

ASSESSING THE DEMAND FOR LOCALLY PRODUCED NATURAL BEEF

by

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(Under the Direction of R. Curtis Lacy)

ABSTRACT

This project focuses on locally grown labels and attempts to determine if consumers are willing-to-pay for this value-added attribute and what the consumer perceives as “locally grown” and “regionally grown.” A survey was employed from a random sample located in the Southeastern United States. Included in the survey were questions on credence attributes such as grass-fed, natural, and organic, and how they compare to local beef. Logistic regression was used to analyze willingness-to-pay for a “locally grown” label on a ribeye steak package. More consumers were willing to pay for naturally raised beef than grass-fed, and more for grass-fed than organic. Results of this study indicate that people consider “locally grown” to be an attribute that is desirable in their product. Respondents to this survey indicated that they considered their state to be local.

INDEX WORDS: Ribeye steak, Naturally grown, Locally grown, Grass-fed, Willingness-to-pay, Logistic regression

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DEDICATION

I would like to dedicate this work to my mom and dad. They have given me unwavering support and selfless love throughout this process. I would also like to dedicate this to my sister, Samantha. Thank you for always being there whenever I need you. I could not have done this without the loving support of my wonderful family. I love you all.

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Chapter 1

INTRODUCTION

Beef is a staple food item among many households in the Southeastern United States. According to USDA, in 2011 per capita beef consumption was approximately 57 pounds on a retail weight basis (USDA-ERS). This number is down considerably from a high of 94 pounds in 1976 (US-EPA). Since beef is generally considered a perishable product, consumption does not necessarily indicate demand as consumption is also directly related to production.

Microeconomic theory states that demand is affected by four factors: population, income, prices of substitutes, and consumer tastes and preferences. In practice, demand is not directly observable. However, several years ago Kansas State University developed the beef demand index which makes it possible to reach some conclusions concerning beef demand on a relative annual basis. The index (1980 =100) uses observable data to calculate relative beef demand over time.

A concerning item to the beef industry is the fact that the Annual Retail All Fresh Beef Demand Index has fallen from 100 in 1980 to 76 in 2011. While beef demand improved considerably in the late 1990s to the early 2000s (from 77 to 91), the decline has been steadily downward (Tonsor).

Beef Branding and Credence Attributes

Historically, beef has been considered a fairly homogeneous product and as a result was largely undifferentiated at the retail counter. However, in recent years there has been a proliferation of beef brands as firms attempt to differentiate their products. This increase in branding is an attempt to capture more of an increasingly fragmented market. The first brand of any substance was Certified Angus Beef (CAB®) which was launched in 1978. The CAB brand was developed so that Angus cattle producers could differentiate their product which is noted as being more highly marbled¹ than other breeds.

Since that time, several other breeds and agribusiness firms developed their own brands based on breed and other credence attributes. According to Caswell and Mojuszka (1996), a credence attribute is an attribute in which quality cannot be assessed even after the product is purchased and consumed (Caswell and Mojuszka, 1996). As concern about the environment and consumer health has grown, consumers of all types of red meat and poultry products are increasingly concerned with four major items: antibiotics, growth hormones, humane treatment of animals, and overall sustainability of livestock production systems (Ziehl et al., 2005; Umberger et al., 2009; Frewer et al., 2005). These concerns have led to the development of products and brands that feature labels touting naturally-raised, grass-fed, organic, antibiotic-free, and

¹ Marbling has been shown to be a very good indicator of flavor, juiciness and tenderness. All of these are attributes that have consistently ranked as the most important to the majority of consumers when rating a beef product's acceptability.

other claims that attempt to differentiate the product from that produced in the conventional or commodity system.

Precise data on the amount of beef produced in these alternative systems are not available. However, estimates from various governmental and trade groups place indicate that between three and seven percent of the beef consumed in the US is produced in one of these alternative systems.

In addition to concerns about the production systems of the animals, consumers are increasingly interested in the origins of their food due to food safety issues, need for sustainability, and a desire to support local producers (Merck Animal Health, 2011a) and (Merck Animal Health, 2011b). According to Martinez et al. (2010) the growth of the local food movement is increasing. They indicate that “Local food markets account for a small but growing share of total U.S. agricultural sales.” They offer the following observations as proof:

- *Direct-to-consumer marketing amounted to \$1.2 billion in current dollar sales in 2007, according to the 2007 Census of Agriculture, compared with \$551 million in 1997.*

- *Direct-to-consumer sales accounted for 0.4 percent of total agricultural sales in 2007, up from 0.3 percent in 1997. If nonedible products are excluded from total agricultural sales, direct-to-consumer sales accounted for 0.8 percent of agricultural sales in 2007.*

- *The number of farmers' markets rose to 5,274 in 2009, up from 2,756 in 1998 and 1,755 in 1994, according to USDA's Agricultural Marketing Service.*

- *In 2005, there were 1,144 community-supported agriculture organizations (CSAs) in operation, up from 400 in 2001 and 2 in 1986, according to a study by the nonprofit, nongovernmental organization National Center for Appropriate Technology. In early 2010, estimates exceeded 1,400, but the number could be much larger (Martinez et al., 2010).*

Since 2009, USDA-AMS estimates the number of farmer's markets has grown to 7,175 (Figure 1.1). While it is not known if the number of farmer's markets and CSAs will continue to increase at their current rate, it is clear that demand for locally-produced food is increasing.

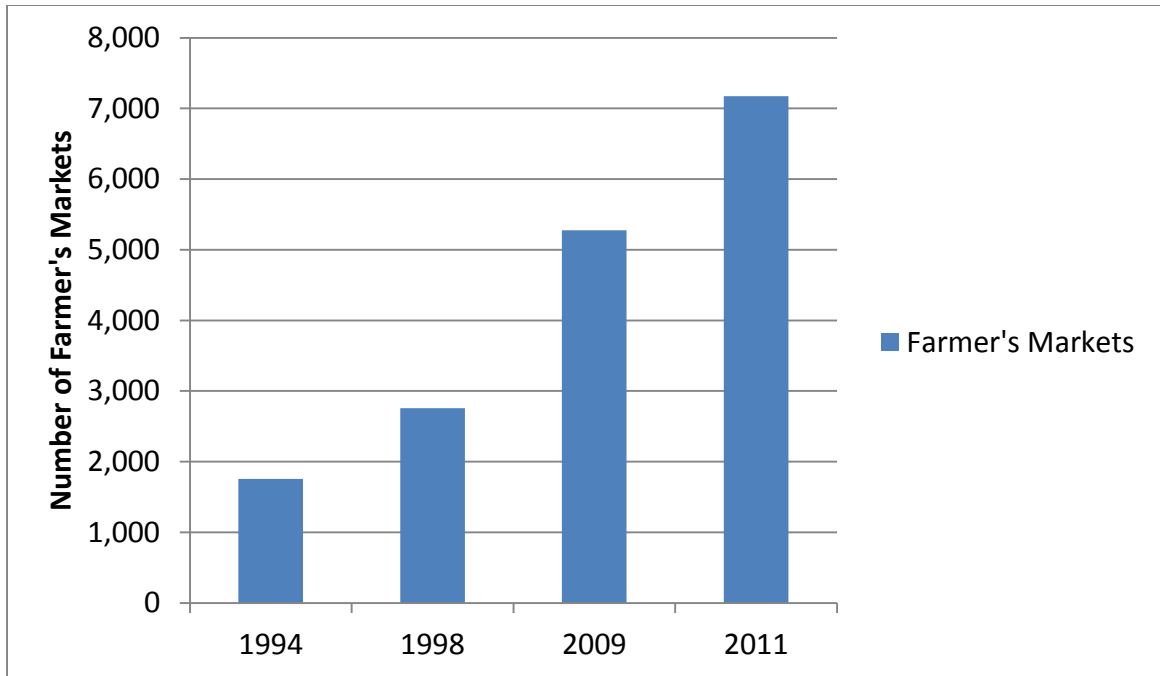


Figure 1.1: Number of Farmer's Markets in the US.

Source: USDA-AMS, 2012. Adapted from USDA – AMS, Farmers Market Growth, 1994 – 2011. <http://search.ams.usda.gov/farmersmarkets/>

Southeastern US Perspective

Beef production in the Southeastern US is predominantly cow-calf.

According to USDA-NASS, on January 1, 2012, there were approximately 2.7 million beef cows in the region.² At one-time, there was a fed-beef industry within the region. However, with the advent of modern feeding facilities and beef-packing concentrations in the Plains and Midwestern US, this industry has largely disappeared.

In general, beef calves produced in the region are sold at about 500 pounds then placed in a pasture-based growing program (stocker production or stockering) until about 800 pounds at which time they are shipped to commercial

² Southeastern region defined as Georgia and contiguous states.

cattle finishing yards where they are fed a high-energy diet until they reach a slaughter weight of approximately 1,200 pounds. Because the producers in this region are largely cow-calf operators, they are essentially residual claimants of the prices and revenues at the finisher and stocker levels.

By virtue of their place in the beef supply chain and their geographic location relative to other cow-calf producers, the price for their calves is largely determined by the price of the end product (finished or fed cattle) as well as the price of grain and transportation costs. Because of escalating fuel and feed costs, the basis between Southeastern US calves and those from the Midwest and Plains has increased in recent years (Figure 1.2). Moreover, because of increasing input prices and land rent that is a result of higher crop prices in the region many cattle producers are searching for ways to increase their net returns.

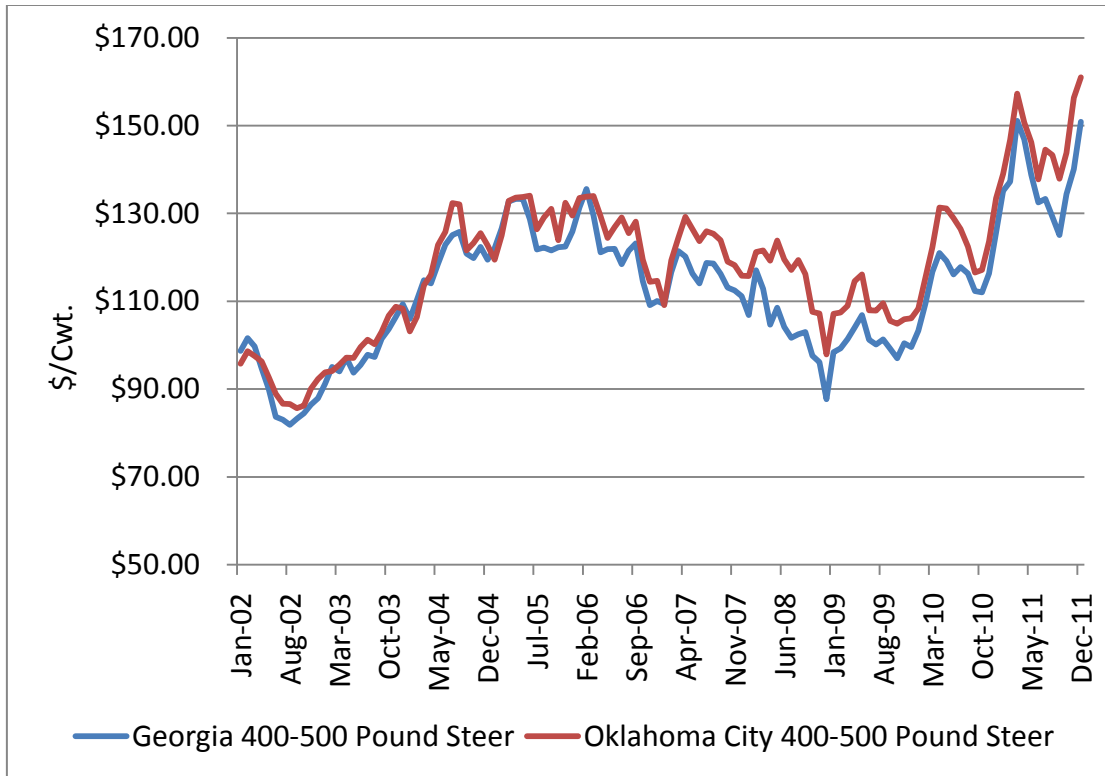


Figure 1.2: Comparison of Georgia and Oklahoma City Calf Prices, 2002-2011

Source: USDA – AMS Market News. Weekly Auction Market Reports for Georgia and Oklahoma. www.ams.usda.gov (Various Weeks). Data compiled by Livestock Marketing Information Center (LMIC).

