

EVALUATION OF CONSUMER PREFERENCES REGARDING GOAT MEAT IN
FLORIDA

By

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This document is dedicated in loving memory of my grandmother, Mattie Hugley Dixon.

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Florida is a part of the United States' goat production region and its goat inventory increased sixty-three percent between 1992 and 1997. Goat meat has always been a minor food item in the United States, but the importance of meat goats to farm income has increased in recent years. The rapid growth of ethnic populations has led to increased consumption since Hispanics, Muslims, and individuals with African ancestry are major consumers of goat meat products. Florida has a strong potential for a meat goat market; however, the lack of consumer information has hindered producers', processors', and marketers' ability to fully delineate the profitability and viability of the industry.

The overall objective of this research project is to identify the factors that influence goat meat consumption among Hispanic and non-Hispanic consumers. This information can be used by goat meat industry officials to better understand who their consumer is and further develop their markets. The data for this study were obtained using telephone surveys that targeted Florida residents. The Institute for Behavior

Research and the Survey Research Center at the University of Georgia in Athens, GA, collected the data using the random digit dialing probability technique to minimize bias.

The questionnaire sought information on demographic as well as consumer preferences towards goat meat. According to the results from a probit analysis, consumption of other meats and various demographic and psychographic characteristics influenced the willingness to try goat meat. Respondents from households with 5 or more people were most likely to try goat meat, and as household size decreased the willingness to try tended to decline. The results also suggest individuals who had previously consumed lamb were more inclined to try goat meat.

CHAPTER 1 INTRODUCTION

Preamble

Columbus introduced goats to North America in the area that is presently known as Texas during the 1600's and goat production in the South has flourished ever since their introduction (Walsh, 1995). In the past decade, meat goat production has dramatically increased throughout the Southeastern region of the United States, Florida in particular. The meat goat industry in Florida has evolved and producers who once viewed their animals as a sideline operation now consider it a serious business (Simpson, 1995).

Consumption of goat meat and goat meat products has become more popular in the United States and the strongest demand for goat meat is along the eastern coast, Southern California, Florida, Detroit, and the northeast region stretching from Washington, D.C. to Boston (McKenzie-Jakes, 2004). The lack of consumer information poses a barrier in goat meat marketing and it has prevented producers, processors, and marketers from fully ascertaining the profitability and viability of the industry. This thesis will use cross-sectional survey data to assist in identifying and understanding the factors that influence the consumption of goat meat in Florida.

Problematic Situation

A 2000 study by McLean-Meyinsse identified meat goat production as a new enterprise that is believed to enhance farm incomes for small farmers. Goat meat is an extremely popular food item in the Mediterranean, the Middle East, Africa, South America, Central America, the West Indies, and Southeastern Asia. However, goat meat

consumption in the United States has been historically low. In recent years, U.S. domestic demand for goat meat has increased with the largest demand along the eastern coast of the United States, especially in Florida. Florida's, goat meat consumption exceeds production (McKenzie-Jakes, 2004) creating a need to import live goats or goat meat in order to satisfy demand (Gipson, 1999). Despite the product's increase in popularity, the lack of availability of goat meat in Florida hampers the industry's profitability.

Florida is a part of the eleven state southern goat production region stretching from Texas to North Carolina (TX, LA, OK, AK, MS, AL, FL, GA, TN, SC, and NC). In 2002, this region accounted for 80 percent of meat-type goat production in the United States, and Florida contributed three percent of the region's meat goat inventory (USDA-NASS, 2002). During the past few decades, Florida's meat goat industry has transformed from one in which goats were raised as a minor part of subsistence level farm system into a more structured industry oriented approach that is viewed as a business (Simpson, 1995). According to the 2002 Census of Agriculture, 1,764 meat goat farms existed in Florida, a six percent decrease from the total number of meat goat farms in 1997. However, during the same time period, the state's meat goat inventory increased twenty-five percent (Table 1-1). In addition between 1997 and 2002, the number of goats sold increased 47. Meat goat farms accounted for over eighty-eight percent of the goat farms within the state in 2002.

Growth in Florida's meat goat industry is attributed to a number of factors. Historically, the majority of U.S. immigrants were from European countries, but changes in immigration patterns have occurred.

Table 1-1. Florida farms with goats, goat numbers and goats sold, goat production region, and United States: 2002 and 1997.

