference in the customer surveys, though the producers would be the same.

Consumers and producers were approached by a surveyor and asked to participate in the survey. If the participant accepted they were asked to read the cover letter to the survey. The cover letter described: the purpose of the study, participation was completely voluntary, no known risks greater than everyday life, and withdrawing from the study at

any time was at no penalty. Often many customers were filling out the survey at the same time, this allowed for a larger sample size to be taken. The survey crews remained at the market for the entirety of the market day's hours. The hours of operation varied greatly by the individual market. Producers were given the surveys at the beginning of the market day and the surveys were collected at the end of the day, so that the producer had ample time to fill out the survey. If producers were unable to complete their survey during the market hours they were given a self-addressed business reply envelope to return the survey. The surveys were kept filed by the location of the survey. We experienced a response rate of 92% of producers were surveyed at the markets. While an accurate representation of the consumer response rate would be difficult because there were no counts of the total number of consumers at the market for the given day that we were there. A full list of response numbers and percentages by location is given in Table I-1.

Data Analysis

All of the surveys were completed between mid June 2010 and the end of August 2010; we received a survey sample of 166 farmers' market producers and 624 farmers' market consumers. In the consumer surveys there were 523 complete surveys for the questions of quality (question #18) and freshness (question #19), and for price question (question #16) there were 378 that answered options 1-5 and 145 that answered either 6 or 7. Options in question #16 were: (1) Farmers' Market prices are higher by more than 25% (2) Farmers' Market prices are higher by less than 25% (3) No difference (4) Farmers' Market prices are lower by less than 25% (5) Farmers' Market prices are lower by more than 25% (6) Grocery stores offer the same product but not the same quality (7)

Other. All of these surveys also had the corresponding demographical questions answered. This was done so that we would have an accurate representation of each individual participating in the survey. The surveys can be found in appendix A. and table I-1 illustrates the markets surveyed and the number of respondents at each market.

The procedures for the analysis of the data are as follows. The survey data for consumers and producers of all the markets was entered into the data program Excel, where the data was then transposed for use in SAS (Statistical Analysis Software). SAS was then used to evaluate consumer and producer preferences for the attributes of price, quality, and freshness differences, compared to their respective demographics.

Using "If –Then" statements in SAS allowed the answers given in the survey to have a range of values which is interval censored data. For example, if a participant answered A, this was entered into Excel as a 1 and then in SAS that was converted to mean all values greater than 25%. Then in SAS the lifereg procedure was used to fit a parametric model for interval censored data. With SAS, an interval censored regression was used so that estimates of actual percentages of variables could be used. This was done for consumers and producers at each attribute of price, quality, and freshness.
For producers the theoretical foundation for price, quality, and freshness differences are as follows:

Perceived Price Difference = f (income from farmers' markets, college, female, participation at farmers' market)

Perceived Quality Difference = f (income from farmers' markets, college, female, participation at farmers' market)

Perceived Freshness Difference = f (income from farmers' markets, college, female, participation at farmers' market)

For consumers the theoretical foundation for price, quality, and freshness differences are as follows:

Perceived Price Difference = f (Female, Urban, College, Household Income, Favor Cooking, Favor Organic, Favor Health Food, CSA Membership, Grow food in one's own Garden)

Perceived Quality Difference = f (Female, Urban, College, Household Income, Favor Cooking, Favor Organic, Favor Health Food, CSA Membership, Grow food in one's own Garden)

Perceived Freshness Difference = f (Female, Urban, College, Household Income, Favor Cooking, Favor Organic, Favor Health Food, CSA Membership, Grow food in one's own Garden)

In this model the responses to the question were interval censored, there were values that were left, right, uncensored, or interval censored. The left censored response was farmers' market products were lower in quality, price, or freshness by more than 25% as compared to grocery stores. The right censored response was that farmers' market products were higher in quality, price, or freshness by 25% as compared to the grocery stores. The uncensored response was that farmers' market products were no difference from grocery store products. Also the interval censored responses were that farmers' market products were lower in quality by less than 25% or farmers' market products were higher in quality, price or freshness by less than 25%.

The basic model we used is $y = X\beta + \sigma\epsilon$ where y is a vector of responses, X is a matrix of covariate values including the intercept ($n \times k$), and ϵ is a vector of errors with ranking distribution (*S*), cumulative distribution function (*F*), and probability density function (*f*). That is, $S(t) = \Pr(\epsilon_i > t)$, $F(t) = \Pr(\epsilon_i \leq t)$, and $f(t) = dF(t)/dt$, where ϵ_i is a part of the error vector. Then with the left, right, uncensored, or interval censored responses, the log likelihood (*L*) is:

(1) $L = \sum log\left(\frac{f(w_i)}{\sigma}\right) + \sum log\left(S\left(W_i\right)\right) + \sum log\left(F\left(W_i\right)\right) + \sum log\left(F\left(W_i\right) - \left(V_i\right)\right)$

where the first sum is for uncensored, second is for right-censored, third is for left-censored, the final is for the interval censored observations and also where W_i is

(2) $W_i = \frac{1}{\sigma}(Y_i - X_i'\beta)$

And V_i

(3) $V_i = \frac{1}{\sigma}(Z_i - X_i'\beta)$

where Z_i is the lower end of a censoring interval. The formulas above were derived from the models of Cameron (1988) and SAS Institute Inc. (1999).

By using this interval censored regression, we will be able to see actual percentage differences in consumer and/or producer demographics as compared to preferences of price, quality, and freshness. For example female consumers can be compared to male consumers as to who states a price difference, and by a percentage of how much the difference is. This will allow marketing measures to more accurately pinpoint certain consumer segments, and also for education of specific segments of producers.

Results and Discussion

This study proved to find useful information about Oklahoma Farmers' Market consumers and producers. We discovered that a high majority of consumers and producers believed that farmers' market products were fresher and had higher quality as compared to those products offered by local grocery stores. As consumers and producers could agree on high quality and fresh products, their opinions differed when the factor of price played into the equation. Consumer and producer demographics were then evaluated to discover which demographics fit these groups.

Consumers and Producers Ranking of Quality and Freshness

In the consumer survey there were 600 responses to the question of quality. The responses were 479 for farmers' market products are better by more than 25%, 99 for farmers' market products are better by less than 25%, 20 for no difference, 1 for farmers' market products are worse by less than 25%, and 1 for farmers' market products are worse by more than 25%. In the question about freshness there were 604 consumer responses. The responses were 516 for farmers' market products are fresher by more than 25%, 73 for farmers' market products are fresher by less than 25%, 13 for no difference, 2 for farmers' market products are less fresh by less than 25%, and 0 for farmers' market products are less fresh by more than 25%.

In the producer survey there were 150 responses to the question of quality. The responses were 127 for my products are better by more than 25%, 12 for my products are better by less than 25%, 9 for no difference, 2 for my products are worse by less than 25%, and 0 for my products are worse by more than 25%. In the question on freshness there were 139 producer responses. The responses were 122 for my products are fresher by more than 25%, 6 for my products are fresher by less than 25%, 10 for no difference,

0 for my products are less fresh by less than 25%, and 1 for my products are less fresh by more than 25%. In the question of freshness, 27 producers did not answer this question; this may be due to the fact that not all producers sell products that go bad in a short period of time, such as hand-made soap.

With these results we fail to reject the null hypothesis (A) and reject the alternative hypothesis (B). The result of this test concludes that a high majority farmers' market consumers and producers perceive farmers' market products to be fresher and have higher quality as compared to the same products offered in conventional marketing outlets. The results for producers and consumers perceptions of quality and freshness are illustrated in figures II-2 and II-3 respectfully.

Consumers and Producers Ranking of Price

In the consumers survey, there were 598 responses to the question asking, "How much of a price difference is there between farmers' market products and those in the grocery stores?" The consumer responses were 110 for farmers' market prices are higher by more than 25%, 154 for farmers' market prices are higher by less than 25%, 70 for no difference, 58 for farmers' market prices are lower by less than 25%, 25 for farmers' market prices are lower by more than 25%, 134 for grocery stores offer the same product but not the same quality, and 47 for other.

In the producer survey there were 182 responses to the question of price (multiple answers account for this, there were 161 producers that responded to this question). The responses were 23 for my prices are higher by more than 25%, 39 for my prices are higher by less than 25%, 15 for no difference, 18 for my prices are lower by less than 25%, 12 for my prices are lower by more than 25%, 39 for grocery stores offer the same

product but not the same quality, 29 for grocery stores do not offer my product, and 7 for other.

There were 26% of farmers' market consumers thought that farmers' market prices were higher by less than 25%. For the farmers' market producer there were 39 responses for both my prices are higher by less than 25% and also grocery stores offer the same product but not the same quality. But when you combine the two higher categories and the two lower categories for price there are 264 consumers who think prices are higher and 83 who think prices are lower, as compared to the grocery stores. For producers when you combine the groups of higher and lower prices there were 62 responses for higher and 30 responses for lower prices as compared to the grocery store. While these responses are not as clear cut as the responses to quality and freshness, still most producers and consumers rated that farmers' market products were higher priced than the grocery stores.

With these results we fail to reject the null hypothesis (C) and reject the alternative hypothesis (D). The result of this test concludes that mostly farmers' market consumers and producers perceive farmers' market products to be higher priced as compared to the same products offered in conventional marketing outlets. The results for producers and consumers perceptions of price are illustrated in figures II-4 and II-5 respectfully.

Relating Demographics to Producers and Consumers Rankings

In this section we will discuss the results of the interval censored regression as compared to demographics. Farmers' market producers who were college graduates thought that their prices were 9.28% less, quality was 14.80% worse, and freshness was

21.86% lower than the grocery stores, as compared to those producers who are not college graduates. Female producers thought that their prices were higher by 7.89% than the grocery stores, as compared to male producers. The producers who participate in the market less than 25% of the time thought that their prices were lower by 26.61% and worse quality by 28.06% than the grocery stores, as compared to producers who participate in the market 100% of the time. Farmers' market producers who participate in the market 50% of the time ranked their prices to be 14.80% less than the grocery stores, as compared to those producers who participate in the market 100% of the time. Those farmers' market producers who participate in the market 75% of the time ranked their products 19.10% worse than the grocery stores, as compared to those producers who participate in the market 100% of the time. Only the significant values were discussed here; the entire findings are illustrated in Tables II-1, II-2 and II-3.

In the consumer surveys, we found that female consumers perceived farmers' market prices to be 4.5% higher, quality to be 8.24% higher, and freshness to be 6.30% higher than the grocery stores as compared to males. Urban consumers compared to rural consumers thought that farmers' market prices were higher by 3.87%. The consumers who have college educations thought that prices were 5.23% higher as compared to the consumers who do not have a college education. The consumers who had a household income of $15,001-$30,000 though that the quality of farmers' market products was higher by 8.73% than the grocery stores, as compared to those who have a household income of $80,001-and above. Also those consumers who had a household income of $30,001-$50,000 thought that the quality of farmers' market products was 8.20% higher than the grocery stores, as compared to those who have a household income of $80,001-

and above. The consumers, who shop at health food stores as compared to those who do not, thought that farmers' market quality was 7.04% higher and freshness was 5.84% higher than compared to the grocery stores. Only the significant values were discussed here; the entire findings are illustrated in Tables II-4, II-5 and II-6.

Conclusion

This essay used producer and consumer surveys to gather information on the participants of Oklahoma farmers' markets. During the summer of 2010 surveys were conducted in which farmers' market producers and consumers were asked about their specific preferences for the attributes of price, quality, and freshness. This study looked to gain further understanding of what value consumers place on these attributes and what demographics explain the preferences towards these attributes. Also, the study was interested in the producers ranking of their products as compared to those same products offered in traditional retail outlets as well as the producers' demographics. By identifying these groups of consumers and producers farmers' markets will be better able fulfill their customers' needs and market to a targeted audience.

Specific Conclusions

Firstly, a high majority of producers and consumers thought the farmers' market products were higher quality than the grocery store products. When consumers ranked farmers' market products' quality to be higher than the grocery stores; these consumers were found to have one or more of the following demographics: female, low middle income ($15,001- $30,000), middle income ($30,001-$50,000) , and shops at health food stores. Farmers' market producers who were college graduates ranked their products of worse quality as compared to those offered at grocery stores, compared to non-college

graduates. Those producers who participated less than 25% of the time and those who participated 75% of the time thought that their products were worse quality as compared to the producers who participate 100% of the time. Although we find slight deviations in the demographics of producers and consumers, we still find results as to most farmers' market participants think that the farmers' market products are far superior to those of the grocery stores.