One way that producers have attempted to increase their income is to market directly to consumers. This notion comes from their awareness of the increased interest in purchasing locally produced food items. However, in contrast to locally grown fruits and vegetables, beef (and other livestock or poultry producers) face significant challenges in direct-marketing their products. The primary impediments are lack of scalable production and food safety regulations. For instance, in Georgia there are only 16 federal facilities and 60 state inspected (the majority of which slaughter multiple types of animals, and many cases only wild game) (Georgia Departments of Agriculture). Moreover,

with an average slaughtering capacity of less than 10 head per week for most facilities, it can be hard to supply only locally grown beef at the market. This lack of infrastructure issue for locally grown products has brought about several proposed solutions; one of which is utilizing regional labels in conjunction with food hubs to provide consumers with the products they want from a region with which they are familiar.

Food Hubs

One possible way to increase awareness and make it easier for producers to provide consumers with a local product is through a food hub, which is a group of producers joining efforts to market their products to a geographic location in their area. Joining together can help supply a regional area with fresh grown products from a “regional” area. According to the USDA, farmers, especially small to mid-sized farms, continually face challenges with selling their product due to a lack of infrastructure (Barham, 2012). Food hubs are designed to make it easier to aggregate, distribute, and market for the farmer to get their product directly to the consumer on a local and regional level. These businesses, “hubs,” are aimed at small to mid-sized producers looking to market their goods directly to local consumers.

Currently there is very little published research concerning regional labels, especially as it relates to beef products in the Southeast. However, with the growing interest in food hubs and increased consumer demand, regional labels may be beneficial for producers to examine. This hypothesis is based on the fact

that there is already a demonstrated demand for locally produced products. However, infrastructure concerns make it generally infeasible to consider widespread adoption of locally-produced beef. If it can be shown though that consumers are open to the idea of a regionally produced beef product, then producers can devote more of their attention to producing and marketing their product instead of trying to locate or develop local packing facilities.

Objectives

The overall objective of this study then is to determine consumer acceptance and willingness to pay (WTP) for a regionally-produced beef product. Specific objectives include:

1. To determine if there is any difference in consumer acceptance and WTP for different production systems,
2. Determine what southeastern US consumers deem to be local, and
3. Determine if consumers are willing to purchase a regionally-produced beef product.

The remainder of this thesis is organized as follows: Chapter 2 covers the literature review on previous research on credence attributes, logit regression, and demand for locally grown foods. Chapter 3 presents the methods and procedures used to analyze the data. Chapter 4 provides a general description of the survey and discusses the results from logit regression. Finally, the conclusions and implications are presented in Chapter 5.

Chapter 2

REVIEW OF LITERATURE

Willingness-to-Pay

Brand names in the beef industry have been appearing in the United States since the introduction of Certified Angus Beef (Froehlich et al., 2009). Attributes such as Certified Angus are known as credence attributes. A credence attribute is one that quality cannot be assessed even after the product was purchased and consumed (Olynk et al., 2010). This includes: locally or regionally grown, organic, natural and grass-fed.

One of the main objectives when dealing with credence attributes in produce and meat marketing is determining willingness-to-pay for these value added attributes. The meat market is primarily consumer driven. Thus, having an accurate grasp on consumers' perceptions of these attributes is vital for profitable production decisions, marketing, and planning on the production side of the equation. Therefore, researching and understanding the perception of 'locally grown' labels to determine if consumers perceive this as a value-added attribute is essential to producers and marketers of these products.

Research in this area is not extensive, especially when it comes to meat marketing and the Southeastern region of the United States. There have, however, been a handful of research projects on willingness-to-pay for locally

grown fruits and vegetables. Ziehl et al. (2005) conducted a similar study which involved consumer valuation of natural, regionally produced beef. Determining willingness to pay for natural beef by respondents in the United States and also Colorado specifically was the main objective of their research. The authors found that consumers were interested in natural production practices, grass-fed, and traceability practices and considered them to be important. All of these factors impacted their decision to pay a premium for natural beef. Ziehl et al. (2005) performed a cluster analysis which divided their sample into five distinct clusters. Cluster analysis was used because it allows for the construction of groupings or clusters of consumers who share a common characteristic but otherwise are heterogeneous. This method can be very useful when trying to determine identify a specific market segment for a particular product.

Their research found that out of seven credence attributes, three of the most desirable attributes were: No Hormones, No Antibiotics, and Traceability respectively. The fourth rated attribute was Natural beef. The primary aspects of marketing beef cattle as naturally grown are no antibiotics and no hormones. In essence, the combination of these very desirable attributes reported by Ziehl et al. (2005) indicates a preference for naturally grown beef cattle. Also the third ranked attribute, traceability, is a perceived characteristic of locally grown products. As evidenced by numerous governmental publications and popular press articles, consumers perceive a locally grown product as something that is traceable from the farm to the consumers' shopping cart.

There are underlying aspects of this research that show that natural and locally grown beef are very desirable value-added attributes. There is not however, a direct comparison of natural or locally grown beef in the literature available, especially in the Southeastern United States. This study is aimed towards the Southeastern region and focuses on locally and regionally grown beef cattle.

Vegetable production, although different than meat production, still faces many of the same types of marketing challenges as beef products. Determining willingness-to-pay for value added attributes is also a concern for vegetable farmers. Velasquez et al. (2005) conducted a field survey at two farmers markets in Illinois to determine demand and willingness-to-pay for value added vegetables. Conducted on weekends during summer and fall (the busy time for farmers' markets), they interviewed 30 people per market. Gender and age were both found to be important factors in determining willingness-to-pay. Females were found to outnumber males 2 to 1. According to their research, females were less likely to purchase new types of vegetables than males; similar results were observed for older patrons of the market as well. Older patrons tend to have limited income and are likely to be more product loyal than younger patrons. Consequently, brand loyalty from the elderly can have a negative effect on demand for locally grown labels making their way into the market. If a consumer is set on a brand before they reach the market, introducing new products can be a difficult challenge to overcome.

People who are aware of credence attributes have the highest willingness-to-pay (Nilsson et al., 2006). Nilsson also found that more price conscious people had the lowest willingness-to-pay. A third group existed for Nilsson's research, the concerned shopper, who has a positive willingness-to-pay for certified pork chops, with the certification in three categories: environmental, animal welfare, and antibiotics, but if the price became too high, this group would opt for the conventionally-raised product.

Locally Grown

Trying to determine whether locally grown products, particularly beef products, are profitable for producers is part of a broader concern of this research. Velasquez et al. (2005) showed that patrons of the Urbana Farmers Market in Illinois shopped there for quality and fresh products. Eighty-seven percent of consumers went to these farmers market to support local farmers and 50 percent of all consumers in the study took that opportunity to get to know the growers of the produce. Nationally, farmers markets have increased from 1994 to 2004 by 111 percent (Darby et al., 2008). Darby et al. examined consumers and what they considered to be "local" and how they value the "locally grown" aspect of a product apart from other attributes. Using conjoint analysis, they surveyed 530 respondents, face to face, at 17 Midwestern locations. Summary statistics from this survey show that there is in fact a demand for locally produced foods, which is independent of other attributes. Also, the study found that consumer perceptions of locally grown was not specifically clear, but Darby's

findings suggest that state boundaries could serve as a natural point of delineation in consumers' minds.

A study done by (Yue and Tong, 2009) focused on organic and local produce. Yue and Tong asserted that pressure from large scale farms have forced smaller farms to look for niche markets for their products. This study utilized a combination of a hypothetical and non-hypothetical choice experiment to determine consumers' preference for fresh produce. The experiment was set up at the Minnesota State Fair in August 2008. A total of 365 participants were surveyed, with 115 in the non-hypothetical experiment and 250 in the hypothetical experiment. For the hypothetical section, respondents were asked questions about their buying decisions using real produce. The non-hypothetical portion consisted of pricing scenarios where participants received the produce they chose and were required to pay for their choice. A mixed logit regression was used to analyze the data. Findings for locally grown fresh produce revealed that 83 percent of people consider freshness as "very important." Seventy-two percent rated safe to eat as very important and 74 percent stated a good reason for people to choose locally grown fresh produce was to support the local economy.

Bellows et al. (2010) conducted an experiment on locally grown foods. They used data from a study collected by the Food Policy Institute, from the State University of New Jersey. However, instead of finding the individual effects, they also included organic, U.S. grown and GM-free foods to find the relationship for these attributes. They also went a step further and separated

their findings by gender to understand the shopping habits of males and females. They found that attitudes toward aforementioned attributes varied with involvement in preparation and selection of food. The study found no gender differences for organic and U.S. grown attributes. There was, however, a slight positive correlation in the attitude towards the four attributes and frequency of those involved with meal preparation.

The findings of these studies are not unique to the United States. According to a study done by (Vieregge et al., 2007) in Switzerland, patrons of a McDonalds prefer local products to be served in the McDonalds because the majority of patrons consider local food to be of higher quality. Seventy-one percent confirmed they would frequent the establishment more often if they knew local food products were used.

Estimation Methods

The following section contains a brief discussion of the estimation procedures used for the previous research and discusses why the logistic model was chosen as the method of regression.

Cluster analysis is an analytical method that is often used when conducting marketing research. When using cluster analysis, the data is divided into groups that are defined by a common characteristic. These clusters are helpful for data summarization and determining utility in whatever data is being analyzed. When dealing with large data sets, cluster analysis can reduce the data into manageable clusters which can then be analyzed as individual clusters

that are representative of the objects in the cluster (Tan et al., 2006). While cluster analysis can be useful in market analysis by identifying groups that otherwise may not be apparent (i.e. sharing a latent variable), it also has several limitations. The primary drawbacks to cluster analysis are that it does not have a theoretical foundation for model development, the solutions are not unique, and many different solutions can be developed by varying one or more elements (Hair, et al). That is, by adding or removing one or more variables, solutions or clusters can change dramatically. In spite of these limitations, cluster analysis can still be very useful in identifying markets or marketing strategies for products.