Geographical Area	2002	1997	Percent Change	Florida's Contribution
Florida				
Number of Goat Farms	1,992	2,114	(5.8)	
Number of Meat Goat Farms	1,764	1,931	(8.6)	
Numbers of Meat Goats on Farms	36,020	28,737	25.3	
Number of Meat Goats Sold	18,769	13,700	37.0	
Percent of Meat Goat Farms	88.6	91.3		
Percent of Meat Goat Sold	52.1	47.7		
Goat Production Region				
Number of Goat Farms	42,487	37,303	13.9	4.7
Number of Meat Goat Farms	1,729,158	1,727,978	0.1	4.6
Numbers of Meat Goats on Farms	1,433,589	975,931	46.9	2.5
Number of Meat Goats Sold	765,622	407,078	88.1	2.5
Percent of Meat Goat Farms	91.2	88.7		
Percent of Meat Goat Sold	53.4	41.7		
United States				
Number of Goat Farms	91,462	76,543	19.5	2.2
Number of Meat Goat Farms	74,980	63,422	18.2	2.4
Numbers of Meat Goats on Farms	1,938,924	1,231,762	57.4	1.9
Number of Meat Goats Sold	1,109,619	532,792	108.3	1.7
Percent of Meat Goat Farms	82.0	82.9		
Percent of Meat Goat Sold	57.2	43.3		

Source: USDA-NASS, 2002.

The majority of current immigrants are people from Hispanics, Caribbean Islanders, Muslims, and Asian populations, as opposed to the historical pattern of immigration from Europe. These changes in immigration patterns from European countries to those from regions of the world that are perceived to have a dietary preference for goat meat have increased the demand for the product (McKenzie-Jakes, 2003; Pinkerton et al., 1994; Sherman, 2002; Walsh, 1995). People from these populations tend to retain food preferences and religious affiliations in an effort to maintain their ethnic identity when merging with a dominant group (Harwell, 1995). Thus, the demand for goat meat among

target consumers is expected to be inelastic (Harwell, 1995; Pinkerton et al., 1994). It is projected that by the year 2025, the U.S. population will increase 44 million due to the increase of foreign populations, many of which consume goat meat. Therefore, the demand for this product in the United States is expected to expand as population increases and as minority purchasing power increases (Russell, 2000).

Health conscious consumers and members of the “yuppie community” who consume the meat as a gourmet item create an additional demand for goat meat products (Harwell, 1995; McKenzie-Jakes, 2004; McLean-Meynsse, 2003; Pinkerton et al., 1994; Sherman, 2002). Members of the health food sector consume goat meat because of the product’s nutritional attributes. Goat meat is a naturally lean meat that is low in cholesterol, low in fat and high in proteins (Johnson, 1995).

Advancements in Florida’s food distribution infrastructure allow for refrigerated goat meat to be delivered from Texas in an inexpensive and quick manner to consumers. Additionally, low ocean freight rates have permitted goat imports from Australia to occur more frequently (Simpson, 1995). Previously, goat meat has previously been viewed as an unusual food item in the United States; however it is now more mainstream.

Researchers have found it difficult to accurately estimate per capita consumption levels of goat meat due to discrepancies in goat inventories, auction runs, and slaughter numbers (Gipson, 1999; Harwell, 1995). Therefore, it is popular for researchers to use indirect methods to approximate per capita consumption. Degner and Moss (1999) surveyed wholesalers in Fort Lauderdale, Miami, and Tampa, Florida. These markets are considered to consist of significant populations with preferences for goat meat. Using estimated wholesale sales, the researchers quantified the annual per capita goat meat

consumption to be a mere 0.21 pounds, nearly 20 percent less than per capita consumption levels in 1986. However, a 1999 study conducted by Putnam and Allshouse estimated that the national per capita goat meat consumption significantly increased to about one pound per capita in 1997. Gipson (1999) utilized National Statistical Service data and Foreign Agricultural Service import/export data as two indicators to measure goat meat demand. In 1998 almost 450,000 goats were slaughtered which was a 1,000 percent increase over a 20-year period. It is worth mentioning that the estimates do not include goats slaughtered in non-United States Department of Agricultural facilities or state inspection facilities and farm slaughter or personal slaughter. It is commonly accepted that demand for goat meat is underestimated because the bulk of goat meat consumed is undocumented, i.e. the majority of the slaughtering occurs in non-UDSA inspected facilities (Davis and Willard, 1996). According to the Foreign Agricultural Service data, the United States has been a net importer of goat meat product since 1991 (Gipson, 1999). Table 1-2 illustrates the quantity of goat meat imported to the U.S. and the quantity exported by the United States from 1989 through 1994. Based on the data, the United States does not have an adequate supply of goat meat production to keep up with demand. In 1998, imports rose to 4,500 metric tons, which is equivalent to over 600,000 pounds. The United States imports the majority of its goat meat from Australia and New Zealand.

Available research suggests the demand for goat meat is influenced by consumers' age, gender, race, household size, and marital status (McLean-Meynsse, 2003; Nelson et al., 1999). Additionally, carcass weight and carcass size preferences differ among target populations within the niche market (Pinkerton et al., 1994).

Table 1.2. United States meat goat imports and exports.