Secondly, a high majority of producers and consumers thought the farmers' market products were fresher than the grocery store products. Farmers' market consumers who had one or more of the following demographics ranked farmers' market products to be fresher than those of the grocery stores: female, shops at health food stores. Producers who were college graduates thought that their products were less fresh as compared to non-college graduate producers. While there are some slight differentiating traits among consumers and producers of farmers' markets, overall consumers and producers rank farmers' market products to be fresher. With these high rankings of freshness and quality, that is why quality and freshness should be traits that are used in further promotion of farmers' markets.

Thirdly, consumers and producers mostly ranked farmers' market prices to be higher than grocery store prices. This concludes that there is a true willingness to pay for farmers' market products and that the attributes of local foods are valued by consumers and producers to be higher than compared to the grocery stores. Also, the descriptive demographics of the groups were determined through this survey and this in turn will help with farmers' market promotion. By specifically targeting these groups through advertising farmers' markets will be better able to promote themselves.

Finally, we found that consumers who were: female, urban, and/or college graduates thought that farmers' market products were higher priced as compared to the grocery stores. Farmers' market producers who were college graduates thought that their prices were lower (than grocery stores) as compared to non-college graduates, while female producers thought that their product prices were higher (than grocery stores) as compared to male producers. Also producers who participated less than 25% of the time and 50% of the time thought that their product prices were lower (than grocery stores) compared to those producers who participated in the market 100% of the time.

Limitations and Future Research

With this survey data there were several limitations and several hindsight changes. The first of which was that a large majority of producers and consumers thought that farmers' market quality and freshness were far superior to the grocery stores. This did not allow us to define a group to one set of demographics. In knowing this, future research could ask consumers what other attributes of farmers' market products that they place value on and link consumer demographics to those traits.

Secondly, in the question of price, allowing producers and consumers to select answers that were other than numerical caused some problems in the statistical analysis; this question should have been broken into two questions. One question should have asked if farmers' market products were comparable to the grocery store products and another question should have asked how much of a price difference these products had. This would have allowed for easier data input and statistical calculations.

Finally, future research could survey non-participants of farmers' markets in order to discover what attributes those consumers value about foods and how farmers'

markets could fulfill those needs. In surveying non-participants, farmers' market participation could be expanded to those who do not currently participate in the farmers' markets.

ESSAY III

Consumer Willingness-to-Pay for Attributes of Tomatoes and Producer's Perceptions of Farmers' Market Consumers' Demographics

Abstract

Do consumers value locally produced food for its location of production, and do they value the attribute of local food separate from attributes associated with locally produced food? Previous studies suggest that demand exists for locally produced foods and that they carry higher premiums, independent of other attributes associated with local foods (Loureiro and Hine 2002; Thilmany, Bond, and Bond 2008; Darby et al. 2008). In this study we will specifically investigate consumer willingness-to-pay for the attributes of production methods, production locations, nutrition, and food safety in tomatoes. Also this study will determine the correlation between farmers' market producers' perceptions of their consumers' demographics and actual farmers' market consumer demographics. The data was collected in surveys of consumers and producers in central Oklahoma in the summer of 2010. The results of this study show that consumers are willing to pay premiums for the attributes of organic, high nutrition, high food safety, and locally produced. Also producers predicted their consumers' demographics reasonably well. The results of this study could be used in the promotion of farmers' market products to the general public, through education and promotion. Increased sales of farmers' market

products are expected to have a positive economic impact on the local economy (Henneberry, Whitacre, and Agustini 2009).

Introduction

This essay will discuss what the previous literature defines as locally produced food, consumers' value in farmers' markets, consumers' WTP (Willingness-to-Pay) for locally produced food, and producers' perceptions of their consumers' demographics. This research will investigate consumer WTP for attributes of tomatoes at farmers' markets. The attributes that were considered were price, production method, production location, nutrition, and food safety. It was assumed that these tomatoes had five attributes at two levels each. This study also looks at how producers perceive their consumers' demographics. By gaining an understanding of consumers' WTP for these attributes, producers can more accurately market to their customers. Also by knowing how producers perceive their consumers, conclusions can be drawn as to ways to educate these producers on what their consumer demographics are and how to market towards them.

Defining Locally Produced Foods

Local food markets often claim the food that they sell is locally produced, but deciding what defines local can often be tricky. Many consumers believe that foods grown in a one-hundred mile radius of the market is considered local food, while others interpreted local as the food being grown within the state (Hartman Group 2008). Darby et al.(2008) found that local products that were below the state level did not carry a higher WTP premium, but those products that were defined local at a state level carried consumer demand that was independent of other attributes. Also Loureiro and Hine (2002) conclude that locally produced carries a 10% premium. A Maine study indicated

that consumers and producers ranked local production as being within state boundaries (Hunt 2007). If this is true for Oklahoma, market managers could have more flexibility in the area of production that can be allowed to sell in the market. Consumers place value on the locality of the food that they are purchasing, but also these consumers place a value on the external benefits of local foods (Darby, et al. 2008). In this study we will not specifically ask consumers to explain their definition of local, but rather, through a WTP study, discover their value placed exclusively on locally produced foods as well as other attributes.

Consumers' Value in Farmers' Markets

Consumers of farmers' markets products enjoy many external benefits associated with farmers' markets. Farmers' markets provide a place of interaction between the consumer and the producer of locally produced foods. Consumers feel a connection between the money spent and the farmer who directly receives that payment (Darby, et al. 2008). In Toler, et al. (2009) the authors concluded that consumers placed value on the local producers wellbeing and was a possible reason for consumers placing higher value on locally-grown food. Consumers benefit from local markets because of the increased availability of fresher, healthier, and locally grown produce from a reliable source (Trobe 2001). Social interaction is also a valued aspect of farmers' markets. A study done by Hunt (2007) showed that 98% of customers had fun while at the farmers' market and 59% claimed that the market outing was as family event. Farmers' market customers not only enjoy the products that they receive, but the environment they receive them in.

While these attributes account for some of the value consumers place on local foods, consumers also value quality and freshness of the products (Weatherell, Tregear,

and Allinson 2003). A Minnesota study found that a large majority of study participants considered freshness important and rated safe to eat as a valued attribute (Yue and Tong 2009). Another study done by Hunt (2007) reveled that consumers ranked freshness as the most important reason to shop at farmers' markets. A large majority of customers surveyed in UK farmers' markets stated that they would purchase more locally produced food if it was available to them (Trobe 2001; Weatherell, Tregear, and Allinson 2003). Cloud (2007) argues that local food is better because it has not traveled across the country, thus inferring that local produce must be fresher and is better on the environment because there are less shipping miles. Though the environmental issues can be debated, consumers enjoy knowing local food comes from local people, and that they are getting a product that they can trust.

These studies illustrate the consumer value that is placed on attributes of farmers' markets. But what these previous studies have left to answer is how Oklahoma farmers' market customers' value attributes of locally produced foods. This study will investigate how consumers value the attributes of production methods, production locations, nutrition, and food safety and how much they are willing to pay for these attributes in tomatoes.

Consumer Willingness-to-Pay for Locally Produced Food

Consumer demand for products can often be gauged in the amount they are willing to pay for the products of interest. The more the market vendors know about the perceived value of their product, the better they can promote and charge for their product. In a Colorado based study, it was found that consumers valued the locally grown attribute more than that of the organic and GMO-free attributes. Customers are willing to pay a

10% premium for locally grown potatoes, whereas organic attributes carried about a 6% premium and GMO-free attribute carried 5.5% premium (Loureiro and Hine 2002). At the Piedmont Triad Farmers Market, 80% of customers reported that they would pay a 50% premium on the same product that could be purchased at the supermarket, and 29% stated that they did not consider price when shopping at the market (Andreatta and Wickliffe 2002). Another study done by Thilmany, Bond, and Bond (2008) concluded that, for a large majority of consumers surveyed, locally produced attribute was valued by consumers more than organic production. Since local grown attribute carries the highest WTP premium available, this aspect should be pursued more in-depth. That is why this study will investigate central Oklahoma farmers' market consumers WTP for organic, high nutrition, high food safety, and locally produced attributes in tomatoes.

Producers' Perceptions of their Consumers' Demographics

In this study we are also interested in investigating whether or not producers accurately know the consumers that they are marketing towards. For a producer to accurately market to their customers they must understand the needs, wants, and expectations of their customers. Through a better understanding of consumer demographics and preferences these producers will more precisely tailor their products and marketing strategies to fit their customer base. There are no known recent studies that link farmers' market producers' perceptions of their consumers' demographics and the actual consumer demographics. That is why this study will use consumer and producer surveys to examine producer perceptions of consumer demographics and actual consumer demographics.

The overall objective of this study is to determine consumer WTP for specific attributes of tomatoes and producers perceptions of their consumers' demographics. The specific objectives are: (1) to determine farmers' market consumers WTP for attributes of production method, production location, nutrition, and food safety in tomatoes; (2) to determine if there is a difference between male and female consumers WTP for specific attributes of tomatoes; (3) to discover if farmers' market producers accurately predict their consumers' demographics.

Conceptual Framework and Hypotheses

Consumer WTP for Attributes of Tomatoes

In this study we are looking to elicit what value consumers place on attributes of tomatoes in farmers' markets. To derive consumer WTP for the attributes of production method, production location, nutrition, and food safety in tomatoes, we will use a choice modeling and from that be able to estimate the utility for these attributes. We hypothesize that consumers will have positive WTP estimates for the attributes of organic, high nutrition, high food safety, and locally produced will be positive. The following null hypothesis will be tested to determine if there is consumer WTP for the attributes of interest:

(A) H_0: WTP for Organic > 0

WTP for High Nutrition > 0

WTP for High Food Safety > 0

WTP for Locally Produced > 0

(B) H_A: WTP for Organic < 0

WTP for High Nutrition< 0

WTP for High Food Safety < 0

WTP for Locally Produced < 0

If the null is rejected then this would indicated that consumer WTP for the attributes of organic, high nutrition, high food safety, and locally produced is less than zero.

Also, we hypothesize that female consumers will have a higher WTP for these attributes than compared to male consumers. The following null hypothesis will test if female consumers have a higher WTP for these attributes as compared to male consumers:

(C) H_0: Female WTP for Organic > Male WTP for Organic

Female WTP for High Nutrition > Male WTP for High Nutrition

Female WTP for High Food Safety > Male WTP for High Food Safety

Female WTP for Locally Produced > Male WTP for Locally Produced

(D) H_A: Female WTP for Organic < Male WTP for Organic

Female WTP for High Nutrition < Male WTP for High Nutrition

Female WTP for High Food Safety < Male WTP for High Food Safety

Female WTP for Locally Produced < Male WTP for Locally Produced

If the null is rejected then this would indicate that males would have a higher WTP for these attributes as compared to female consumers.

Producers Perceptions of their Consumers' Demographics

In this study we are also interested in gaining an understanding of how producers view their consumers' demographics. To test if producers have accurate knowledge of their consumers, we will use a survey to ask producers their opinions of what their consumer demographics are. We will also use a survey to ask consumers what their

demographics are. After gathering these results we will compare the highest percentage of responses by consumers and producers to see if producers accurately perceive the demographics of the consumers we surveyed.

Methodology/ Survey Design

While previous studies have considered consumer participation in farmers markets, none have evaluated Oklahoma farmers' market consumers WTP for attributes of locally produced food. In order to gain a more in-depth understanding of farmers' market consumer and producer traits a survey will be implemented. More specifically, consumers were given eight choice sets, in each set there were three options, two options of hypothetical tomatoes that they would consider purchasing and an option not to purchase any. Also this study will ask consumers their demographics and ask producers their perceptions of their consumers' demographics.

Geographic Area of Interest

The focus of this study is central Oklahoma, we considered an area designated by the Oklahoma Department of Tourism as "Frontier Country", this area includes the Oklahoma counties of Canadian, Cleveland, Grady, Hughes, Lincoln, Logan, McClain, Okfuskee, Oklahoma, Payne, Pottawatomie, and Seminole. Within these counties there are 20 farmers' markets. We were able to survey 19 of these farmers' markets; the Norman Farmers' Market declined our request to survey. This area was selected because it had the most farmers' markets in one centrally located place in Oklahoma. We only surveyed the farmers' markets that were registered with the Oklahoma State Department of Agriculture. The size of the farmers' markets in this area varied greatly, from Stroud Farmers' Market a two producer market to Edmond Farmers' Market a forty-two

producer participants. The age of these markets is the likely reason for this phenomenon Stroud Farmers' Market was in its first year of business and the Edmond Farmers' Market was in its twenty-second year.

Survey Design

After consulting farmers' market managers, vendors, and consumers along with the relevant literature, a survey was designed. These consultations provided valuable insight into which attributes of locally produced food should be included in the survey. There were two surveys that were constructed. We specifically wanted to investigate the attributes of production method, production location, nutrition, and food safety in tomatoes and consumers WTP for these attributes. There were five attributes that were considered at two levels. The attributes were price at the levels of $2 and $4, production method at the levels of organic and conventional, production location of locally produced and not locally produced, nutrition at the levels of high and low, and food safety at levels of high and low. Each consumer was given two choices of tomatoes with varying attributes (and an option to not select either one) and asked if they would be willing to purchase either option. Each customer was asked to do this eight times.