Cluster analysis was used by Ziehl et al. (2005) to group survey takers into a cluster of similar attitudes about certain variables. They found that natural groupings occur in the data with fairly homogenous characteristics that allows them to create what they refer to as a “buyer profile.” With five segments in the data they then were able to understand what consumers in each segment found important when purchasing beef products.

Fisher’s Exact test is a procedure that calculates an exact probability value for the relationship between two dichotomous variables. Much like the Chi-square test, Fisher’s Exact test takes into account the marginal effect and assumptions of the model independence. This is a better choice if the marginal effect is uneven or has a small sample size (SISA). Implementing the Fisher’s Exact test was the analysis choice of Velasquez et al. (2005). They calculated percentages then cross-tabulated against consumers’ willingness to purchase new types of vegetables to determine data trends. Consumers’ willingness to

purchase new types of vegetables was cross-tabulated against responses. This data was then analyzed using the Fisher's Exact test due to the smaller size of the sample.

Another popular method of predicting consumer choices is conjoint analysis. Conjoint analysis is an analysis technique that employs an indirect method of determining peoples' perceived values of specific product features. Although it is useful technique, it is also a complex method that has many options for the consumer to choose from, which can be time consuming. Instead of directly asking the respondent what they prefer, conjoint analysis employs respondents' evaluation of potential product profiles. Each profile includes multiple product features joined together. Respondents are usually given many profiles which are independently varied for each profile. This can then be analyzed to determine which features are most desired and which ones have the most impact on choice (Sawtooth Systems, 2012).

Nilsson et al. (2006) used choice-based conjoint analysis and choice experiment for collecting consumer preference data. They mailed surveys to a sample of representative households in the United States. A total of 642 surveys were returned. The survey consisted of 16 questions with five options per question. This type of survey provided many options available for analysis to break down into individual preferences of respondents. Nilsson's survey also gave respondents a no-choice option as well, which more realistically simulated a shopping experience. People were asked to decide from four options and a no-choice option, which consisted of brand name, price, and one, two, or three

possible certification variables. In their findings, the attribute conscious group were willing to pay anywhere from \$2.58 to \$10.64 per pound for any combination of the certification variables. This differed considerably when compared to the price conscious group where prices varied from \$0.24 to \$0.67 per pound for the same certifications variables. These findings provide insight into how information plays a role in consumers' willingness-to-pay for attributes that cannot be physically observed before or after purchase.

Another popular tool for analyzing cross-sectional data is logistic or logit estimation. Logistic parameterization can be used to attain all the coefficients in an assigned range of values (Lipovetsky, 2009), usually from zero to one. As a result, coefficients obtained by the multinomial-logit parameterization are useful for interpretation of the predictors' influence (Lipovetsky, 2009).

In comparison to ordinary least squares (OLS), logistic regression is a better fit for the data from this project because logistic regression is best suited for non-linear models. OLS is most commonly used for linear models. Although it can be used to model binary variables, it may yield predicted values beyond the (0, 1) range. Also normal distribution and homogeneous error variance assumptions may be violated for binary dependent variables when using OLS (Pohlmann and Leitner, 2003). Logistic regression estimates the probability of an outcome as a function of independent variables and is specifically designed to analyze binary or discrete choice models. This model estimates the log odds as a linear combination of the independent variables whereas OLS models the relationship between a dependent variable and a collection of independent

variables (Pohlmann and Leitner, 2003). For this reason, logistic regression was chosen to analyze the data in order to obtain a clearly defined discrete choice model that is free of violating normal distribution and homogenous error term variance assumptions.

In summary, current literature does not focus on locally grown beef cattle in the Southeastern United States. Research has been done on credence attributes for vegetable and fruit production in this area, however, not for beef products. Of these studies concerned with credence attributes in the beef industry, none have examined on local or regional labels for the Southeast. Research in local vegetable and fruit production and beef production has shown there is an increased willingness-to-pay for these products.

Logistic regression is an effective way of analyzing data with a binary outcome. This research project utilizes this analysis tool to predict willingness-to-pay for credence attributes. This study is important because it will give information and insight into consumer preferences on credence attributes of beef in the Southeastern region where research is minimal. As a result, producers and beef marketing firms will better understand consumer buying preferences and what they look for when shopping for meat products. Specifically, this project addresses the question of natural versus locally grown ribeye steaks and what the consumer perceives as “locally grown.”

Chapter 3

METHODS AND PROCEDURES

The survey conducted consists of a 37 question internet study with various questions about the shopping behavior of the respondent in regards to beef steak (ribeye). The survey focused on consumers' buying behavior of the different attributes associated with beef (Appendix C). The primary focus of the questionnaire was to determine if production method (e.g. natural, grass-fed, etc.) was more important than location (local or regional) in consumers' decision to purchase a beef product. This objective was accomplished by determining consumer's willingness-to-pay (WTP) for labels that identified the product as grass-fed, organic, natural, locally grown, and regionally grown.

There were three sections to the survey. Section I, which covered the shopping habits of respondents such as where their groceries are purchased, if they had ever bought natural or grass-fed products, and where they obtained their information about organic produce and meats. Section II contained the fractional orthogonal conjoint analysis questions, and Section III collected the demographic information.

Survey respondent recruitment and data tabulation were conducted by the Survey Research Center from the University of Georgia. The survey was approved by the Institute for Behavioral Research through the University of Georgia. A target number of 500 completed surveys was the goal for this study.

A random sample of people were called throughout Alabama, Georgia, Florida, North Carolina, South Carolina, and Tennessee. Potential respondents were pre-screened to see if they or their family consumed beef. Only those who were consumers of beef were asked to participate in the survey. They were read a participation letter (Appendix B) during the initial phone call and once again in writing when they received the email with the link to the survey. Once they agreed to take the survey and notified of a \$15.00 incentive for completing the survey, they were sent an email which gave them a link and password to complete the survey online. Respondents were able to complete the survey at their convenience and return to it at a later date if they chose to do so. After completing the survey, the respondents were mailed a letter of appreciation and a \$15.00 check for their participation.

A total of 2,879 individuals were contacted by phone to recruit participants (Appendix A). This resulted in 521 completed surveys which were collected by the Survey Research Center. Once the data was checked for response errors and completeness, nine were excluded leaving 512 usable surveys for analysis.

The data was returned in comma separated values CSV format where it was then recoded for logistic regression to be analyzed in SAS (Statistical Analysis System). It was then edited to remove any non-response observations (missing data) or other data errors (incorrect ranking, outliers, etc.), and recoded to binary form in order to fit the model for logistic regression. Summary statistics analysis as well as correlation analysis was conducted before regression in order

to filter the non-binary questions of the survey and isolate the variables that fit best with the model.

Thirty-two variables were included in the model that was constructed from Sections I and II from the survey.

Variables considered include the importance of no added growth hormones, whether food produced locally is perceived to be superior or inferior based on convenience, consistent quality, reduced transportation, where the information about local food is found. Also, the importance respondents place on the production system (organic, natural, etc.), their level of agreement for various health and food product info, previous purchases of local beef, weekly expenditures of meat, the state the respondent is from, and all the demographics included in the survey. A complete list of variables and their descriptions along with summary statistics is available in Table 4.3.

The PROC MEANS procedure in SAS was also used for this analysis to acquire basic statistics such as: where the majority of respondents reside, how much they spend weekly on groceries and meat products, importance of food safety and animal treatment, and purchasing behavior of beef products and their credence attributes such as USDA Certified Organic, Naturally Grown, or Grass-fed Beef. This helped determine what people perceived as important and what variables needed to be considered for the logistic model.

After reviewing the available literature, logistic regression was chosen as the appropriate analysis tool. The basic model for predicting the probability of respondents purchasing locally raised beef can be written as:

$$P(y = 1) = \frac{1}{1 + e^{-m}} \quad \text{Equation 3.1}$$

where: $m = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$ Equation 3.2

which yields: $\ln\left(\frac{P_i}{1 - P_i}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$ Equation 3.3

Logistic regression is a non-linear model that usually includes a binary dependent variable and independent variables that can take any value. This type of regression is useful for predicting events, such as the probability of whether someone is willing to pay for locally grown ribeye steaks. The outcome can give insight on the strengths and relationships among the variables. In this specific case, the relationship among the location of the respondent, what they consider “locally” grown, the demographics, and a number of other questions in the survey aids in predicting a 0 or 1 outcome as to whether a person is willing-to-pay for a ribeye beef package with a “locally” grown label (question 12). Zero indicates a zero probability of willingness-to-pay and one indicates a 100 percent probability of willingness to pay for locally grown beef.

Discrete choice modeling is primarily used to describe decision makers’ choices among alternative options such as various credence attributes, product labels, and quality of the product (Train, 2009). In order to be considered a

discrete choice model, three characteristics need to be demonstrated. First, the alternatives must be mutually exclusive from the decision makers' perspective. Second, the choice set must be exhaustive. And third, the number of alternatives must be finite (Train, 2009). The alternatives must be mutually exclusive in that if one option is chosen, the alternatives cannot be chosen. It must be exhaustive, meaning all other alternatives are included in the choice set. And there must be definite number of alternatives for the characteristics of a discrete choice model to be fulfilled. The data set obtained from the ribeye survey fit these characteristics and is the basis for choosing this type of model to analyze the data.

The dependent variable in the model was constructed from question 12 of the survey which asked respondents if they were likely to purchase "locally or regionally produced" food products from the Southeast. The respondents were given the option to choose from the following options:

1. Not at all likely
2. Not very likely
3. Neutral or somewhat likely
4. Very likely
5. Extremely likely

To allow for analysis within the logistic model's 0/1 framework, it was necessary to create new variable (LOCAL) where responses four and five (very or extremely likely) were coded as one and responses one, two and three were coded as zero.

Once the dependent and all independent variable were properly coded, logit regression was used to obtain parameter estimates which should provide a good fit that will be useful in predicting willingness-to-pay according to the variables included. While these parameter estimates are useful for forming a model, the marginal effects are especially useful in making generalizations regarding the implications for the application of the model results. Calculating the marginal effects can be done so by using the following equation:

$$\frac{\partial E(y = 1 | x_i)}{\partial x_i} = f(\beta' x_i) \beta \quad \text{Equation 3.4}$$

The marginal effect is then the change of the dependent variable (i.e., the probability of $y = 1$) when there is one unit change of a single independent variable holding all other variables constant. Specifically, these effects are calculated using the density function, $f(\beta' x_i)$, evaluated at the mean value of all variables (x_i) and then multiplying it by the corresponding β coefficient associated with the independent variable of interest. The marginal effect is interpreted as the change in the probability of buying locally produced food products given a unit change in a particular independent variable. When the independent variable is a binary variable, the marginal effect is evaluated as the difference between the probabilities evaluated at the discrete level of the binary variable = 0 and 1, respectively. Thus, it is more meaningful to consider the marginal effects derived from the logit model than the parameter estimates as is typically done with regression models.