Year	U.S. Imports*	U.S. Exports*	Balance*
1989	86,067	122,056	35,989
1990	99,353	115,413	16,060
1991	122,932	53,246	-69,686
1992	172,280	60,444	-111,836
1993	136,364 ^a	3,504 ^b	-132,860
1994	138,481 ^a	None ^b	-138,481

*Values are expressed in metric tons.

^a These figure probably reflect reduced Australians in exports of goat due to serve drought conditions.

^b The steep drop in exports as imports fell markedly in 1993 and 1994, thus conserving domestic supplies.

Source: Ohio Cooperative Development Center, 2004

Hispanics tend to prefer young kids, weighing 15-25 pounds live weight and young goats weighing about 50 pounds live weight. Hispanics are the fastest growing ethnic group and the largest minority group in the United States. An emphasis on understanding the factors that influence consumption should be placed on Hispanics because they are the only group that has an expected year round demand for goat meat products (Spaugh, 1997). Muslims favor heavier goats than Hispanics and consume goats that are about 70 pounds live weight, male, and intact. Additionally, Jamaicans, Haitians, West Africans, African Americans have a preference for mature goats (Pinkerton et al., 1994).

There is a relatively thin body of published literature regarding the marketing of goats and meat goat, but researchers seem to agree on the barriers surrounding the marketing of goat meat. Pinkerton et al. (1992) found that the marketing constraints that hinder the demand for goat meat include an unorganized marketing infrastructure, lack of quality grades, seasonal demand, inconsistent supply, negative consumer attitudes, inconsistent quality, and insufficient research to identify new market and expand existing

markets. Pinkerton et al. (1994) suggest that a lack of marketing information is a result of inadequate interest by many state departments of agriculture and the structure of the industry. Pinkerton et al. (1994) also suggested that in niche markets, located primary in urban centers, demand for goat exceeds domestic supply, with the shortages caused by inefficiencies in markets. Studies by Degner and Moss (1999) and Degner and Locascio (1988) identified the constraints commercial retailers suggest hamper ability to sell goat in Florida as insufficient demand, supply problems, cheaper substitutes, and product form.

Growth in Florida's meat goat inventory has been encouraged by numerous factors, particularly in that Americans are becoming more ethnically diverse and health-conscious, and more are revealing greater willingness to try new exotic food products such as rabbit and goat (McLean-Meyinsse, 2000). Many consumers lack knowledge and exposure to goat meat products, creating an additional barrier faced by the industry (Zachery and Nelson, 1992). Studies suggest that once consumers are informed on the product's nutritional attributes and preparation methods, consumer interest in consuming the product increases (Miller, 1995; Rhee et al. 2000). For instance, Rhee et al. (2000) found that after participants were educated on goat meat's nutritional values more than 60 percent of the respondents reversed their previous perception of the product. Existing research also identifies the carcass size preferred by populations within the niche market, but fails to identify the specific cuts of goat meat that are preferred by populations in the niche market. However, little inductive research has been completed to identify the characteristic of goat meat consumers or the characteristics of the product that influence consumption. Therefore, information that describes the factors that influence

consumption is needed in order to fully understand the marketing and advertising approaches that will assist in increasing the presence of goat meat in the U.S. food industry as well as impacting the goat meat industry.

Researchable Problem

The meat goat industry has experienced substantial gains in recent years due to the increase in demand for goat meat products. The demand for goat meat products in Florida is expected to continue growing as target populations within the niche market increase. Researchers believe Florida has the potential for a meat goat market that is profitable. However, lack of consumer information has hindered producers', processors', and marketers' ability to delineate fully the profitability and viability of Florida's meat goat industry. Consumer information is a critical component to completely understanding the possible economic impact of goat meat productions and marketing in Florida.

A relatively thin body of empirical research is available that evaluates the impact of demographic and socioeconomic characteristics on consumers' preferences and perception for goat meat products. This research will assist in filling the voids in research by assessing the factors that influence the willingness to try goat meat within the Hispanic and general markets. This study will identify the barriers that restrict consumption and make recommendations for opportunities to increasing consumption of goat meat products within the state of Florida.

Objectives

The overall objective of this research project is to identify the factors that influence and the barriers that reduce consumption, with a special focus on the Hispanic population. We will collect information for existing and potential goat meat consumption

in Florida and study the effects of perception, consumer preferences, and demographic and socioeconomic characteristics on willingness to try goat meat. The specific objectives for this project are:

- To develop an understanding of the factors that influences the willingness to try goat meat products for Hispanics and non-Hispanics.
- To disseminate the results from this study and make recommendations for opportunities of increased consumption of goat meat products to producers and potential producers.