In order to create a survey that was perfectly orthogonal, SAS was used. Proc optex in SAS was used to create a design that allowed for maximum assessment without using a full factorial design. Proc corr in SAS was then used to test the design to see if it was orthogonal. Also there were two versions of the survey given so that consumers weren't overwhelmed with answering sixteen question sets. The hypothetical choice of tomatoes was used because it is something that most consumers purchase and readily purchase in the summer. Below is an example of one of the survey questions.

Figure III-1 Consumer Survey Examples

Attributes	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$4.00	I wouldn't buy any of these
Production Method	Conventional	Organic	
Nutrition	Low	High	
Food Safety	High	Low	
Locally Produced	No	No	
I would purchase…	[ ]	[ ]	[ ]

Attributes	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$4.00	I wouldn't buy any of these
Production Method	Conventional	Organic	
Nutrition	High	Low	
Food Safety	High	Low	
Locally Produced	Yes	Yes	
I would purchase…	[ ]	[ ]	[ ]

Two different surveys of producers and consumers were then conducted. With this information we analyzed the responses given by consumers and producers, for all 19 farmers' markets in this study. The complete consumer and producer surveys can be found in appendix A.

Data Collection

The farmers' market surveys were conducted at the markets' place of business; both consumers and producers were surveyed. All producers at the farmers' markets were asked to participate in the survey. The consumer surveys were randomized by the asking that every other available customer to participate. A survey crew of six individuals was assembled to assist in the collection of data. This enabled more than one farmers' market to be surveyed on a given Saturday. Some farmers' markets are only open on Saturdays. If a market was open more than one day a week the manager of that market was asked which day was their busiest day and so that was the day that we surveyed that market, usually this was Saturday. With the larger farmers' markets two surveyors were sent to that market, and the smaller ones only one surveyor was sent. The only market that was surveyed during both days of operation was the OSU-OKC farmers' market, since the farmers' market had two separate locations for each day (Saturday: 400 N. Portland,

Wednesday: N.W. 63rd and Western). We felt as though these locations were far enough apart that there would be a difference in the customer surveys, though the producers would be the same.

Consumers and producers were approached by a surveyor and asked to participate in the survey. If the participant accepted they were asked to read the cover letter to the survey. The cover letter described: the purpose of the study, participation was completely voluntary, no known risks greater than everyday life, and withdrawing from the study at any time was at no penalty. Often many customers were filling out the survey at the same time, this allowed for a larger sample size to be taken. The survey crews remained at the market for the entirety of the market day's hours. The hours of operation varied greatly by the individual market. Producers were given the surveys at the beginning of the market day and the surveys were collected at the end of the day, so that the producer had ample time to fill out the survey. If producers were unable to complete their survey during the market hours they were given a self-addressed business reply envelope to return the survey. The surveys were kept filed by the location of the survey. We experienced a response rate of 92% of producers were surveyed at the markets. While an accurate representation of the consumer response rate would be difficult because there were no counts of the total number of consumers at the market for the given day that we were there. A full list of response numbers and percentages by location is given in Table I-1.

Data Analysis

In this study we are looking to elicit what value consumers place on attributes of tomatoes in farmers' markets. To derive consumer WTP for the attributes of production

method, production location, nutrition, and food safety in tomatoes we will use a choice modeling and from that be able to estimate the utility for these attributes. Then from the derived utilities from each attribute the WTP can be estimated. We used a conditional logit model to derive the utilities for each attribute. Proc mdc in SAS was used to estimate a conditional logit model in which consumer utilities were derived. In doing so we would like to discover the overall utility that these attributes have. The consumers in this study were faced with eight choice models and in each were asked to choose between two options of tomatoes with varying levels of five attributes at two levels each. Following the models of Adamowicz et al. (1998) and the Galawat and Yabe (2010) we propose that a consumers' (i=1, 2 …N) utility (U_{ij}) for each alternative (j) is represented in a utility function that is comprised of a deterministic (V_{ij}) and a stochastic (ε_{ij}) component:

(1) $U_{ij} = V_{ij} + \varepsilon_{ij}$

In this model a consumer will choose an alternative (j) if the utility is higher than other options (k). The probability that a consumer will choose option (j) is illustrated by:

(2) $Prob\{j\ is\ chosen\} = Prob\{V_{ij} + \varepsilon_{ij} \geq V_{ik} + \varepsilon_{ik}\ \forall\ k\ C_i\}$

where C_i represents all of the choice sets (A, B, C) for each consumer (i). Also the conditional indirect utility function (V_{ij}) has a linear form:

(3) $V_{ij} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n$

Where $\beta_1$through $\beta_n$is a vector of the coefficient attached to the vector of attributes X_1throughX_n. The probability of the consumer choosing option j is (assuming properties are type I extreme-value distribution):

(4) $Prob\{j\ is\ chosen\} = \frac{\exp(V_{ij})}{\sum_{j\epsilon C} \exp\ (V_{ij})}$

The WTP can be derived from the utilities of the attributes by dividing the negative utility of the attribute ($\beta_{attribute}$) by the price utility ($\beta_{price\ attribute}$) as seen in the following equation.

(5) $WTP = \frac{-\beta_{attribute}}{\beta price\ attribute}$

Results and Discussion

This study proved to find useful information about Oklahoma Farmers' Market consumers and producers. The results of this study show that farmers' market consumers were willing to pay premiums for the attributes of organic, high nutrition, high food safety, and locally produced. Also farmers' market producers fairly accurately predicted their consumers' demographics. The following sections will describe the results in greater detail.

Farmers' Market Customers WTP for Attributes of Locally Produced Foods

The results of this study show that farmers' market consumers are willing to pay premiums for attributes of local food. These attributes are organic compared to non-organic, high nutrition compared to low nutrition, high food safety compared to low food safety, locally produced compared to non-locally produced. The premiums that all customers are willing to pay are $2.01 for high food safety, $1.98 for locally produced, $1.84 for high nutrition, and $1.11 for organic. We expected all of these attributes to be positive, and with this we fail to reject the null hypothesis (A) and reject the alternative hypothesis (B). The result of testing the hypothesis concludes that consumers have a WTP that is positive for the attributes of organic compared to non-organic, high nutrition compared to low nutrition, high food safety compared to low food safety, locally produced compared to non-locally produced. These results are consistent with the

literature that was discussed earlier. This is likely due to the fact that male consumers may be unaware of the price.

After considering all farmers' market consumers WTP we were interested in investigating any differences in female and male consumers WTP. We speculated that females would have a higher WTP as compared to males. The results were that both female and male consumers had a positive WTP for the attributes of organic compared to non-organic, high nutrition compared to low nutrition, high food safety compared to low food safety, locally produced compared to non-locally produced. We estimated female farmers' market consumers to have a WTP of $1.79 for locally produced, $1.75 for high food safety, $1.60 for high nutrition, and $1.04 for organic. We also estimated male farmers' market consumers to have a WTP of $3.00 for locally produced, $2.98 for high food safety, $2.87 for high nutrition, and $1.40 for organic.

With these results we reject the null hypothesis (C) and fail to reject the alternative hypothesis (D). The result of this test concludes that male farmers' market consumers have higher WTP estimates than those of the female consumers for the attributes of organic compared to non-organic, high nutrition compared to low nutrition, high food safety compared to low food safety, locally produced compared to non-locally produced.

Farmers' Market Producers' Perceptions of their Consumers' Demographics

In this study we were interested in gaining knowledge of how farmers' market producers perceive their consumers' demographics. What we find is that producers fairly accurately predict their consumers' demographics. The consumers we surveyed reported that 50.32% of these individuals were between the ages of 46-65 years, 28.20% stated that they had a household income of $80,001 and above, and 57.58% of these individuals

responded that they were college educated. While 62.18% of producers thought their consumers were between the ages of 46-65 years, 35.97% thought their consumers' household income was $30,001-$50,000, and 54.55% of producers stated that their consumers were educated at or above the college level. These producers predicted their consumers age and education levels really well, though the average income level of the farmers' market consumer surveyed is much higher than what these producers predicted. The complete list of the producers' perceptions and the surveyed consumers' demographic results can be seen in Table III-1

Conclusion

This study provided useful insight to consumer WTP for attributes of tomatoes and farmers' market producers' perceptions of their consumers' demographics. All farmers' market consumers demonstrated a WTP that was positive for the attributes of organic compared to non-organic, high nutrition compared to low nutrition, high food safety compared to low food safety, locally produced compared to non-locally produced. When all of the consumer-surveys were assessed the amount this group was willing to pay for these attributes was in the order of highest to lowest was high food safety, locally produced, high nutrition, and organic. Though when the female and male groups were analyzed separately the ranking was locally produced, high food safety, high nutrition, and organic. Since all of these attributes carry higher WTP premiums they should then in turn be used as to market to new potential customers of the farmers' market.

Farmers' market producers accurately predicted their consumers' age and education levels, though these producers perceive their consumers as having lower household incomes than they actually have. This way of thinking for farmers' market

producers maybe a problem, they may actually price their products lower than the market would allow. Producers should be informed as to who their customers are and what demographic they represent. Also due to the fact of underestimating the income level of their customers, producers may be missing opportunities to sell specialty items that this income group would be more interested in.

REFERENCES

Adamowicz, W., P. Boxall, M. Williams, and J. Louviere. 1998. "Stated Preference Approaches for Measuring Passive Use Values: Choice Experiments and Contingent Valuation." *American Journal of Agricultural Economics* 80(1):64-75.

Andreatta, S., and W. Wickliffe, II. 2002. "Managing farmer and consumer expectations: A study of a North Carolina farmers market." *Human Organization* 61(2):167-176.

Blanck, H.M., C. Gillespie, J.E. Kimmons, J.D. Seymour, and M.K. Serdula. 2008. "Trends in Fruit and Vegetable Consumption Among U.S. Men and Women, 1994–2005." *Preventing Chronic Disease Public Health Research, Practice, and Policy* 5(2):1-10. http://www.cdc.gov/pcd/issues/2008/apr/2007_0049.htm. Accessed: January 2011.

Cameron, T.A. 1988. "A new paradigm for valuing non-market goods using referendum data: Maximum likelihood estimation by censored logistic regression." *Journal of Environmental Economics and Management* 15(3):355-379.

Centers for Disease Control and Prevention (CDC): Department of Health and Human Services. 2011. "Fruit and Vegetable Benefits." http://www.fruitsandveggiesmatter.gov/benefits/index.html(Accessed 24 January 2011).

---. 2009. "U.S. Obesity Trends:Trends by State 1985–2009." *http://www.cdc.gov/obesity/data/trends.html#State*: (Accessed 25 January 2011)

Cloud, J. "Eating Better Than Organic." *TIME Magazine*, Mar 2, 2007, pp. 45-51.

Darby, K., M.T. Batte, S. Ernst, and B. Roe. 2008. "Decomposing Local: A Conjoint Analysis of Locally Produced Foods." *American Journal of Agricultural Economics* 90(2):476-486.

Galawat, F., and M. Yabe. 2010. "ASSESSING CONSUMER'S PREFERENCE FOR LOCAL RICE IN BRUNEI: AN APPLICATION OF CHOICE MODEL." *International Society for Southeast Asian Agricultural Sciences* 16(2):104-115.

Grimm, K.A., MPH; HM Blanck, PhD;KS Scanlon, PhD; LV Moore, PhD; LM Grummer-Strawn, PhD; and JL Foltz, MD. 2010. "State-specific Trends in Fruit and Vegetable Consumption among Adults — United States, 2000–2009." *Morbidity & Mortality Weekly Report:Centers for Disease Control and Prevention (CDC)* 59(35):1125-1130.

Hahn, M. 2008. "EBTs Bring More Revenue to Farmers Markets." *Farmers Markets Today* March/April:p.23 http://www.farmersmarketstoday.com/fmt/index.php?option=com_content&task=view&id=34&Itemid=21Retrieved (Accessed 15 February 2011).

Hartman Group. 2008. "Consumer Understanding of Buying Local." *Hartbeat 27* Available at http://www.hartman-group.com/hartbeat/2008-02-27 (accessed 11 January 2011).

Henneberry, S.R., B. Whitacre, and H.N. Agustini. 2009. "An Evaluation of the Economic Impacts of Oklahoma Farmers Markets." *Journal of Food Distribution Research* 40(3):64-78.

Hord, N.G., Y. Tang, and N.S. Bryan. 2009. "Food sources of nitrates and nitrites: the physiologic context for potential health benefits." *The American Journal of Clinical Nutrition* 90:1-10.