Chapter 4

RESULTS

This chapter presents the results from the estimated logit model. Determining the value that consumers place on “locally” labeled ribeye steak is the goal of this research project. Since that value can be affected by many variables, they will be discussed in this chapter. The result should be some helpful into what consumers are looking for when they purchase beef and beef products. Additionally, this analysis will identify the demographic groups that are willing and not willing to pay for a regionally-labeled beef product. The first section of this chapter covers the descriptive statistics of the data, and the second describes logit regression model and the parameter estimates for each variable.

Descriptives

The majority of the respondents were females at 61.87 percent. Eighty percent of the survey population was Caucasian, followed by African Americans at 15.32 percent (Figure 4.1).

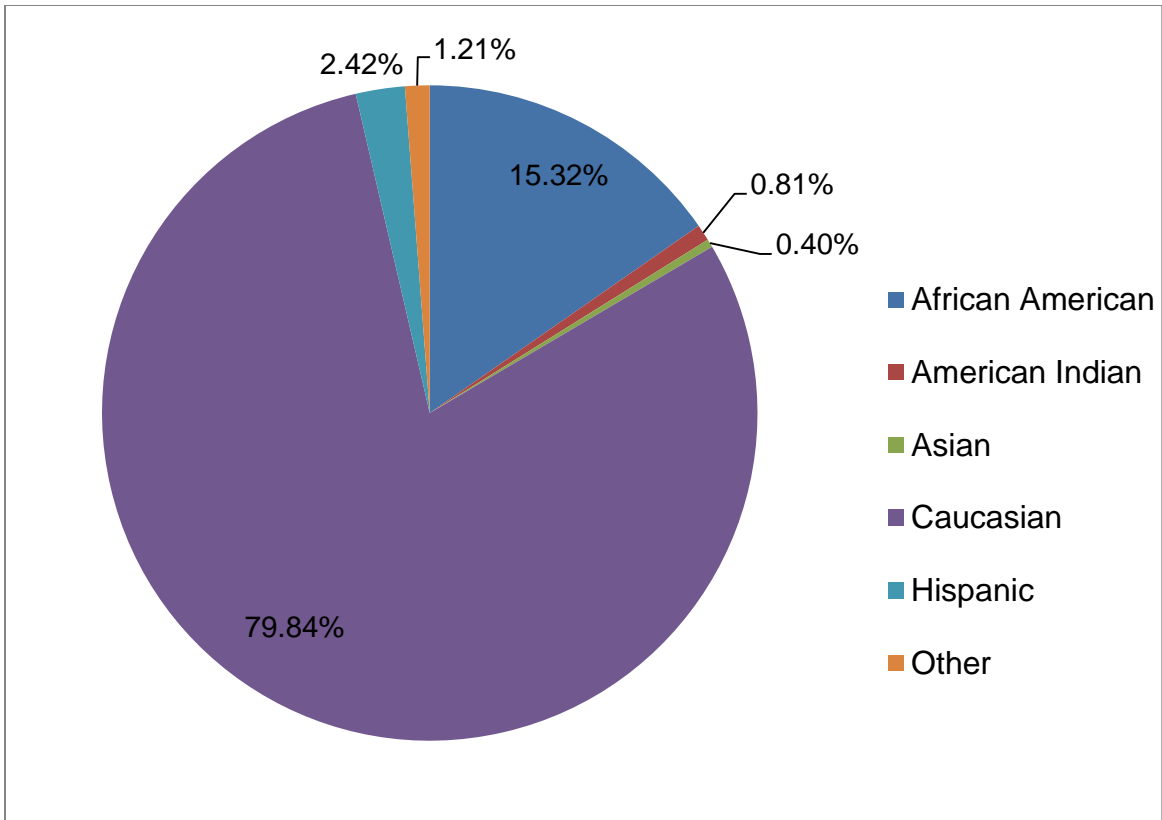


Figure 4.1: Percentage of Race in Ribeye Survey

When compared to the United States Census statistics, the average race composition is similar throughout each state. States included in the Ribeye Survey are Alabama, Georgia, Florida, North Carolina, South Carolina, and Tennessee. The percentage of the states included in the Census contains all the races except for Hispanics and adds the race Native Hawaiian and Other Pacific Islander. As shown in Table 4.1, all the states in the survey combined have an average Caucasian percentage of 69.25 which is ten percent lower than the survey average. African Americans average 23.11 percent among the six states which is higher than the survey average by almost eight percent.

Table 4.1: Percentage of Race by States

State	Percent of population by state					
	Caucasian	African American	American Indian, Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other
Alabama	68.53	26.18	0.59	1.12	0.06	2.03
Florida	75.04	15.96	0.38	2.42	0.07	3.62
Georgia	59.74	30.46	0.33	3.25	0.07	4.01
North Carolina	68.47	21.48	1.28	2.19	0.07	4.34
South Carolina	66.16	27.90	0.42	1.28	0.06	2.45
Tennessee	77.56	16.66	0.32	1.44	0.06	2.24
Average States	69.25	23.11	0.55	1.95	0.06	3.12

Source: 2010 United States Census Data (US-CB) 2010

The average age of respondents was 50.4, with the youngest being 18 and the oldest at 89. Over 80 percent of the respondents completed at least some college. 41.70 percent are unemployed leaving the other 58.30 percent as students, part-time or full-time. According to the Bureau of Labor Statistics Data the national unemployment rate is 8.3 percent as of February 2012. The unemployed percentage is very high in this survey when compared to the national average. However, it should be noted that 61.87 percent of respondents were female 42.62 percent of respondents were 55 years old or older. Since employment choices did not include spouses staying at home or retired, it is quite

possible that seemingly high unemployment rate merely reflects a significant percentage of females not working outside the home and large number of retired individuals that completed the survey.

The majority of survey takers live in a suburban environment at just over 56 percent. Sixty-eight percent of the respondents are married and 84.08 percent own their home either with or without a mortgage. Average income among the households ranged from \$35,000 to \$99,000 a year.

Georgia had the highest percentage of respondents at 32.93 percent, followed by Florida at 23.90 percent, and North Carolina at 18.47 percent. The full breakdown for responses by state is given below in Table 4.2.

Table 4.2: Respondents by State from Ribeye Survey States

	Frequency	Percent	Cumulative Frequency	Cumulative Percent
AL	32	6.43	32	6.43
FL	119	23.90	151	30.32
GA	164	32.93	315	63.25
NC	92	18.47	407	81.73
SC	34	6.83	441	88.55
TN	57	11.45	498	100.00

Eighty-six percent of survey takers primarily purchase their meat products from the supermarket and the second most popular place to purchase meat is a retail meat store at 41.5 percent (Figure 4.2). Nearly 40 percent of respondents

purchase some portion of their meat directly from the producer. This figure is obtained by summing the individual purchase point as a primary source, secondary source, and occasional source. Health/natural food store and farmers markets are shopped at occasionally by respondents whereas most people rarely shop for meat via the internet. Respondents chose Health/Natural Food stores as their primary source 3.61 percent of the time, Retail Meat Markets 12.05 percent of the time, Farmers Markets 11.84 percent of the time, directly from the producer 7.43 percent of the time, and the Internet 0.60 percent of the time. Alternatively only two percent of people never buy their meat products from the Supermarket, 39.76 percent never from Health/Natural Food Stores, 14.86 never from Retail Meat Markets, 23.69 never from Farmer's Markets, 47.79 percent directly never from the producer, and 72.29 percent never from the Internet.

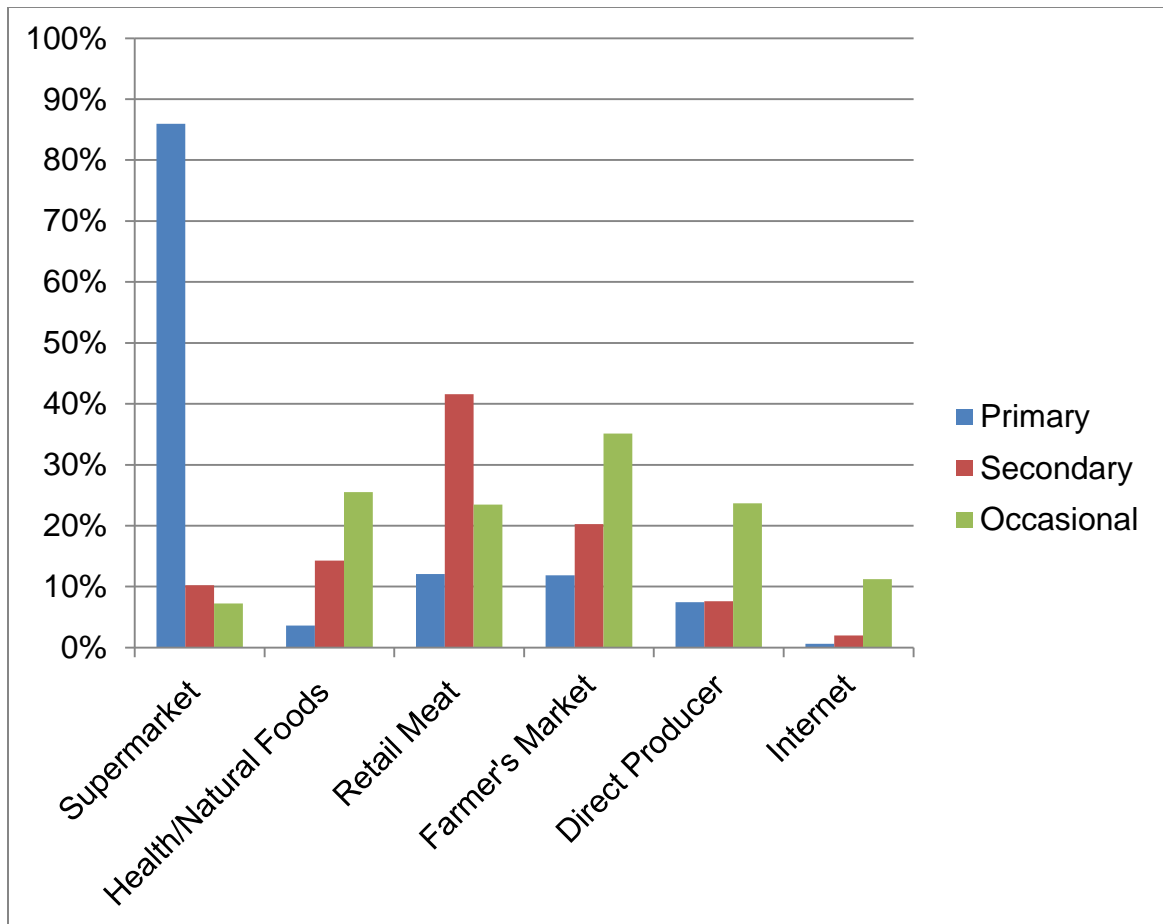


Figure 4.2: Respondents Preferred Shopping Location for Meat Purchase

Respondents were asked two questions to rate the importance of how the cattle are treated prior to slaughter. For the first question (question five), people were asked to rank attributes on a Likert-scale of 1 to 5, with 1 being not important at all and 5 being extremely important. The mean response for no growth hormones is 3.46, approximately half-way between important and very important. This was also the range for animals treated humanely, traceable from farm to consumer, grass fed and no antibiotics. These responses indicate that these attributes are of considerable importance to the respondents and suggests some market potential exists for beef products with these qualities.

One of the major objectives of this project was to determine what beef consumers in the Southeast consider to be local. Additionally, given the interest in food hubs, it was also important to determine what they consider to be regional. To answer these two questions (Questions seven and eight), respondents were asked what they deemed to be either local or regional. For both questions, survey participants were given sixteen options from which to choose. These options allowed to respondents to select from a list of either spatial or geographical choices. For both questions, potential spatial answers ranged from 25 to 500 miles and the geographic choices ranged from my community to Canada and Mexico.

When all choices were consider included, respondents indicated they considered “locally” produced, to be My State, and for “regionally” produced it was Mine/adjacent States. However, when the responses were parsed into spatial and geographic groupings some interesting results appear. First, when it comes to local, some consumers think of local in terms of mileage while others view it geographically (Figure 4.3). Approximately 35 percent of consumers viewed local in terms of miles. For this group, the two largest responses were for 100 miles or less and 50 miles or less, respectively. A much larger proportion of respondents viewed local as being geographical in nature at about 65 percent. For this group, the highest response was for My State at 25 percent.

When queried about what they considered regional, the respondents were much more uniform in their answers. Only 22 percent viewed regional in terms of miles. For this group their mean response was equivalent to 200 miles or less.

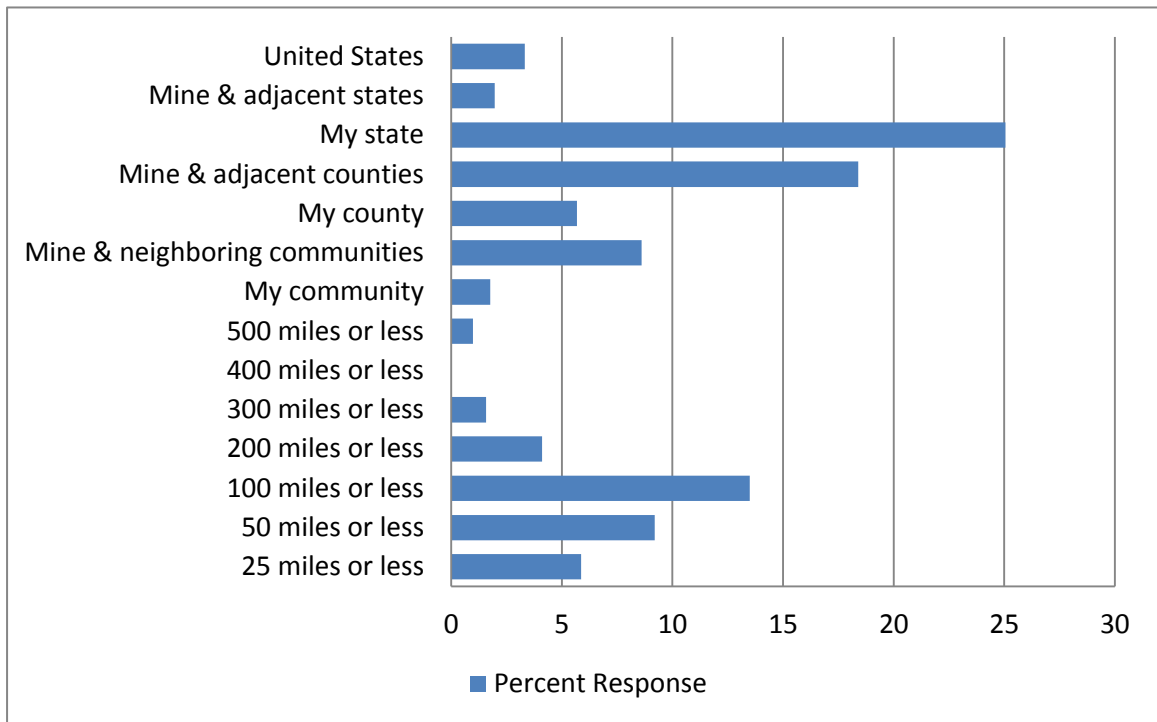


Figure 4.3: What Respondents Consider Locally Produced

For those respondents who view regional to be geographical in nature, the overwhelming choice was Mine and Adjacent States at 45 percent of all responses (Figure 4.4). Moreover, from a geographical perspective almost 73 percent of potential beef consumers consider regional to be that area that is adjacent states and smaller. So, while survey takers were somewhat mixed on what they consider local, they are very clear on what consider regional – their home state and adjacent states.

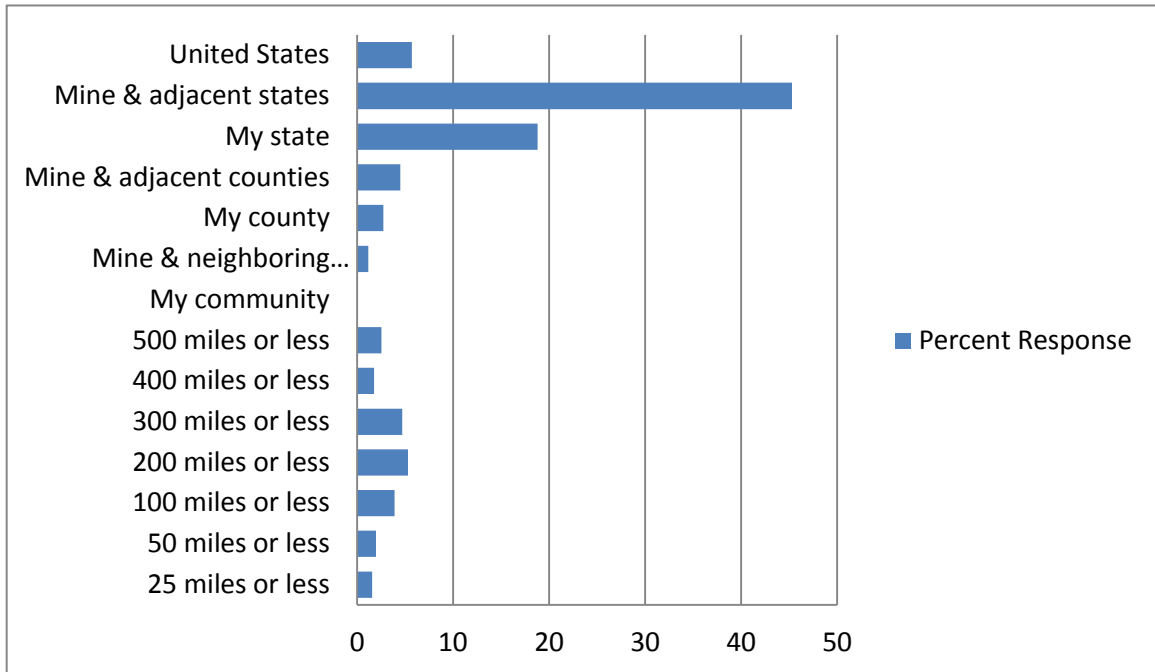


Figure 4.4: What Respondents Consider Regionally Produced

The survey data shows that when it comes to locally produced, respondents considered it superior in terms of reduced transportation cost and freshness. This was determined by analyzing question nine of the survey that asked what respondents perceive to be positive attributes of locally produced foods. On a scale of 1 to 3 (1 being superior and 3 being inferior), reduced transportation had a mean response of 1.48 and freshness had a mean response of 1.24. Additionally, 98 percent of the respondents have bought local food in the past with the most common purchases being vegetables, fruit, and eggs at 92.57 percent, 87.15 percent, and 60.84 percent respectively. Local meat was also previously purchased by 52.6 percent of survey takers.

When asked about the likelihood of paying a higher price for credence attributes, respondents chose Naturally Grown (39.65 percent) and Grass-fed (38.48) over Organic (33.39) (Figure 4.5). A paired t-test was utilized to compare

the means between the three choices. There was no statistical difference between Naturally Grown and Grass-fed (alpha level $p=.01$). However, both of these choices were statistically different than Organic at the .01 alpha-level.

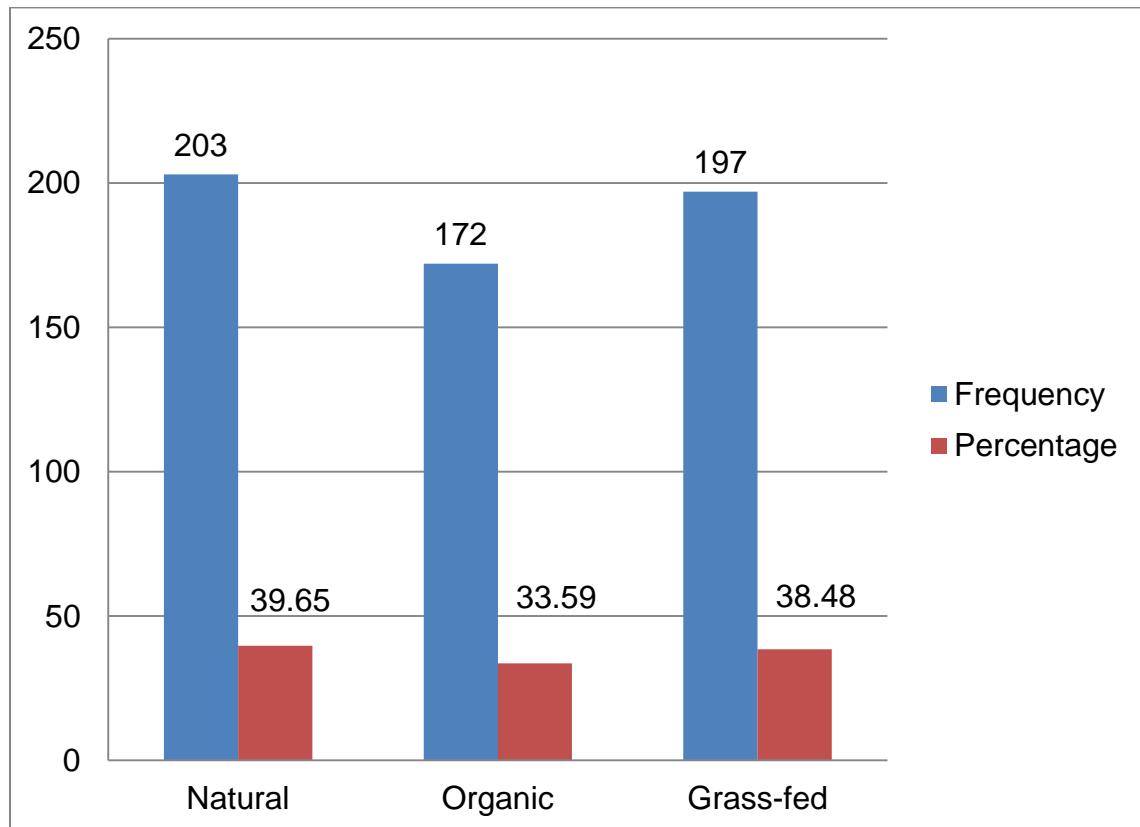


Figure 4.5: Credence Attributes

Survey takers spent from \$100 to \$149 per week on groceries and, on average, \$45.59 on meat products. The meats consumed the most were chicken at 49.19 percent and beef at 32.26 percent. Ground beef was the most frequent cut prepared by respondents, followed by processed beef and steak.