Hunt, A.R. 2007. "Consumer interactions and influences on farmers' market vendors." *Renewable Agriculture and Food Systems* 22(01):54-66.

Kerr Center. 2007. "Closer to Home:Healthier Food, Farms and Families in Oklahoma:A Centennial Report." *Kerr Center for Sustainable Agriculture* http://kerrcenter.com/publications/closer_to_home/toc.htm(Accessed 26 January 2011).

Loureiro, M.L., and S. Hine. 2002. "Discovering Niche Markets: A Comparison of Consumer Willingness to Pay for Local (Colorado grown), Organic, and GMO-Free Products." *Journal of Agricultural and Applied Economics* 34(03):477-487.

Lyon, P., V. Collie, E.-B. Kvarnbrink, and A. Colquhoun. 2009. "Shopping at the farmers' market: consumers and their perspectives." *Journal of Foodservice* 20(1):21-30.

Oklahoma Department of Human Services (OKDHS). 2010. "Number of Oklahomans Receiving Nutrition Benefits Increases " *http://www.okdhs.org/library/news/rel/2010/02/fssd02232010.htm (Accessed 15 February 2011).*

Rose, D., and R. Richards. 2004. "Food store access and household fruit and vegetable use among participants in the US Food Stamp Program." *Public Health Nutrition* 7(08):1081-1088.

SAS Institute Inc. 1999. "SAS/STAT User's Guide, Version 8." *Cary, NC: SAS Institute Inc.*

Thilmany, D., C. Bond, and J. Bond. 2008. "Going Local: Exploring Consumer Behavior and Motivations for Direct Food Purchases." *American Journal of Agricultural Economics* 90(5):1303.

Toler, S., B.C. Briggeman, J.L. Lusk, and D.C. Adams. 2009. "Fairness, Farmers Markets, and Local Production." *American Journal of Agricultural Economics* 91(5):1272-1278.

Trobe, H.L. 2001. "Farmers' markets: consuming local rural produce." *International Journal of Consumer Studies* 25(3):181-192.

U. S. Department of Agriculture- Agriculture Market Service (USDA-AMS). 2010. "Farmers Market Growth: 1994-2010." *Internet site: http://www.ams.usda.gov/AMSv1.0/ams.fetchTemplateData.do?template=TemplateS&navID=WholesaleandFarmersMarkets&leftNav=WholesaleandFarmersMarkets&page=WFMFarmersMarketGrowth&description=Farmers%20Market%20Growth&acct=frmrdirmkt Accessed November 1, 2010.*

U. S. Department of Agriculture. 2010. "EBT in Farmers' Markets- Report to Congress." Internet site: http://www.fns.usda.gov/SNAP/ebt/pdfs/Kohl--Feasibility.pdf (Accessed 8 March 2011).

U.S. Department of Health and Human Services. 2011. "Health Information for Individuals and Families." http://www.health.gov/ (Accessed: 30 January 2011)

U.S. Department of Health and Human Services:U.S. Department of Agriculture. 2005. "Dietary Guidelines for Americans 2005."www.healthierus.gov/dietaryguidelines(Accessed: 24 January 2011).

USDA Agricultural Marketing Service; USDA Food and Nutrition Service; Project for Public Spaces, I., ,. 2010. "SUPPLEMENTAL NUTRITION ASSISTANCE PROGRAM (SNAP) AT FARMERS MARKETS: A HOW-TO HANDBOOK." June 2010 http://www.ams.usda.gov/AMSv1.0/getfile?dDocName= STELPRDC5085298&acct=wdmgeninfo (Accessed 15 February 2011).

Weatherell, C., A. Tregear, and J. Allinson. 2003. "In search of the concerned consumer: UK public perceptions of food, farming and buying local." *Journal of Rural Studies* 19(2):233-244.

Yue, C., and C. Tong. 2009. "Organic or Local? Investigating Consumer Preference for Fresh Produce Using a Choice Experiment with Real Economic Incentives." *HortScience* 44(2):366-371.

Zepeda, L., and J. Li. 2006. "Who Buys Local Food?" *Journal of Food Distribution Research* 37(03):1-11.

TABLES

Table I-1 Survey Response Numbers from Each Farmers' Market

Location	Name of Farmers' Market (FM)	Number of producers surveyed	Producer response rate	Number of consumers surveyed
Blanchard	Blanchard FM	4	**57%**	21
Chickasha	Chickasha FM	10	**100%**	34
Choctaw	Eastern Oklahoma County FM	5	**83%**	20
Cushing	Downtown Cushing FM	3	**100%**	24
Del City Mid West	Mid Del FM	7	**100%**	28
Edmond	Edmond FM	42	**95%**	49
El Reno	El Reno FM	5	**125%**	48
Guthrie	Guthrie Farmers'& Market	8	**114%**	27
Minco	Legion Hut	6	**100%**	8
Moore	Old Town FM	3		12
OSU/OKC (Portland)	OSU-OKC Farmers' Market	28	**85%**	68
OSU/OKC(63rd)	OSU-OKC FM	Included above		21
Oklahoma City	OKC - Women in Ag	2	**33%**	9
Oklahoma City	OSDH Wellness FM	3	**100%**	35
Seminole	Seminole County FM	8	**67%**	32
Shawnee	Pottawatomie County Farmers' Coop Market	12	**60%**	54
Stillwater	Stillwater FM	14	**78%**	101
Stroud	Stroud FM	1	**50%**	7
Tuttle	Tuttle FM	5	**100%**	26
Total		166	**92%**	624

Table II-1 Producer Responses to Question #5 (Price Differences)

	Price difference compared to the grocery store
Producer income from the farmers' market (as % of total household income)	Compared to reliant producers ‡
Less than 25%	9.08% less
50%	3.86% less
Demographics	
College Graduates	9.28% less, compared to non-college graduate producers**
Female	7.89% more, compared to male producers*
Participation in summer farmers' market	Compared to fulltime producers†
Less than 25%	26.61% less***
50% of the time	14.80% less*
75% of the time	1.94% less
Intercept	7.93***

‡Reliant producers responded that their income was 75% reliant on the farmers' market.
†Full time producers responded that they participated in the market 100% of the time.
Significance levels: * α= 0.1, ** α= 0.05, and *** α=0.001

Table II- 2 Producer Responses to Question #6 (Quality Differences)

	Quality difference compared to the grocery store
Producer income from the farmers' market (as % of total household income)	Compared to reliant producers‡
Less than 25%	Worse by 16.93%
50%	Better by 5.31%
Demographics	
College Graduates	Worse by 14.80%, compared to non-college graduate producers*
Female	Better by 17.20%, compared to male producers **
Participation in summer market	Compared to fulltime producers†
Less than 25%	Worse by 28.06% **
50% of the time	Worse by 11.20%
75% of the time	Worse by 19.10%**
Intercept	56.96***

‡Reliant producers responded that their income was 75% reliant on the farmers' market.
†Full time producers responded that they participated in the market 100% of the time.
Significance levels: * α= 0.1, ** α= 0.05, and *** α=0.001

Table II-3 Producer Responses to Question #7 (Freshness Differences)

	Freshness difference compared to the grocery store
Producer income from the farmers' market (as % of total household income)	Compared to reliant producers‡
Less than 25%	238.84% less fresh
50%	216.65% less fresh
Demographics	
College Graduates	Less fresh by 21.86%, compared to non-college graduate producers*
Female	More fresh by 10.76%, compared to male producers
Participation in summer market	Compared to fulltime producers†
Less than 25%	17.13% more fresh
50% of the time	2.71% more fresh
75% of the time	3.10% more fresh
Intercept	73.20***

‡Reliant producers responded that their income was 75% reliant on the farmers' market.
†Full time producers responded that they participated in the market 100% of the time.
Significance levels: * α= 0.1, ** α= 0.05, and *** α=0.001

Table II-4 Consumer Responses to Question #16 (Price Differences)

Demographics	Price difference compared to the grocery store
Females	Higher by 4.50%, compared to males.*
Urban	Higher by 3.87% compared to rural.*
College	Higher by 5.23% compared to non-college graduates.**
Income	Compared to high income($80,001 and above)
Low income ($0.00-$15,000)	Lower by 0.38%
Low middle income ($15,001-$30,000)	Lower by 2.89%
Middle income ($30,001- $50,000)	Lower by 3.60%
High middle income ($50,001-$80,000)	Lower by 3.83%
Favors cooking	Compared to those who don't like to cook at all
Likes cooking very much	Higher by 1.79%.
Likes cooking somewhat	Higher by 4.87%
Purchases organic food	Higher by 4.33% compared to those who don't buy organic food.
Shops at health food stores	Lower by 2.80% compared to those who don't shop at health food stores.
Community Supported Agriculture (CSA) membership	Compared to those who are not familiar with any CSA
Yes	Higher by 0.55%.
No, choose not to	Lower by 0.50%
Grows food in one's own garden for family consumption	Higher by 3.31% compared to those who do not grow food for family consumption
Intercept	10.84***

Significance levels: * α= 0.1, ** α= 0.05, and *** α=0.001

Table II-5 Consumer Responses to Question #18 (Quality Differences)

Demographics	Quality difference compared to the grocery stores
Females	Higher by 8.24%, compared to males**
Urban	Lower by 4.27% compared to rural.
College	Higher by 0.36% compared to non-college graduates.
Income	Compared to high income($80,001 and above)
Low income ($0.00-$15,000)	Higher by 6.97%
Low middle income ($15,001-$30,000)	Higher by 8.73% **
Middle income ($30,001- $50,000)	Higher by 8.20%*
High middle income ($50,001-$80,000)	Higher by 4.50%
Favors cooking	Compared to those who don't like to cook at all
Likes cooking very much	Higher by 7.04%
Likes cooking somewhat	Higher by 3.22%
Purchases organic food	Lower by 1.68% compared to those who don't buy organic food.
Shops at health food stores	Higher by 7.04% compared to those who don't shop at health food stores.**
Community Supported Agriculture (CSA) membership	Compared to those who are not familiar with any CSA
Yes	Higher by 7.56%
No, choose not to	Higher by 0.26%
Grows food in one's own garden for family consumption	Lower by 0.40% compared to those who do not grow food for family consumption
Intercept	43.87***

Significance levels: * α= 0.1, ** α= 0.05, and *** α=0.001

Table II-6 Consumer Responses to Question #19 (Freshness Differences)

Demographics	Freshness difference compared to the grocery stores
Females	Higher by 6.30%, compared to males.**
Urban	Lower by 2.37% compared to rural.
College	Lower by 3.36% compared to non-college graduates.
Income	Compared to high income($80,001 and above)
Low income ($0.00-$15,000)	Higher by 6.02%
Low middle income ($15,001-$30,000)	Higher by 2.87%
Middle income ($30,001- $50,000)	Lower by 3.44%
High middle income ($50,001-$80,000)	Lower by 0.41%
Favors cooking	Compared to those who don't like to cook at all
Likes cooking very much	Higher by 2.56%
Likes cooking somewhat	Higher by 1.09%
Purchases organic food	Higher by 0.80% compared to those who don't buy organic food.
Shops at health food stores	Higher by 5.84% compared to those who don't shop at health food stores.*
Community Supported Agriculture (CSA) membership	Compared to those who are not familiar with any CSA
Yes	Lower by 2.34%
No, choose not to	Lower by 4.32%
Grows food in one's own garden for family consumption	Lower by 2.27% compared to those who do not grow food for family consumption
Intercept	42.41***

Significance levels: * α= 0.1, ** α= 0.05, and *** α=0.001

Table III-1 Producers' Perceptions of Consumers' Demographics

	Producers' Perceptions of Consumers' Demographics		**Surveyed Consumers' Actual Demographics**	
Demographic	*# of responses*	*Percentage*	*# of responses*	*Percentage*
Age (Years)				
18-25	1	0.84%	25	4.05%
26-45	39	32.77%	142	22.98%
46-65	74	62.18%	311	50.32%
66 & up	4	3.36%	140	22.65%
Uncertain	1	0.84%		
Total	119		618	
Income (Household)				
$0.00- $15,000	2	1.44%	51	8.82%
$15,001-$30,000	23	16.55%	67	11.59%
$30,001-$50,000	50	35.97%	136	23.53%
$50,001-$80,000	20	14.39%	161	27.85%
$80,001- and above	3	2.16%	163	28.20%
Uncertain	41	29.50%		
Total	139		578	
Education				
Non-College	55	45.45%	263	42.42%
College	66	54.55%	357	57.58%
Total	121		620	

FIGURES

Figure I-1 Map of Percent Obese U.S. Adults, Source: CDC 2009

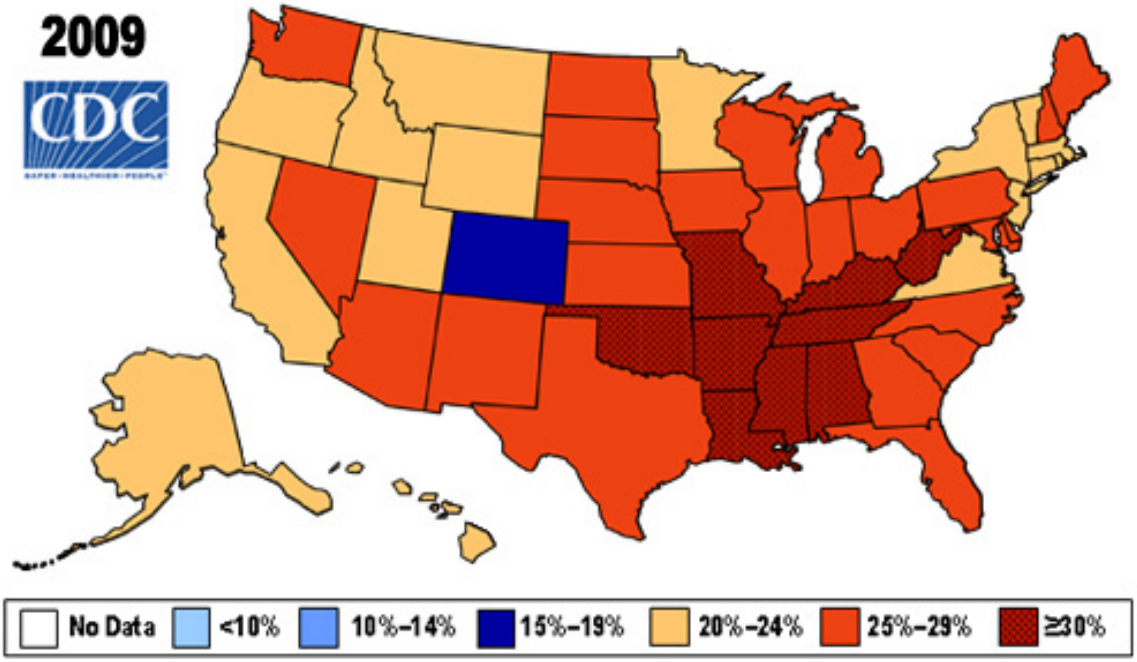


Figure II-1 Survey Examples of Price, Quality, and Freshness Questions

5. On average, how much of a *price* difference is there between your products and those in the grocery stores?

- o My prices are higher by more than 25%.
- o My prices are higher by less than 25%.
- o No difference
- o My prices are lower by less than 25%.
- o My prices are lower by more than 25%.
- o Grocery stores offer the same product but not the same quality
- o Grocery stores do not offer my product
- o Other

6. On average, how much of a *quality* (standard or grade) difference is there between your products and those in the grocery stores?

- o My products are better by more than 25%.
- o My products are better by less than 25%.
- o No difference
- o My products are worse by less than 25%.
- o My products are worse by more than 25%.

7. On average, how much of a *freshness* (age of product) difference is there in your products and the grocery stores?

- o My products are fresher by more than 25%.
- o My products are fresher by less than 25%.
- o No difference
- o My products are less fresh by less than 25%.
- o My products are less fresh by more than 25%.

Figure II-2

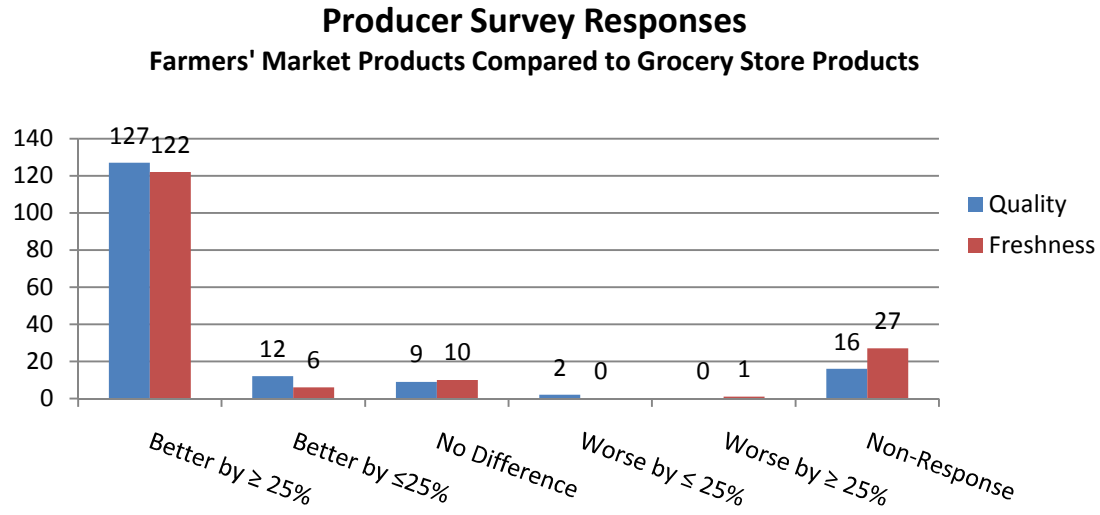


Figure II-3

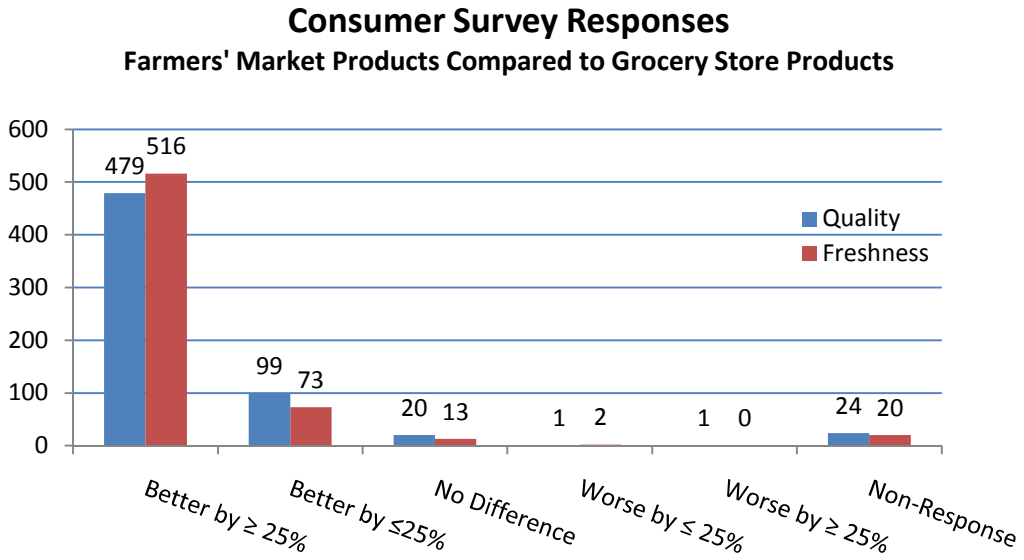


Figure II-4

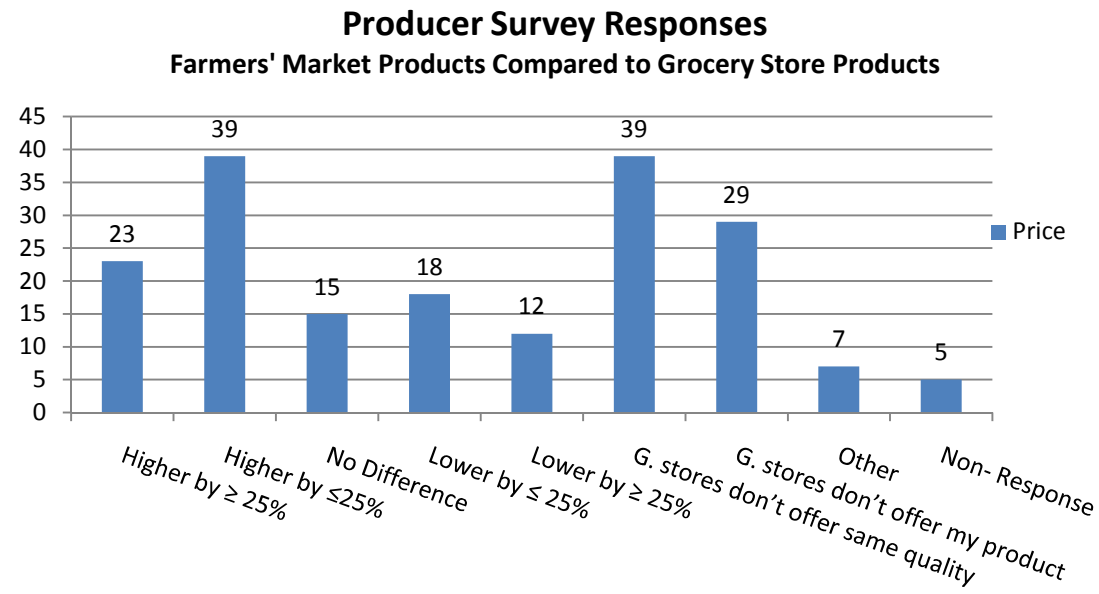


Figure II-5

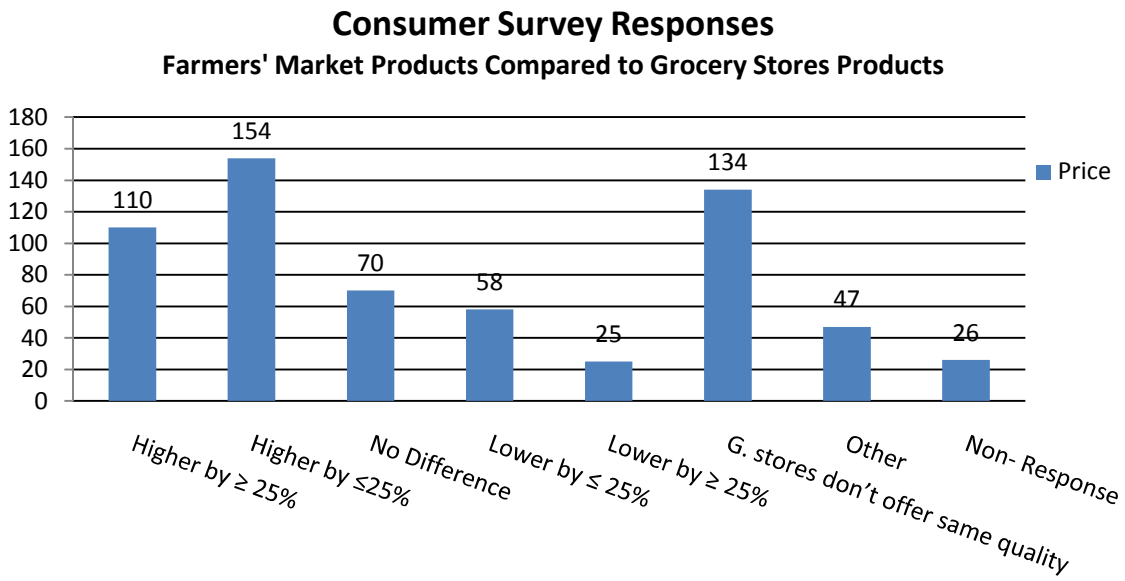


Figure III-1 Consumer Survey Examples

Attributes	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$4.00	I wouldn't buy any of these
Production Method	Conventional	Organic	
Nutrition	Low	High	
Food Safety	High	Low	
Locally Produced	No	No	
I would purchase…	[ ]	[ ]	[ ]

Attributes	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$4.00	I wouldn't buy any of these
Production Method	Conventional	Organic	
Nutrition	High	Low	
Food Safety	High	Low	
Locally Produced	Yes	Yes	
I would purchase…	[ ]	[ ]	[ ]

APPENDICES

Appendix A.

Consumer and Producer Surveys:

AGRICULTURAL ECONOMICS

Survey of Oklahoma Farmers' Market Consumers

Dear Oklahoma Farmers' Market Consumer:

This survey is a part of the research work being done on a project entitled: "Improving Consumer Participation in Oklahoma Local Food Markets", funded by the Agricultural Marketing Service of the U.S. Department of Agriculture. In this survey, you are asked questions about your opinion of marketing techniques, plus participation in the farmers' market and demographics. This survey will be distributed to farmers' market consumers in central Oklahoma during the summer of 2010. By simply completing this short survey, you will help us at Oklahoma State University assist Oklahoma farmer's market managers to promote and build better farmers' markets. This research study will focus on identifying marketing strategies for improving consumer participation in Oklahoma local food markets.