Question 18 of the survey consisted of ranking seven variables that consumers might consider when shopping for beef and an “other” option that the respondents were allowed to write in their own information they look at while

purchasing beef products. The respondents were asked to rank Expiration Date, Nutritional Value, Price, USDA Grade, Local Production, other industry labels such as Certified Angus Beef, Production System Labels, and Other if there was something else they deemed more important. These choices were ranked using a Likert-scale of 1-7, with one being the least important and seven being the most important. For analysis and communications purposes we chose to determine the cumulative percentage of people who chose five (somewhat important) or higher for each variable and rank them from highest to lowest.

As shown in Figure 4.6, production system label had a 52.43 percent ranking from respondents, which was the highest ranked variable out of 289 responses. The next highest variable was Local Production at 47.06 percent. Third on the list was “other industry labels such as Certified Angus Beef” at 40.07 percent. Fourth through seven are Nutritional Value, USDA Grade, Price and Expiration Date, respectively. These last four rankings dropped below thirty percent ranging from 27.43 percent to 6.57 percent. There were a few people who chose the “other” option with the majority response being fat content.

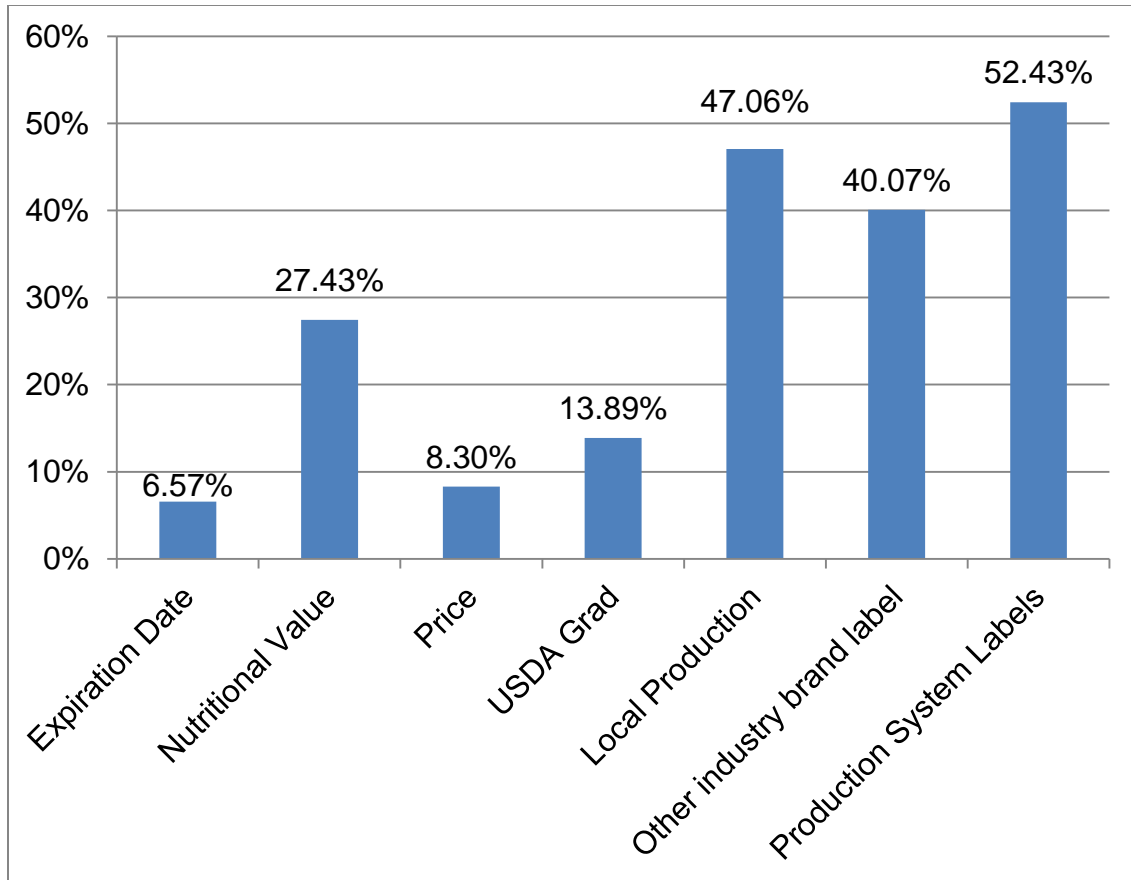


Figure 4.6: Ranking of Information Respondents Perceive as Important

Logit Regression

The model specified in Equation 3.1 was analyzed using PROC LOGISTIC in the SAS® System. Table 4.3 lists each variable and a description of each with the mean and standard deviation.

Table 4.3: Description of Variables Used in Model

Variable	Definition	Mean	Standard Deviation
LOCAL_PREV	1 if respondent has purchased any variety of locally grown meat products in the past, 0 otherwise	0.98046	0.13952
GRT_HOR	1 if no added growth hormones is important, 0 otherwise	0.55078	0.49790
LOC_CON	1 if food produced locally is superior in terms of convenience, 0 otherwise	0.25781	0.43786
LOC_CQ	1 if food produced locally is superior in terms of consistent quality, 0 otherwise	0.44141	0.49790
LOC_TRANS	1 if food produced locally is superior in terms of reduced transportation, 0 otherwise	0.45313	0.49828
LOC_ENV_SUS	1 if food produced locally is superior in terms of environmental sustainability, 0 otherwise	0.47461	0.49984
INFO_DIR_ML	1 if respondent found information about local food from direct mail, 0 otherwise	0.09766	0.29714
INFO_LEAF	1 if respondent found information about local food from leaflets, 0 otherwise	0.18555	0.38912
INFO_FRIN	1 if respondent found information about local food from friends, 0 otherwise	0.61719	0.48655
RANK_PRC	1 if respondent found price important in terms of product information, 0 otherwise	0.14453	0.35197
PROD_INFO	1 if respondent agreed that product information is of high importance, 0 otherwise	0.86914	0.33758
COMP_PRC	1 if respondent constantly checks and compares prices in the grocery store, 0 otherwise	0.75391	0.43116

AVD_ADD	1 if respondent tries to avoid food products with additives, 0 otherwise	0.61523	0.48706
FRT_VEG	1 if respondent eats fruits and vegetables often, 0 otherwise	0.87500	0.33104
HW_FD_GRN	1 if knowing how the respondents food is grown is important, 0 otherwise	0.60352	0.48965
FD_SFTY_EXAG	1 if respondent sees concerns about food safety as exaggerated, 0 otherwise	0.17578	0.38101
SUP_LOC_PROD	1 if supporting local producers is an important concern of the respondents, 0 otherwise	0.57617	0.49465
WEEKEXP	Average weekly expenditure of meat products	42.3789	30.3168
SHOPPER	1 if respondent is primary shopper for household, 0 otherwise	0.85742	0.34998
STATE_FL	1 if respondent is from Florida, 0 if from other states	0.24023	0.42764
MALE	1 if respondent is male, 0 if female	0.36719	0.48251
WHITE	1 if respondent is Caucasian, 0 if other race	0.77344	0.41902
AGE	Age of respondent	47.3809	18.6567
EDU_HS	1 if respondent finished high school, 0 otherwise	0.16211	0.36891
EMPLOYED	1 if respondent is employed, 0 otherwise	0.51172	0.50035
RURAL	1 if respondent lives in rural location, 0 otherwise	0.28516	0.45193
HSIZE	Number of people in household	2.6992	1.4522
ADULT	Number of adults in household	2.0352	0.94813

MARSTAT	1 if respondent is married, 0 otherwise	0.65625	0.47542
RENTER	1 if respondent rents their house, 0 otherwise	0.13282	0.33970
INCOME_LOW	1 if income of respondent is below \$35,000, 0 otherwise	0.28125	0.45005
INCOME_HIGH	1 if income of respondent is greater than \$100,000, 0 otherwise	0.21679	0.41247

The parameter estimates, standard error, and Chi squared values of the thirty-two variables and intercept are presented in Table 4.4.

Table 4.4: Results from Logit Estimation in SAS® Systems

Parameter	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	-4.1941	1.0620	15.5956	<.0001
LOCAL_PREV	1.9885	0.8601	5.3453	0.0208
GRT_HOR	0.6689	0.2731	5.9995	0.0143
LOC_CON	0.2932	0.3286	0.7960	0.3723
LOC_CQ	0.2426	0.2869	0.7151	0.3977
LOC_TRANS	0.4761	0.2749	2.9993	0.0833
LOC_ENV_SUS	0.9508	0.2713	12.2816	0.0005
INFO_DIR_ML	-0.7576	0.3992	3.6013	0.0577
INFO_LEAF	0.4869	0.3421	2.0255	0.1547
INFO_FRIN	0.9541	0.2495	14.6216	0.0001
RANK_PRC	-0.5044	0.3647	1.9128	0.1667
PROD_INFO	1.2286	0.3864	10.1073	0.0015

COMP_PRC	-0.2455	0.3147	0.6088	0.4352
AVD_ADD	0.1976	0.3229	0.3746	0.5405
FRT_VEG	-0.5438	0.3888	1.9567	0.1619
HW_FD_GRN	0.1052	0.3001	0.1229	0.7259
FD_SFTY_EXAG	-0.5830	0.3371	2.9917	0.0837
SUP_LOC_PROD	0.8549	0.2868	8.8871	0.0029
WEEKEXP	0.00325	0.00417	0.6093	0.4350
SHOPPER	-0.1697	0.3730	0.2070	0.6491
STATE_FL	-0.6408	0.2828	5.1348	0.0235
MALE	0.5511	0.2802	3.8682	0.0492
WHITE	-0.4518	0.3454	1.7108	0.1909
AGE	0.0112	0.00772	2.0914	0.1481
EDU_HS	0.6770	0.3985	2.8859	0.0894
EMPLOYED	0.0800	0.2618	0.0934	0.7599
RURAL	0.2425	0.3018	0.6459	0.4216
HSIZE	-0.0549	0.1325	0.1718	0.6785
ADULT	0.1275	0.1933	0.4351	0.5095
MARSTAT	0.3680	0.2974	1.5312	0.2159
RENTER	0.6025	0.4225	2.0338	0.1538
INCOME_LOW	0.3635	0.3448	1.1114	0.2918
INCOME_HIGH	0.0553	0.3334	0.0275	0.8682

Model Fit Statistics			
Criterion	Intercept Only		Intercept and Covariates
AIC	586.455		503.271
SC	590.693		643.136
-2 Log L	584.455		437.271
R-Square	0.2498	Max-rescaled R-Square	0.3671
Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	147.1835	32	<.0001
Score	134.9339	32	<.0001
Wald	96.5657	32	<.0001

Note: Numbers in bold face indicate the estimated coefficients are significantly different from zero at the 10% or less significance level.

The model has an R-squared value of 0.2498 which does not indicate an extremely strong model but the p-value is significant for the overall model showing that the parameter estimates are a good fit for estimating willingness-to-purchase locally or regionally grown ribeye steaks.