Your participation is requested for one time only, and this survey should not take more than 10 to 15 minutes of your time. Please know that your participation in completing this survey is voluntary, and you may withdraw at any time without penalty. Please also know that there are no known risks associated with this project that are greater than those ordinarily encountered in daily life. The results of the consumers' survey will be used in the survey analysis, and the results will be reported based on aggregate information. The primary data will not be identified with any specific respondents. All responses to the surveys will be kept strictly confidential and you will not be identified in the research output. These surveys will be kept in Dr. Henneberry's office in a locked cabinet and will be destroyed after two years. The results of this research are expected to benefit the Oklahoma local food market producers and policy makers by identifying attributes of local food markets that contribute to the success of these markets. We will collect the surveys once you have them completed.

If you have any questions regarding this survey, please do not hesitate to contact us at 405-744-6178 or (e-mail) srh@okstate.edu. If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu. On behalf of Oklahoma State University and Oklahoma local food participants, we thank you for your time.

Sincerely,

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AGRICULTURAL ECONOMICS

Survey of Oklahoma Farmers' Market Consumers

Please answer the following questions as they apply to you

1. How many people live with you that are 18 years or older?

_____

2. How many people live with you that are less than 18 years old?

_____

3. What age category do you fall in?

- o 18-25 years
- o 26-45years
- o 46-65 years
- o 66 years and older

4. What is your gender?

- o Female
- o Male

5. Do you live in an urban or rural area?

- o Urban
- o Rural

6. Are you a college graduate?

- o Yes
- o No

7. What is your household income?

- o Low income ($0.00- $15,000)
- o Low middle income ($15,001- $30,000)
- o Middle income ($30,001- $50,000)
- o High middle income ($50,001- $80,000)
- o High income ($80,001 – and above)

8. Do you like to cook?

- o Very much
- o Somewhat
- o Not at all

9. Have you ever purchased organic foods?

- o Yes
- o No

10. Do you ever shop at health food stores?

- o Yes
- o No

11. Do you have a Community Supported Agriculture (CSA) membership?

- o Yes
- o No, I choose not to
- o No, I am not familiar with any

12. Do you grow food for your family in your own garden?

- o Yes
- o No

13. What are your average household weekly food expenditures?

- o Less than $100
- o $200
- o $300
- o More than $400

14. Where did you hear about the farmers' market?

- o Newspaper
- o Radio
- o Television
- o Internet
- o Billboard/ Roadside sign
- o Paper fliers
- o Other (please specify)

  _____

15. How often do you come to the farmers' market?

- o Every market day
- o Once a week
- o Twice a month
- o Once a month
- o A couple times a year

16. On average, how much of a *price* difference is there between Farmers' Market products and those in the grocery stores?

- o Farmers' Market prices are higher by more than 25%.
- o Farmers' Market prices are higher by less than 25%.
- o No difference
- o Farmers' Market prices are lower by less than 25%.
- o Farmers' Market prices are lower by more than 25%.
- o Grocery stores offer the same product but not the same quality
- o Other _____

17. Would you use an ATM if it was available at the farmers' market?

- o Yes
- o No

18. On average, how much of a *quality* (standard or grade) difference is there between Farmers' Market products and those in the grocery stores?

- o Farmers' Market products are better by more than 25%.
- o Farmers' Market products are better by less than 25%.
- o No difference
- o Farmers' Market products are worse by less than 25%.
- o Farmers' Market products are worse by more than 25%.

19. On average, how much of a *freshness* (age of product) difference is there in Farmers' Market products and the grocery stores?

- o Farmers' Market products are fresher by more than 25%.
- o Farmers' Market products are fresher by less than 25%.
- o No difference
- o Farmers' Market products are less fresh by less than 25%.
- o Farmers' Market products are less fresh by more than 25%.

20. Do you think the market has adequate permanent structures (such as permanent shade pavilions, benches, and picnic tables)?

- o Yes
- o No (please list any other structures you would like to see at the farmers' market)

  _____

  _____

All the following questions are with regard to your preferences for various tomato attributes.

Suppose you are given two options for tomato purchases to choose from, each option is described below and relates to one pound of tomatoes. Of the two options (A & B), please select the ONE you MOST prefer. Or, if you would not purchase any of the products, select C.

21.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$2.00	I wouldn't buy any of these
Production Method	Organic	Conventional	
Nutrition	Low	Low	
Food Safety	High	High	
Locally Produced	No	No	
I would purchase…	[ ]	[ ]	[ ]

22.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$4.00	I wouldn't buy any of these
Production Method	Organic	Organic	
Nutrition	Low	High	
Food Safety	Low	High	
Locally Produced	Yes	No	
I would purchase…	[ ]	[ ]	[ ]

23.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$4.00	I wouldn't buy any of these
Production Method	Conventional	Organic	
Nutrition	High	Low	
Food Safety	High	Low	
Locally Produced	Yes	Yes	
I would purchase…	[ ]	[ ]	[ ]

24.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$2.00	I wouldn't buy any of these
Production Method	Conventional	Organic	
Nutrition	High	High	
Food Safety	High	High	
Locally Produced	No	Yes	
I would purchase…	[ ]	[ ]	[ ]

25.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$4.00	I wouldn't buy any of these
Production Method	Organic	Conventional	
Nutrition	Low	Low	
Food Safety	High	Low	
Locally Produced	Yes	Yes	
I would purchase…	[ ]	[ ]	[ ]

26.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$2.00	I wouldn't buy any of these
Production Method	Organic	Organic	
Nutrition	Low	High	
Food Safety	Low	Low	
Locally Produced	No	Yes	
I would purchase…	[ ]	[ ]	[ ]

27.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$4.00	I wouldn't buy any of these
Production Method	Conventional	Conventional	
Nutrition	High	High	
Food Safety	Low	High	
Locally Produced	Yes	No	
I would purchase…	[ ]	[ ]	[ ]

28.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$2.00	I wouldn't buy any of these
Production Method	Conventional	Conventional	
Nutrition	High	Low	
Food Safety	Low	Low	
Locally Produced	No	No	
I would purchase…	[ ]	[ ]	[ ]

All the following questions are with regard to your preferences for various tomato attributes.

Suppose you are given two options for tomato purchases to choose from, each option is described below and relates to one pound of tomatoes. Of the two options (A & B), please select the ONE you MOST prefer. Or, if you would not purchase any of the products, select C.

21.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$4.00	I wouldn't buy any of these
Production Method	Organic	Conventional	
Nutrition	High	High	
Food Safety	High	Low	
Locally Produced	No	No	
I would purchase…	[ ]	[ ]	[ ]

22.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$2.00	I wouldn't buy any of these
Production Method	Organic	Organic	
Nutrition	High	Low	
Food Safety	Low	Low	
Locally Produced	Yes	No	
I would purchase…	[ ]	[ ]	[ ]

23.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$2.00	I wouldn't buy any of these
Production Method	Conventional	Conventional	
Nutrition	Low	High	
Food Safety	Low	Low	
Locally Produced	Yes	Yes	
I would purchase…	[ ]	[ ]	[ ]

24.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$4.00	I wouldn't buy any of these
Production Method	Conventional	Conventional	
Nutrition	Low	Low	
Food Safety	Low	High	
Locally Produced	No	Yes	
I would purchase…	[ ]	[ ]	[ ]

b

*Note the following is the consumer survey version b. pages three and four, pages one and two are identical. *

25.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$2.00	I wouldn't buy any of these
Production Method	Organic	Conventional	
Nutrition	High	High	
Food Safety	High	High	
Locally Produced	Yes	Yes	
I would purchase…	[ ]	[ ]	[ ]

26.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$4.00	I wouldn't buy any of these
Production Method	Organic	Organic	
Nutrition	High	Low	
Food Safety	Low	High	
Locally Produced	No	Yes	
I would purchase…	[ ]	[ ]	[ ]

27.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$2.00	I wouldn't buy any of these
Production Method	Conventional	Organic	
Nutrition	Low	Low	
Food Safety	High	High	
Locally Produced	Yes	No	
I would purchase…	[ ]	[ ]	[ ]

28.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$4.00	I wouldn't buy any of these
Production Method	Conventional	Organic	
Nutrition	Low	High	
Food Safety	High	Low	
Locally Produced	No	No	
I would purchase…	[ ]	[ ]	[

AGRICULTURAL ECONOMICS

Survey of Oklahoma Farmers' Market Producers

Dear Oklahoma Farmers' Market Producer:

This survey is a part of the research work being done on a project entitled: "Improving Consumer Participation in Oklahoma Local Food Markets", funded by the Agricultural Marketing Service of the U.S. Department of Agriculture. In this survey, you are asked questions about your opinion of marketing techniques, plus consumer participation and demographics. This survey will be distributed to farmers' market producers in central Oklahoma during the summer of 2010. By simply completing this short survey, you will help us at Oklahoma State University assist Oklahoma farmer's market managers to promote and build better farmers' markets. This research study will focus on identifying marketing strategies for improving consumer participation in Oklahoma local food markets.

Your participation is requested for one time only, and this survey should not take more than 15 to 20 minutes of your time. Please know that your participation in completing this survey is voluntary, and you may withdraw at any time without penalty. Please also know that there are no known risks associated with this project that are greater than those ordinarily encountered in daily life. The results of the producers' survey will be used in the survey analysis, and the results will be reported based on aggregate information. The primary data will not be identified with any specific respondents. All responses to the surveys will be kept strictly confidential and you will not be identified in the research output. These surveys will be kept in Dr. Henneberry's office in a locked cabinet and will be destroyed after two years. The results of this research are expected to benefit the Oklahoma local food market producers and policy makers by identifying attributes of local food markets that contribute to the success of these markets. We will collect the surveys slightly before the close of the market, if possible please have them completed at this time.

If you have any questions regarding this survey, please do not hesitate to contact us at 405-744-6178 or (e-mail) srh@okstate.edu. If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu. On behalf of Oklahoma State University and Oklahoma local food participants, we thank you for your time.

Sincerely,

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AGRICULTURAL ECONOMICS

Survey of Oklahoma Farmers' Market Producers

Please answer the following questions as they apply to you.

1. What kinds of products do you sell?

- o Fruits and/or Vegetables
- o Bedding Plants and/or Herbs
- o Baked Goods and/or Canned Goods
- o Soaps and/or Lotions
- o Frozen Meats and/or Eggs
- o Other, please specify

_____

_____

2. Have you experienced an increase or decrease in the average number of customers that have visited your booth compared to last year at the same time?

- o Increased by more than half
- o Increased by less than half
- o No change
- o Decreased by less than half
- o Decreased by more than half
- o Uncertain if there was an increase or a decrease
- o Did not participate in a market last year

3. On an average summer day, how many customers visit your booth?

- o Less than 50
- o 51-100
- o 101-150
- o More than 151
- o Don't know

4. What is your customer return rate?

- o Less than half of my customers are repeat customers.
- o More than half of my customers are repeat customers.
- o Uncertain of the number of repeat customers

5. On average, how much of a *price* difference is there between your products and those in the grocery stores?

- o My prices are higher by more than 25%.
- o My prices are higher by less than 25%.
- o No difference
- o My prices are lower by less than 25%.
- o My prices are lower by more than 25%.
- o Grocery stores offer the same product but not the same quality
- o Grocery stores do not offer my product
- o Other

_____

What is your level of certainty in answering this question?

- o 100% certain
- o 99%- 75% certain
- o 74%-50% certain
- o Less than 49% certain

6. On average, how much of a *quality* (standard or grade) difference is there between your products and those in the grocery stores?

- o My products are better by more than 25%.
- o My products are better by less than 25%.
- o No difference
- o My products are worse by less than 25%.
- o My products are worse by more than 25%.

What is your level of certainty in answering this question?

- o 100% certain
- o 99%- 75% certain
- o 74%-50% certain
- o Less than 49% certain

7. On average, how much of a *freshness* (age of product) difference is there in your products and the grocery stores?

- o My products are fresher by more than 25%.
- o My products are fresher by less than 25%.
- o No difference
- o My products are less fresh by less than 25%.
- o My products are less fresh by more than 25%.

What is your level of certainty in answering this question?

- o 100% certain
- o 99%- 75% certain
- o 74%-50% certain
- o Less than 49% certain

8. How many acres of products do you grow to sell at the farmers' market?

_____ Acres

If you sell items that are not grown, but processed by you, approximately how much of these items do you produce? (example: bread, 12 loafs)

_____ Units

9. On average, have you increased or decreased production compared to last year at the same time?

- o Increased production by more than 25%
- o Increased production by less than 25%
- o Have kept production the same
- o Decreased production by less 25%
- o Decreased production by more than 25%
- o Uncertain if there was an increase or decrease in production
- o Did not participate in a market last year

10. Do you accept food assistance programs?

- o No
- o Yes (please check those that apply)
  - o SNAP (Food Stamps)
  - o WIC
  - o Chickasaw Nation
  - o Other (please specify)

_____

_____

11. What percentage of your customers pay with food assistance?

- o More than 25%
- o Less than 25%
- o Uncertain of the number of customers
- o Non Applicable – I do not accept food assistance coupons

12. Would you be willing to accept food assistance programs if given the opportunity?

- o No
- o Yes (if yes, check all that apply)
  - o I already accept food assistance programs
  - o Do not have the ability to take the coupons or cards
  - o Don't know how to sign up to accept food assistance programs
  - o Other_____

13. What is your best selling product?

_____

14. What is your most profitable product?

_____

15. Do all products that you sell cover their cost of production?

- o Yes
- o No

If "No" Why are these products sold?

- o Customer attraction
- o To recover some cost

What are these products?

_____

_____

16. Do you ever change your prices during the course of the growing season?

- o Increase price when a product is less available
- o Increase prices when other producers do
- o Keep the same price the whole season
- o Decrease prices when other producers do
- o Decrease prices when a product is more available
- o Other reasons (please specify)

_____

17. How do you determine what price you will charge for you product?

- o Use a percentage mark-up over cost
- o Charge the same as the other vendors do
- o Charge the same as the grocery stores do
- o Not really sure
- o Other (please specify)_____

_____

18. Do you agree or disagree that the summer market hours are long enough for all customers to attend?

- o Agree
- o Neither agree or disagree
- o Disagree
- o Undecided

19. To what extent do you agree or disagree that the market is in a good location?

- o Strongly agree
- o Somewhat agree
- o Neither agree or disagree
- o Somewhat disagree
- o Strongly disagree
- o Undecided

20. Do you agree or disagree that the market would benefit from an ATM or debit machine?

- o Strongly agree
- o Somewhat agree
- o Neither agree or disagree
- o Somewhat disagree
- o Strongly disagree
- o Undecided

21. For optimal sales, do you think there should be an increase or a decrease in the number of products sold at the market?

- o Increase in all items
- o Increase in some items
- o Stay the same
- o Decrease in some items
- o Decrease in all items

22. For customer attraction, what products would you like to see *more* of in the market?

_____

23. For customer attraction, what products would you like to see *less* of in the market?

_____

24. For customer attraction, do you agree or disagree the farmers' market should have food concession stands?

- o Strongly agree
- o Somewhat agree
- o Neither agree or disagree
- o Somewhat disagree
- o Strongly disagree
- o Undecided

25. What market structures (permanent shade pavilions, benches, and picnic tables) would you like the market to have? (please list)

_____
_____
_____

- o None, current market structures are fine

26. What do you believe are the reasons the market may lack some of the needed structures?

- o Lack of funding
- o Lack of local government cooperation
- o Lack of vendor agreement
- o No reason; current market structures are fine
- o Other (please list)

_____

27. Would you like to be a part of the Buy Fresh Buy Local (BFBL) project?

- o Yes, I would like to become a member ($25 membership fee supports the project and allows the use of BFBL point-of-purchase items and logos)
- o Yes, I would like to be listed in the BFBL Food Guide (free of charge)
- o Maybe, but I would like to have more information
- o No, thank you

28. What do you think is the average age of your customer?

- o Young college age (18-25 years)
- o Young adult age (26-45years)
- o Middle aged (46-65 years)
- o Senior citizen (66 years and older)
- o Uncertain

29. What do you think is the average household income of your customers?

- o Low income ($0.00- $15,000)
- o Low middle income ($15,001-$30,000)
- o Middle income ($30,001- $50,000)
- o High middle income ($50,001- $80,000)
- o High income ($80,001 – and above)
- o Uncertain

30. What do you think are the average education levels of your customers?

- o Elementary school
- o High school
- o College graduates
- o Masters/Doctoral degree recipients

31. What farmer's markets do you participate in? (Please list all)

_____
_____
_____

Your participation in the following questions will help us interpret the results of this survey. *ALL answers will be kept strictly confidential.*

32. What is the average percent of your total household income that comes from the farmers' market?

- Less than 25%
- 50%
- 75%
- 100%

33. Which of the following best represents your level of education?

- Grade school
- High school
- Some college
- College graduate
- Some graduate school
- Masters degree
- Doctoral degree

34. What is your gender?

- Male
- Female

35. What is your age?

_____Years

36. How actively do you participate in the summer market (assuming the market is open April through October - 31 weeks)?

- 25% of the time (8 weeks)
- 50% of the time (16 weeks)
- 75% of the time (24 weeks)
- 100% of the time (31 weeks)

37. On an average summer day, approximately how much of each of these products do you sell? (Please leave blank if you do not produce these items or say "unsure" if you are producing these items, but are not certain of your volume.)

- Vegetables
  - Tomatoes_____pounds
  - Corn_____bushels
  - Potatoes_____pounds
  - Okra_____pounds
- Fruits
  - Peaches_____bushels
  - Blackberries_____Quarts(1 pound)
  - Strawberries_____Quarts(1 pound)
- Meats and Eggs
  - Lamb_____pounds
  - Beef_____pounds
  - Pork_____pounds
  - Chicken_____pounds
  - Eggs_____dozens

Thank you for your time and cooperation.

Your answers are greatly appreciated and will help in the improvement of Oklahoma farmers' markets.

Appendix B.

Consumer and Producer Survey Results

* Note out of the 624 consumer surveys not all surveys were complete so some questions do not sum to 624.*

AGRICULTURAL ECONOMICS

Survey of Oklahoma Farmers' Market Consumers

Please answer the following questions as they apply to you

1. How many people live with you that are 18 years or older?

0= 110 1=255 2=197 3=38 4=15 5=6 6=1

2. How many people live with you that are less than 18 years old?

0= 475 1=81 2=48 3=16 4=3 5=1

3. What age category do you fall in?

25 o 18-25 years
142 o 26-45years
311 o 46-65 years
140 o 66 years and older

4. What is your gender?

427 o Female
192 o Male

5. Do you live in an urban or rural area?

396 o Urban
228 o Rural

6. Are you a college graduate?

357 o Yes
263 o No

7. What is your household income?

51 o Low income ($0.00- $15,000)
67 o Low middle income ($15,001-$30,000)
136 o Middle income ($30,001- $50,000)
161 o High middle income ($50,001-$80,000)
163 o High income ($80,001 – and above)

8. Do you like to cook?

350 o Very much
241 o Somewhat
32 o Not at all

9. Have you ever purchased organic foods?

512 o Yes
111 o No

10. Do you ever shop at health food stores?

354 o Yes
267 o No

11. Do you have a Community Supported Agriculture (CSA) membership?

32 o Yes
114 o No, I choose not to
474 o No, I am not familiar with any

12. Do you grow food for your family in your own garden?

319 o Yes
302 o No

13. What are your average household weekly food expenditures?

316 o Less than $100
232 o $200
47 o $300
14 o More than $400

Page 1 of 4

14. Where did you hear about the farmers' market?

175 o Newspaper
43 o Radio
13 o Television
36 o Internet
124 o Billboard/ Roadside sign
23 o Paper fliers
135 o Other (please specify)
162 Word of Mouth

15. How often do you come to the farmers' market?

71 o Every market day
215 o Once a week
128 o Twice a month
73 o Once a month
114 o A couple times a year
10 First time attendees

16. On average, how much of a *price* difference is there between Farmers' Market products and those in the grocery stores?

110 o Farmers' Market prices are higher by more than 25%.
154 o Farmers' Market prices are higher by less than 25%.
70 o No difference
58 o Farmers' Market prices are lower by less than 25%.
25 o Farmers' Market prices are lower by more than 25%.
134 o Grocery stores offer the same product but not the same quality
47 o Other _____
26 Non-Response

17. Would you use an ATM if it was available at the farmers' market?

223 o Yes
361 o No

18. On average, how much of a *quality* (standard or grade) difference is there between Farmers' Market products and those in the grocery stores?

479 o Farmers' Market products are better by more than 25%.
99 o Farmers' Market products are better by less than 25%.
20 o No difference
1 o Farmers' Market products are worse by less than 25%.
1 o Farmers' Market products are worse by more than 25%.
24 Non-Answers

19. On average, how much of a *freshness* (age of product) difference is there in Farmers' Market products and the grocery stores?

516 o Farmers' Market products are fresher by more than 25%.
73 o Farmers' Market products are fresher by less than 25%.
13 o No difference
2 o Farmers' Market products are less fresh by less than 25%.
0 o Farmers' Market products are less fresh by more than 25%.
30 Non- Answers

20. Do you think the market has adequate permanent structures (such as permanent shade pavilions, benches, and picnic tables)?

425 o Yes
196 o No (please list any other structures you would like to see at the farmers' market)
_____
_____

Version A: 276 Survey

All the following questions are with regard to your preferences for various tomato attributes.

Suppose you are given two options for tomato purchases to choose from, each option is described below and relates to one pound of tomatoes. Of the two options (A & B), please select the ONE you MOST prefer. Or, if you would not purchase any of the products, select C.

21.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$2.00	I wouldn't buy any of these
Production Method	Organic	Conventional	
Nutrition	Low	Low	
Food Safety	High	High	
Locally Produced	No	No	
I would purchase…	[ ]	[ ]	[ ]
	66	137	73

22.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$4.00	I wouldn't buy any of these
Production Method	Organic	Organic	
Nutrition	Low	High	
Food Safety	Low	High	
Locally Produced	Yes	No	
I would purchase…	[ ]	[ ]	[ ]
	84	110	82

23.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$4.00	I wouldn't buy any of these
Production Method	Conventional	Organic	
Nutrition	High	Low	
Food Safety	High	Low	
Locally Produced	Yes	Yes	
I would purchase…	[ ]	[ ]	[ ]
	160	51	65

24.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$2.00	I wouldn't buy any of these
Production Method	Conventional	Organic	
Nutrition	High	High	
Food Safety	High	High	
Locally Produced	No	Yes	
I would purchase…	[ ]	[ ]	[ ]
	29	223	24

25.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$4.00	I wouldn't buy any of these
Production Method	Organic	Conventional	
Nutrition	Low	Low	
Food Safety	High	Low	
Locally Produced	Yes	Yes	
I would purchase…	[ ]	[ ]	[ ]
	199	23	54

26.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$2.00	I wouldn't buy any of these
Production Method	Organic	Organic	
Nutrition	Low	High	
Food Safety	Low	Low	
Locally Produced	No	Yes	
I would purchase…	[ ]	[ ]	[ ]
	31	171	74

27.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$4.00	I wouldn't buy any of these
Production Method	Conventional	Conventional	
Nutrition	High	High	
Food Safety	Low	High	
Locally Produced	Yes	No	
I would purchase…	[ ]	[ ]	[ ]
	134	73	69

28.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$2.00	I wouldn't buy any of these
Production Method	Conventional	Conventional	
Nutrition	High	Low	
Food Safety	Low	Low	
Locally Produced	No	No	
I would purchase…	[ ]	[ ]	[ ]
	132	14	130

Version B: 260 Surveys Completed

All the following questions are with regard to your preferences for various tomato attributes.

Suppose you are given two options for tomato purchases to choose from, each option is described below and relates to one pound of tomatoes. Of the two options (A & B), please select the ONE you MOST prefer. Or, if you would not purchase any of the products, select C.

21.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$4.00	I wouldn't buy any of these
Production Method	Organic	Conventional	
Nutrition	High	High	
Food Safety	High	Low	
Locally Produced	No	No	
I would purchase…	[ ]	[ ]	[ ]
	183	31	46

22.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$2.00	I wouldn't buy any of these
Production Method	Organic	Organic	
Nutrition	High	Low	
Food Safety	Low	Low	
Locally Produced	Yes	No	
I would purchase…	[ ]	[ ]	[ ]
	139	50	71

23.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$2.00	I wouldn't buy any of these
Production Method	Conventional	Conventional	
Nutrition	Low	High	
Food Safety	Low	Low	
Locally Produced	Yes	Yes	
I would purchase…	[ ]	[ ]	[ ]
	74	108	78

24.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$4.00	$4.00	I wouldn't buy any of these
Production Method	Conventional	Conventional	
Nutrition	Low	Low	
Food Safety	Low	High	
Locally Produced	No	Yes	
I would purchase…	[ ]	[ ]	[ ]
	49	102	109

b

25.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$2.00	I wouldn't buy any of these
Production Method	Organic	Conventional	
Nutrition	High	High	
Food Safety	High	High	
Locally Produced	Yes	Yes	
I would purchase…	[ ]	[ ]	[ ]

182 30 48

26.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$4.00	I wouldn't buy any of these
Production Method	Organic	Organic	
Nutrition	High	Low	
Food Safety	Low	High	
Locally Produced	No	Yes	
I would purchase…	[ ]	[ ]	[ ]

104 67 89

27.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$2.00	I wouldn't buy any of these
Production Method	Conventional	Organic	
Nutrition	Low	Low	
Food Safety	High	High	
Locally Produced	Yes	No	
I would purchase…	[ ]	[ ]	[ ]

85 90 85

28.	Option A	Option B	Option C
Price/ 1lb. Tomatoes	$2.00	$4.00	I wouldn't buy any of these
Production Method	Conventional	Organic	
Nutrition	Low	High	
Food Safety	High	Low	
Locally Produced	No	No	
I would purchase…	[ ]	[ ]	[

67 79 114

Producer Survey

There were 166 producer surveys.