As previously stated, the marginal effects are the change in the probability of purchasing locally regionally labeled food products when there is one unit change of a single independent variable holding all other variables constant. These effects are calculated at the mean value of variable (x_i) using Equation 3.5. The estimated marginal probabilities (marginal effects) derived from the logit model are presented in Table 4.5. Statistically significant variables are marked with the change in probability in bold face print. The most significant variable in determining willingness-to-pay for locally grown food products was the

respondent's previous purchasing of locally grown products. Survey responders that had previously purchased local foods were 28 percent more likely to be willing-to-pay for a locally produced food product. The next highest determinant of WTP was product information at 16.84 percent. The implication is respondents who place a high value on product information are more 16 percent more likely to very or extremely likely to purchase a regionally-produced naturally-raised beef product than others.

There were also a couple of variables that had an adverse effect on WTP. Somewhat surprisingly, respondents who receive information about locally grown products via direct mail are 10 percent less likely to purchase the regional product. Also, those respondents from Florida they are almost nine percent less willing-to-pay for a regional label than those from other states. Finally, respondents who think food safety is not an exaggerated concern are eight percent less likely to purchase the regional product than those who do not share the same food safety concerns.

Table 4.5: Marginal Effects

	Change in Probability	Standard Error	z	P> z	[95% Conf. Interval	
LOCAL_PREV	0.28103	0.1109	2.53	0.011	0.063526	0.498541
GRT_HOR	0.09244	0.03586	2.58	0.015	0.022149	0.162735
LOC_CON	0.04015	0.04408	0.91	0.362	-0.04624	0.126551
LOC_CQ	0.03505	0.03902	0.9	0.369	-0.04143	0.111535
LOC_TRANS	0.06532	0.03733	1.75	0.080	-0.00785	0.138488
LOC_ENV_SUS	0.13050	0.03674	3.55	0.000	0.058489	0.202518
INFO_DIR_ML	-0.1036	0.06243	-1.66	0.097	-0.22597	0.018739
INFO_LEAF	0.06783	0.05358	1.27	0.206	-0.03718	0.172852
INFO_FRIN	0.13172	0.03315	3.97	0.001	0.06675	0.196681
RANK_PRC	-0.0717	0.05198	-1.38	0.168	-0.1736	0.030147
PROD_INFO	0.16838	0.04313	3.4	0.001	0.071272	0.265488
COMP_PRC	-0.0329	0.04313	-0.76	0.446	-0.11739	0.051680
AVD_ADD	0.02511	0.04314	0.58	0.560	-0.05943	0.109659
FRT_VEG	-0.0734	0.05471	-1.34	0.180	-0.18063	0.033819
HW_FD_GRN	0.01505	0.04277	0.35	0.725	-0.06878	0.098873
FD_SFTY_EXAG	-0.0789	0.04585	-1.72	0.085	-0.16878	0.010953
SUP_LOC_PROD	0.11649	0.03727	3.13	0.002	0.043433	0.189543
WEEKEXP	0.00472	0.00063	0.75	0.453	-0.00076	0.001705
SHOPPER	-0.0284	0.04985	-0.57	0.568	-0.12614	0.069252
STATE_FL	-0.0884	0.03889	-2.27	0.023	-0.1646	-0.012157
MALE	0.07762	0.03777	2.06	0.040	0.003596	0.151647
WHITE	-0.0612	0.04676	-1.31	0.191	-0.15285	0.030443
AGE	0.00164	0.00099	1.66	0.098	-0.0003	0.003589
EDU_HS	0.09474	0.05346	1.77	0.076	-0.01004	0.199519
RURAL	0.0352	0.04289	0.82	0.412	-0.04888	0.119277
HSIZE	0.00107	0.01365	0.08	0.937	-0.02567	0.027816
MARSTAT	0.05167	0.04019	1.29	0.199	-0.0271	0.130437

RENTER	0.0808	0.04018	1.44	0.151	-0.02945	0.191052
INCOME_LOW	0.04446	0.04715	0.94	0.346	-0.04795	0.136876
INCOME_HIGH	0.00662	0.04646	0.14	0.887	-0.08444	0.097681

Note: Numbers in bold face indicate the estimated coefficients are significantly different from zero at the 10% or less significance level.

CHAPTER 5

CONCLUSIONS AND IMPLICATIONS

The results of this project indicate that “locally grown” labels are something consumers prefer in a product. Overall, consumers rated production system information as more important than locally-raised. In terms of production systems, they rated “naturally-raised” and grass-fed higher than organic. After production system, respondents indicated that information regarding the locality of the product as being important information. In terms of local, most respondents indicated that they considered their state to be “local.” They also indicated that they thought “regional” was best described as their state and surrounding states. Finally, survey respondents indicated a positive response to purchasing a regionally-labeled food product. These findings indicate that there is a market for a regionally produced beef steak product.

The implications of these findings as they relate to food hubs are significant. First, since consumers are generally accepting of regionally-labeled food products, it may behoove state departments of agriculture in Georgia and surrounding states to develop a regional label, especially for those food products where aggregation is a concern. In addition to a regional label, Land Grant Universities in the region should seek ways to improve the food distribution system within the region.

As it relates to beef production and marketing in the region, it appears that more consumers are willing to pay a higher price for either naturally-raised or grass-fed beef as opposed to organic. The implications for this finding are also significant. First, it appears that the demand for organic beef is smaller than that of naturally-raised or grass-fed. Second, given this finding, there appears to be a potential market for a collection of producers or agribusiness firms to establish a regional beef label to produce a beef product raised in Georgia and surrounding states. This product could be either naturally-raised or grass-fed as there was no reported statistical difference in consumer response to these two products.

In addition to label development, future research should focus on developing profitable finishing systems from grass-fed and naturally-raised beef cattle within the region.

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APPENDIX A:
BEEF SURVEY SUMMARY OF EFFORT

Beef Survey
Summary of Survey Effort
May 4, 2011 – February 21, 2012

	n	%
Interview:		
Complete	2,879	14.8
Partial	2	0.1
Eligible, Non-Interview:		
Refusal	8,735	44.8
Respondent Never Available	10	0.1
Answering Machine	7,169	36.8
Other:		
Dead	7	0.1
Physically/Mentally Unable	164	0.8
Language Unable	375	1.9
Callback Unresolved	132	0.6
TOTAL	19,473	100.0
Unknown Eligibility, Non-Interview:		
Busy	598	4.3
No Answer	13,380	95.2
Technical Phone Problems	73	0.5
TOTAL	14,051	100.0
Not Eligible:		
Fax/Data Line	2,185	20.2
Non-working	503	4.6
Disconnected	4,147	38.3
Number Changed	37	0.3
Cell Phone	6	0.1
Call Forwarding	58	0.5
Business/Government	2,593	23.9
No Eligible Respondent	1,306	12.1
TOTAL	10,835	100.0
COOPERATION RATE*		24.8

* Cooperation rate is computed using the American Association for Public Opinion Research (AAPOR) guidelines for reporting results of surveys. The rate computed here is AAPOR Cooperation Rate 3 (COOP3). COOP3 = Interviews / Interviews + Partials + Refusals.

Total Completed Interviews = 773 / 2,879 = 26.8%

APPENDIX B:
BEEF SURVEY PARTICIPATION LETTER

Dear Sir or Madam,

The Survey Research Center at the University of Georgia is assisting the College of Agricultural and Environmental Sciences at the University of Georgia in conducting a survey of consumers regarding purchase and consumption of Locally Grown Natural Beef products. The intent of this research study entitled 2010 Natural Beef Survey is to determine consumer consumption and buying preferences for Natural Beef products. **Your participation is very important!** It is anticipated that the survey will take no more than 15 minutes of your time to complete.

Your participation in this survey is completely voluntary. All individually identifiable information that you provide will be kept strictly confidential. **Your responses will be kept confidential and will not be released in any individually identifiable form, unless otherwise required by law. Internet communications are insecure and there is a limit to the confidentiality that can be guaranteed due to the technology itself.** You may refuse to participate or stop taking part at any time without penalty or loss of benefits to which you are otherwise entitled. Only summary data will be reported at the conclusion of the survey, and any identifying information such as your name or address will be separated from the responses you provide. No risk or discomfort is anticipated from participation in the study, and you may choose not to answer any questions you don't want to answer. While there are no direct benefits to you for your participation, humankind may benefit through learning about healthy beef products. You will also have an opportunity to receive a copy of the study results if you so desire. By completing the survey you are signifying that you are 18 years of age and that you consent to participate in the above described research study.

To begin the survey, please click [here](#).

Your password is &&.

Upon completion of the survey, the Survey Research Center will mail you a check for \$15.00 as a token of our appreciation for your participation. Please allow 2 - 4 weeks for processing of your check and mailing time. If you would like to check on the status of your check, please call 706-542-9290 between the hours of 9:00 a.m. and 5:00 p.m. If you have any questions do not hesitate to ask now or at a later date. You may contact James J. Bason, Ph.D., Director of the Survey Research Center at 706-542-9082, jbason@uga.edu with any questions. Thank you for the invaluable help that you are providing by participating in this research study.

Sincerely,

James J. Bason, Ph.D.
Director and Associate Research Scientist
Survey Research Center
University of Georgia
Athens, GA 30602

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 629 Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu.

**APPENDIX C:
RIBEYE STEAK SURVEY**

Locally Produced Natural Beef Survey

Dear Respondent:

Thank you for agreeing to participate in our study. This survey is intended to collect data about consumer preferences of beef namely those attributes that influence buying decisions. We are interested in your preferences for beef products that are produced by different production techniques such as organic, natural, grass-fed, and conventional, and offered for sale at various price levels and product quality. In addition, we would like to know what you consider locally grown and how that affects your purchase. The answers to these questions will provide valuable data about the buying preferences of beef consumers and give us insight into how this could affect the producer and food retailers in the southeast.

Again, we would like to emphasize that your participation in this study is **completely voluntary** and we want to assure you that the information you provide will be kept **strictly confidential** and used only for the purposes of this research.

Section I. General Food Purchasing Behavior, Preferences, and Attitudes

1. Are you the primary food shopper of the household?

- 1. Yes
- 2. No

2. In which of the following states do you reside currently?

- | | |
|-------------------------------------|--|
| <input type="checkbox"/> 1. Alabama | <input type="checkbox"/> 5. North Carolina |
| <input type="checkbox"/> 2. Florida | <input type="checkbox"/> 6. South Carolina |
| <input type="checkbox"/> 3. Georgia | <input type="checkbox"/> 7. Tennessee |

3. Approximately, what does your family/household spend on food type groceries in an average week? (Please X ONE box)

- | | |
|--|--|
| <input type="checkbox"/> 1. Less than \$50 | <input type="checkbox"/> 5. \$200 to \$299 |
| <input type="checkbox"/> 2. \$50 to \$99 | <input type="checkbox"/> 6. \$300 to \$399 |
| <input type="checkbox"/> 3. \$100 to \$149 | <input type="checkbox"/> 7. \$400 to \$499 |
| <input type="checkbox"/> 4. \$150 to \$199 | <input type="checkbox"/> 8. \$500 or more |

4. Are you aware that the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA) have implemented rules and regulations for food that can be labeled as "natural" food?