AGRICULTURAL ECONOMICS

Survey of Oklahoma Farmers' Market Producers

Please answer the following questions as they apply to you.

1. What kinds of products do you sell?

99 o Fruits and/or Vegetables
33 o Bedding Plants and/or Herbs
16 o Baked Goods and/or Canned Goods
15 o Soaps and/or Lotions
22 o Frozen Meats and/or Eggs
60 o Other, please specify

2. Have you experienced an increase or decrease in the average number of customers that have visited your booth compared to last year at the same time?

16 o Increased by more than half
35 o Increased by less than half
32 o No change
17 o Decreased by less than half
3 o Decreased by more than half
15 o Uncertain if there was an increase or a decrease
47 o Did not participate in a market last year

3. On an average summer day, how many customers visit your booth?

51 o Less than 50
62 o 51-100
15 o 101-150
15 o More than 151
20 o Don't know

4. What is your customer return rate?

18 o Less than half of my customers are repeat customers.
106 o More than half of my customers are repeat customers.
40 o Uncertain of the number of repeat customers

5. On average, how much of a *price* difference is there between your products and those in the grocery stores?

23 o My prices are higher by more than 25%.
39 o My prices are higher by less than 25%.
15 o No difference
18 o My prices are lower by less than 25%.
12 o My prices are lower by more than 25%.
39 o Grocery stores offer the same product but not the same quality
29 o Grocery stores do not offer my product
7 o Other
5 Non-Answers

What is your level of certainty in answering this question?

62 o 100% certain
67 o 99%- 75% certain
19 o 74%-50% certain
7 o Less than 49% certain

Page 1 of 5

6. On average, how much of a *quality* (standard or grade) difference is there between your products and those in the grocery stores?

127 ○ My products are better by more than 25%.
12 ○ My products are better by less than 25%.
9 ○ No difference
2 ○ My products are worse by less than 25%.
0 ○ My products are worse by more than 25%.
16 Non-Answers

What is your level of certainty in answering this question?

97 ○ 100% certain ○ 99%- 75% certain 34
14 ○ 74%-50% certain ○ Less than 49% certain 2

7. On average, how much of a *freshness* (age of product) difference is there in your products and the grocery stores?

122 ○ My products are fresher by more than 25%.
6 ○ My products are fresher by less than 25%.
10 ○ No difference
0 ○ My products are less fresh by less than 25%.
1 ○ My products are less fresh by more than 25%.
27 Non-Answers

What is your level of certainty in answering this question?

100 ○ 100% certain ○ 99%- 75% certain 28
10 ○ 74%-50% certain ○ Less than 49% certain 2

8. How many acres of products do you grow to sell at the farmers' market?

12.5 Acres

If you sell items that are not grown, but processed by you, approximately how much of these items do you produce? (example: bread, 12 loafs)

Multiple Answers Units

9. On average, have you increased or decreased production compared to last year at the same time?

45 ○ Increased production by more than 25%
22 ○ Increased production by less than 25%
29 ○ Have kept production the same
14 ○ Decreased production by less 25%
1 ○ Decreased production by more than 25%
3 ○ Uncertain if there was an increase or decrease in production
26 ○ Did not participate in a market last year

10. Do you accept food assistance programs?

105 ○ No
46 ○ Yes (please check those that apply)
- 14 ○ SNAP (Food Stamps)
- 17 ○ WIC
- 28 ○ Chickasaw Nation
- 1 ○ Other (please specify)

_____
_____

11. What percentage of your customers pay with food assistance?

2 ○ More than 25%
35 ○ Less than 25%
12 ○ Uncertain of the number of customers
93 ○ Non Applicable – I do not accept food assistance coupons

12. Would you be willing to accept food assistance programs if given the opportunity?

57 ○ No
89 ○ Yes (if yes, check all that apply)
- 37 ○ I already accept food assistance programs
- 20 ○ Do not have the ability to take the coupons or cards
- 24 ○ Don't know how to sign up to accept food assistance programs
- 4 ○ Other_____

13. What is your best selling product?

Multiple Answers

14. What is your most profitable product?

Multiple Answers

15. Do all products that you sell cover their cost of production?

112 o Yes
41 o No

If "No" Why are these products sold?

23 o Customer attraction
14 o To recover some cost

What are these products?

Multiple Answers

16. Do you ever change your prices during the course of the growing season?

16 o Increase price when a product is less available
1 o Increase prices when other producers do
83 o Keep the same price the whole season
10 o Decrease prices when other producers do
8 o Decrease prices when a product is more available
11 o Other reasons (please specify)

Multiple Answers

17. How do you determine what price you will charge for you product?

44 o Use a percentage mark-up over cost
49 o Charge the same as the other vendors do
5 o Charge the same as the grocery stores do
15 o Not really sure
32 o Other (please specify)

18. Do you agree or disagree that the summer market hours are long enough for all customers to attend?

122 o Agree
15 o Neither agree or disagree
15 o Disagree
6 o Undecided

19. To what extent do you agree or disagree that the market is in a good location?

92 o Strongly agree
44 o Somewhat agree
9 o Neither agree or disagree
8 o Somewhat disagree
4 o Strongly disagree
2 o Undecided

20. Do you agree or disagree that the market would benefit from an ATM or debit machine?

54 o Strongly agree
44 o Somewhat agree
29 o Neither agree or disagree
2 o Somewhat disagree
11 o Strongly disagree
14 o Undecided

21. For optimal sales, do you think there should be an increase or a decrease in the number of products sold at the market?

42 o Increase in all items
54 o Increase in some items
55 o Stay the same
7 o Decrease in some items
0 o Decrease in all items

22. For customer attraction, what products would you like to see *more* of in the market?

Multiple Answers

23. For customer attraction, what products would you like to see *less* of in the market?

Multiple Answers

24. For customer attraction, do you agree or disagree the farmers' market should have food concession stands?

43 ○ Strongly agree
40 ○ Somewhat agree
22 ○ Neither agree or disagree
15 ○ Somewhat disagree
18 ○ Strongly disagree
16 ○ Undecided

25. What market structures (permanent shade pavilions, benches, and picnic tables) would you like the market to have? (please list)

Multiple Answers

36 ○ None, current market structures are fine

26. What do you believe are the reasons the market may lack some of the needed structures?

55 ○ Lack of funding
11 ○ Lack of local government cooperation
3 ○ Lack of vendor agreement
40 ○ No reason; current market structures are fine
10 ○ Other (please list)

Multiple Answers

27. Would you like to be a part of the Buy Fresh Buy Local (BFBL) project?

21 ○ Yes, I would like to become a member ($25 membership fee supports the project and allows the use of BFBL point-of-purchase items and logos)
18 ○ Yes, I would like to be listed in the BFBL Food Guide (free of charge)
62 ○ Maybe, but I would like to have more information
36 ○ No, thank you

28. What do you think is the average age of your customer?

1 ○ Young college age (18-25 years)
39 ○ Young adult age (26-45years)
74 ○ Middle aged (46-65 years)
4 ○ Senior citizen (66 years and older)
1 ○ Uncertain

29. What do you think is the average household income of your customers?

3 ○ Low income ($0.00- $15,000)
23 ○ Low middle income ($15,001-$30,000)
50 ○ Middle income ($30,001- $50,000)
20 ○ High middle income ($50,001- $80,000)
3 ○ High income ($80,001 – and above)
41 ○ Uncertain

30. What do you think are the average education levels of your customers?

3 ○ Elementary school
52 ○ High school
64 ○ College graduates
2 ○ Masters/Doctoral degree recipients

31. What farmer's markets do you participate in? (Please list all)

Multiple Answers

Your participation in the following questions will help us interpret the results of this survey. ***ALL answers will be kept strictly confidential.***

32. What is the average percent of your total household income that comes from the farmers' market?

126 o **Less than 25%**
18 o **50%**
6 o **75%**
0 o **100%**

33. Which of the following best represents your level of education?

1 o **Grade school**
37 o **High school**
45 o **Some college**
45 o **College graduate**
4 o **Some graduate school**
19 o **Masters degree**
8 o **Doctoral degree**

34. What is your gender?

73 o **Male**
82 o **Female**
11 Both

35. What is your age?

_____Years

Age Category	Response Number
18-25	3
26-45	39
46-65	74
65& up	33

36. How actively do you participate in the summer market (assuming the market is open April through October - 31 weeks)?

17 o **25% of the time (8 weeks)**
16 o **50% of the time (16 weeks)**
41 o **75% of the time (24 weeks)**
74 o **100% of the time (31 weeks)**

37. On an average summer day, approximately how much of each of these products do you sell? (Please leave blank if you do not produce these items or say "unsure" if you are producing these items, but are not certain of your volume.)

Multiple Answers

- o Vegetables
  - o Tomatoes_____pounds
  - o Corn_____bushels
  - o Potatoes_____pounds
  - o Okra_____pounds
- o Fruits
  - o Peaches_____bushels
  - o Blackberries_____Quarts(1 pound)
  - o Strawberries_____Quarts(1 pound)
- o Meats and Eggs
  - o Lamb_____pounds
  - o Beef_____pounds
  - o Pork_____pounds
  - o Chicken_____pounds
  - o Eggs_____dozens

Thank you for your time and cooperation.

Your answers are greatly appreciated and will help in the improvement of Oklahoma farmers' markets.

Appendix C. IRB Approval Forms
Producer Survey IRB Approval Forms

Oklahoma State University Institutional Review Board

Date:	Friday, April 23, 2010
IRB Application No	AG1020
Proposal Title:	Improving Consumer Participation in Oklahoma Local-Food Markets
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 4/22/2011

Principal Investigator(s):

Shida R. Henneberry
424 Ag Hall
Stillwater, OK 74078

Carra Crow
415 Ag Hall
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Shelia Kennison, Chair
Institutional Review Board

Consumer Survey Approval Forms

Oklahoma State University Institutional Review Board

Date:	Wednesday, June 02, 2010
IRB Application No	AG1025
Proposal Title:	Improving Consumer Participation in Oklahoma Local-Food Markets
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 6/1/2011

Principal Investigator(s):

Shida R. Henneberry
424 Ag Hall
Stillwater, OK 74078

Carra Crow
415 Ag Hall
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

[X] The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

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Sincerely,

Shelia Kennison, Chair
Institutional Review Board

VITA

Carra Jayne Crow

Candidate for the Degree of

Master of Science

Thesis: IMPROVING CONSUMER PARTICIPATION IN LOCAL FOOD MARKETS: A CASE STUDY OF OKLAHOMA FARMERS' MARKETS

Major Field: Agricultural Economics

Biographical:

Education:

Completed the requirements for the Master of Science in Agricultural Economics at Oklahoma State University, Stillwater, Oklahoma in May, 2011.

Completed the requirements for the Bachelor of Science in Agribusiness at Oklahoma State University Stillwater, Oklahoma in May, 2009.

Name: Carra Jayne Crow Date of Degree: May, 2011

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: IMPROVING CONSUMER PARTICIPATION IN LOCAL FOOD MARKETS: A CASE STUDY OF OKLAHOMA FARMERS' MARKETS

Pages in Study: 102 Candidate for the Degree of Master of Science

Major Field: Agricultural Economics

Scope and Method of Study: The study included central Oklahoma Farmers' Market producers and consumers. Producer and consumer surveys were used.

Findings and Conclusions:

This thesis discusses consumer and producer perceptions and actions surrounding locally produced food in central Oklahoma Farmers' Markets. This study uses data that was collected from a survey of farmers' market consumers and producers in central Oklahoma during the summer of 2010.

This thesis is composed of three sections. The first essay discusses farmers' market consumer and producer descriptive statistics. The highly debated issue of producers accepting food assistance program payments in exchange for their products is also discussed. In this essay it was discovered that there are producers willing to accept food assistance programs, but do not know how to sign up to accept them. The second essay examines consumers and producer perceptions of farmers' market products compared to those sold in the grocery stores. The findings suggest that a high majority of producers and consumers rank freshness and quality of farmers' market products superior to the same products offered in the grocery stores. On the other hand, most producers and consumers rank farmers' market products to be higher priced than the same products offered in the grocery stores. The third essay discusses consumer willingness-to-pay (WTP) for tomatoes and producer demographic perceptions of farmers' market consumers. Results show that farmers' market consumers have a WTP for the attributes of food safety, locally grown, high nutrition, and organic in tomatoes. Results also show that producers accurately predicted their consumers' demographics.

ADVISER'S APPROVAL: Dr. Shida Henneberry