- 1. Yes
- 2. No

5. Thinking about the importance of various food attributes, please rate the importance of the following attributes in your decision to purchase food (Please X ONE box).

Attribute	Not at all Important	Somewhat Important	Important	Very Important	Extremely Important
a. No antibiotics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. No added growth hormones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. No added animal by-products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. No mineral supplements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. No artificial sweeteners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. No artificial flavorings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. No artificial food colorings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Minimally processed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Animals treated humanely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Other (please describe)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. What would you consider to be “locally produced” food? If it is produced within: (Please X ONE box)

- | | |
|---|--|
| <input type="checkbox"/> 1. 25 miles or less | <input type="checkbox"/> 9. Mine and neighboring communities |
| <input type="checkbox"/> 2. 50 miles or less | <input type="checkbox"/> 10. My county |
| <input type="checkbox"/> 3. 100 miles or less | <input type="checkbox"/> 11. Mine and adjacent counties |
| <input type="checkbox"/> 4. 200 miles or less | <input type="checkbox"/> 12. My state |
| <input type="checkbox"/> 5. 300 miles or less | <input type="checkbox"/> 13. Mine and adjacent states |
| <input type="checkbox"/> 6. 400 miles or less | <input type="checkbox"/> 14. The United States |
| <input type="checkbox"/> 7. 500 miles or less | <input type="checkbox"/> 15. Canada |
| <input type="checkbox"/> 8. My community | <input type="checkbox"/> 16. Mexico |

7. What would you consider to be “regionally produced” food? If it is produced within: (Please X ONE box)

- | | |
|---|--|
| <input type="checkbox"/> 1. 25 miles or less | <input type="checkbox"/> 9. Mine and neighboring communities |
| <input type="checkbox"/> 2. 50 miles or less | <input type="checkbox"/> 10. My county |
| <input type="checkbox"/> 3. 100 miles or less | <input type="checkbox"/> 11. Mine and adjacent counties |
| <input type="checkbox"/> 4. 200 miles or less | <input type="checkbox"/> 12. My state |
| <input type="checkbox"/> 5. 300 miles or less | <input type="checkbox"/> 13. Mine and adjacent states |
| <input type="checkbox"/> 6. 400 miles or less | <input type="checkbox"/> 14. The United States |
| <input type="checkbox"/> 7. 500 miles or less | <input type="checkbox"/> 15. Canada |
| <input type="checkbox"/> 8. My community | <input type="checkbox"/> 16. Mexico |

8. In general, when purchasing food products, which if any of the following best describes your behavior? (Please X ONE box)

- 1. I always purchase the same brand
- 2. I usually purchase the same brand
- 3. I sometimes purchase the same brand
- 4. I rarely purchase the same brand
- 5. I never purchase the same brand
- 6. Don't know

9. In comparison to mainstream national food suppliers, would you say food produced or supplied locally/ regionally are superior or inferior with respects to the following attributes? (Please X ONE box)

Attribute	Superior	About the Same	Inferior	Don't Know
a. Convenience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Freshness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Consistent quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Affordability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Food safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Healthfulness/Nutrition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Reduced transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Community development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Social fairness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Easy traceability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Environmental sustainability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. Which, if any, of the following local food have you bought at all in the past?

- 1. Meat products
- 2. Dairy products
- 3. Eggs
- 4. Fish/Seafood
- 5. Fruits
- 6. Vegetables
- 7. Other (please specify) _____
- 8. None at all

11. Where do you find information about local food?

- 1. Newspapers or magazines
- 2. Radio
- 3. Television
- 4. World Wide Web or Internet
- 5. Direct mail
- 6. Leaflets
- 7. From friends or colleagues
- 8. Other (please specify) _____
- 9. None of these

12. If a “locally produced” or “regionally produced” label or logo is used to identify food products that are produced in the Southeastern region of the U.S. (i.e., Alabama, Florida, Georgia, North Carolina, South Carolina, and Tennessee), how likely or unlikely would you be to purchase such a product?

- 1. Not at all likely
- 2. Not very likely
- 3. Neutral or somewhat likely
- 4. Very likely
- 5. Extremely likely

13. How likely or unlikely would you be to pay a higher price a food product that was produced? (Please X ONE box for each)

Production Practice	Not at all Likely	Not very Likely	Neutral or Somewhat Likely	Very Likely	Extremely Likely
a. Naturally	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Organically	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Grass-fed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. Which meat product do you most prefer to consume? (Please X ONE box)

- 1. Beef
- 2. Chicken
- 3. Lamb
- 4. Pork
- 5. Fish/Seafood
- 6. Other (please specify) _____

15. Where do you prefer to purchase your meat? (Please X ONE box for your primary source of meat, X ONE box for your secondary source of meat, and X all that apply for occasional sources of meat and locations where you never purchase meat.)

Location	Primary Source (X ONE)	Secondary Source (X ONE)	Occasional Source (X All that Apply)	Never (X All that Apply)
a. Supermarket	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Health/Natural Foods Store	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Retail Meat Store	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Farmer's Market (in season)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Direct from Producer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Internet & Direct Mail Order	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. What is your best estimate of the amount of money your family/household spends on meat products in an average week? Round to the nearest dollar: \$ _____ /week.

17. How often do you prepare each of the following cuts of beef throughout the year? (Please use only one box per cut)

Cut of Beef	Several times a				
	week	Weekly	Monthly	Yearly	Not at all
a. Ground Beef	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Ground Beef Patties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Steak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Roast	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Processed Beef (sausage, hot dogs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Precooked Entrées	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Other (please describe)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. What type of information, if any, do you look for when buying beef and beef products? (Please rank from 1 to 7; 1= least important and 7 = most important)

- ____ Expiration date
- ____ Nutritional value
- ____ Price
- ____ USDA Grade (Prime, Choice, Select, etc.)
- ____ Locally Produced
- ____ Other industry brand labels such as Certified Angus Beef
- ____ Production system labels (Organic Beef, "Natural Beef", Grass-fed Beef)
- ____ Other (please describe) _____
- ____ Do not buy beef

19. Thinking about various beef production practices, please rate the level of importance of each on your purchase decision (Please X ONE box).

Production Practice	Not at all Important	Somewhat Important	Important	Very Important	Extremely Important
a. Open range (no small or crowded pens)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. No antibiotics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. No added growth hormones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Naturally grown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Grass-fed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Animals treated humanely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Traceable from farm to consumer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Organic (USDA certified organic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Other (please describe)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. Please indicate your level of agreement or disagreement with the following statements that most closely reflect your opinion on the food you purchase or eat and your health (Please X ONE box).

Statement	Strongly Disagree		Neither Agree or Disagree		Strongly Agree
	Disagree	Disagree	Disagree	Agree	Agree
a. Product information is of high importance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. I always compare product information labels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. I collect ad coupons and use them when I go shopping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. I constantly check and compare prices in the grocery store	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. I try to avoid food products with additives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. I often eat fruits and vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. I eat red meat in moderate amounts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. I exercise regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Knowing how my food is grown is important	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Concerns about food safety are exaggerated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Supporting local producer is an important concern of mine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Convenient purchase location is important	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Visual appeal is important to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Taste is an important concern of mine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. Nutritional value is a major concern of mine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p. Food is not as safe as it was 10 years ago	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q. I usually look for health information when I buy food products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r. I seldom eat at a fast food restaurant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section II. Ribeye Steak Purchasing Decisions

Imagine you are shopping at your local grocery store or supermarket. You find there are several different kinds of ribeye steaks available with some notable features and differences. The packaging, size, and expiration date, etc. on the steaks are all identical except they vary depending on production practice (organic, natural, grass-fed, or conventional), with or without a label that identifies the beef as produced locally or in the southeastern region, and the grades of the beef (USDA Prime, USDA Choice, and USDA Select), and the price of the ribeye steak varying from \$6.99/lb., to \$11.99/lb.

21. Scenario 1

Please choose among the three ribeye steak packages in the scenario below. You should look and evaluate the characteristics of each product carefully and check only ONE box below the package you most prefer in this scenario.



Product #1A



Product #1B



Product #1C

I would prefer to buy none of the products above: Product#1D

22. Scenario 2

Please choose among the three ribeye steak packages in the scenario below. You should look and evaluate the characteristics of each product carefully and check only ONE box below the package you most prefer in this scenario.



Product #2A



Product #2B



Product #2C

I would prefer to buy none of the products above: Option #2D

23. Scenario 3

Please choose among the three ribeye steak packages in the scenario below. You should look and evaluate the characteristics of each product carefully and check only ONE box below the package you most prefer in this scenario.



Product #3A



Product #3B



Product #3C

I would prefer to buy none of the products above: Option #3D

24. Scenario 4

Please choose among the three ribeye steak packages in the scenario below. You should look and evaluate the characteristics of each product carefully and check only ONE box below the package you most prefer in this scenario.



Product #4A



Product #4B



Product #4C

I would prefer to buy none of the products above: Option #4D

25. Please rank the above 4 ribeye steak products that you chose from each scenario from **least** preferred (1) to the **most** preferred (4) and write by their product identification # and option letter, e.g.,4B (from scenario 4 and option B), 2A (from scenario 2 and option A), etc. in the box below each ranking number.

Ranking: 1 2 3 4

--	--	--	--

Section III: Demographics and Background Information

26. What is your gender?

- 1. Male
- 2. Female

27. What is your ethnic background?

- 1. African American
- 2. American Indian (Native American)
- 3. Asian
- 4. Caucasian
- 5. Hispanic
- 6. Other (please describe) _____

28. What is your age? Please state in years: _____ years

29. Please indicate the highest level of education that you have completed.

- 1. Elementary school
- 2. Some high school
- 3. Completed high school
- 4. Some college
- 5. Completed college
- 6. Some graduate school
- 7. Completed graduate degree
- 8. Any other education (please describe) _____

30. What is your current employment status outside the home?

- 1. Not employed
- 2. Student
- 3. Part-time
- 4. Full-time

31. Which of the following best describes the area in which you live in?

- 1. Urban
- 2. Suburban
- 3. Rural

32. Including yourself, how many adults (18 yrs+) are living in your household? _____

33. Do you have children living in your household?

- 1. Yes. If yes, how many children (18 yrs or younger)? _____
- 2. No

34. What is your current marital status?

- 1. Single (never married)
- 2. Divorced (now single)
- 3. Married
- 4. Domestic partnership
- 5. Widowed (not remarried)

35. Which of these best describe your home?

- 1. Owned without mortgage
- 2. Owned with mortgage
- 3. Rented house
- 4. Rented apartment
- 5. Share parent/relative's home

36. Which of the following ranges describes your annual household income before taxes? (X ONE box)

- 1. Under \$10,000
- 2. \$10,000 to \$19,999
- 3. \$20,000 to \$34,999
- 4. \$35,000 to \$49,999
- 5. \$50,000 to \$74,999
- 6. \$75,000 to \$99,999
- 7. \$100,000 to \$149,999
- 8. \$150,000 or more

Thank you very much for your cooperation!!!