Hypotheses

Hispanics are the primary consumers of goat meat products and compose the majority of this developing niche market. There are numerous factors that impact preferences, perceptions, and willingness to try goat meat. In previous red meat studies, attributes other than price found to influence a consumers' decision to buy the product included safety, availability, advertisement, and government labels (Hui et al., 1995). Thus, these attributes may also be important in the consumer purchase decision of goat meat. Given these considerations, several hypotheses will be tested. The hypotheses are:

- Increases in household size and educational attainment will positively affect the consumers' willingness to try goat meat.
- Respondents that associate a positive product image with goat meat will be more inclined to express a willingness to try the product.
- Consumers that rate safety, convenience and cholesterol and fat content as important factors in purchasing meat will be more likely to try goat meat.
- Ethnicity, age, and gender will influence the probability of trying goat meat. For instances Hispanics are more likely to try goat meat whereas females are less likely to try goat meat.
- Consumers that rate price specials as important factors in purchasing meat will be least likely to try goat meat products.
- Lamb consumption will have a positive influence on the willingness to try goat meat.

- Hispanics from different geographic origins will have differing levels of willingness to try goat meat.

CHAPTER 2 LITERATURE REVIEW

The body of literature regarding the marketing of goat meat is relatively thin. Numerous sensory evaluation studies have been conducted revealing the overall palatability of goat meat is acceptable among consumers, but their lack of knowledge about the product limits the demand and decreases its profitability within the meat industry (Degner, 1991; James and Berry, 1997; Rhee et al., 2003; Smith et al., 1974). Few studies have focused on the factors that influence goat meat consumption, and none of the available research appears to investigate the attributes that were important to goat meat consumers. Understanding consumers' preferences for goat meat is essential so that marketing strategies can be developed to increase the demand for the product.

Two previous studies, McLean-Meyinsse (2003) and Degner and Lin (1993) examined consumption of goat meat in the South. McLean-Meyinsse (2003) identified that demographic, socioeconomic, and geographic factors that influenced previous consumption, willingness to try goat eat, and interest in purchasing various goat meat products. The study's sample consisted of 1,421 respondents from Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia. A binomial logit was used to estimate the relationship between prior consumption and the selected explanatory variables. Additionally, ordered probit models were used to estimate the probabilities of nonconsumers' willingness to eat goat meat and the likelihood of this individual to make future purchases for goat nuggets, patties, roast, or marinated ready-to-cook goat meat

products. The study found that goat meat consumption was the highest among older respondents, households with more than three persons, among African-Americans, other non-Caucasian races, men and Texas residents. According to the marginal probabilities, individuals from other races were 15 percent more inclined to consume goat meat products than their Caucasians counterparts and women were 14 percent less likely than men to have previously consumed goat meat.

The results from the ordered probit suggested that amongst non-tryers, women and residents of Arkansas, Florida, Kentucky, Louisiana, North Carolina, Oklahoma, South Carolina, and Virginia were more likely to consume goat meat within the next month. Younger consumers, households containing less than three persons, African-Americans, or other races were less likely to try goat meat within the next month. Women and residents from Florida, Kentucky, North Carolina, Oklahoma, South Carolina, and Virginia were more willing to try goat meat at restaurants. Respondents least likely to try free goat meat samples in supermarkets were younger, lived in smaller households, and were non-Caucasian.

In summary, age, race, household size, religion, gender, and state residency were found to affect consumption. Consumers most likely to eat goat nuggets, patties, or roasts were individuals from larger households, non-Caucasians, men, or Texas residents. Additionally, respondents living in larger households, other races, men or Texas residents were more likely to be willing to purchase marinated, ready to cook goat meat.

The results of McLean-Meynsse (2003) research were consistent with the outcomes of a study conducted by Degner and Lin (1993) that analyzed willingness to consume goat meat at restaurants or home. Data for their study consisted of responses

from consumer surveys conducted in Jacksonville and Tampa, Florida. Three-hundred interviews were conducted in each city and participants were 18 years of age or older. A probit model was utilized to evaluate the impact of demographic, geographic, and socioeconomic factors on the willingness to consume goat meat at home and in restaurants. The study found that if the respondent possessed a positive attitude or perception of the product, they were more likely to order goat meat at a restaurant or purchase the meat for at home consumption. The study found that household income, gender, and household size effected participants willingness to consume goat meat. Respondents from households with annual incomes of less than \$10,000 were more likely to order goat at a restaurant than individuals from households with a yearly income between \$10,000 and \$19,000. Also, consumers between the ages of 35-49 were more inclined to order goat meat in a restaurant than any other age group, but age had no significant affect on purchase intentions.

An empirical study conducted by Hui et al. (1995) rated the importance of 12 selected meat attributes among various demographic, geographic, or socioeconomic characteristics. The data for the survey were obtained using a telephone survey that was administered to 1002 randomly selected households in Louisiana and Texas. The primary shopper of each household was interviewed. The Kruskal-Wallis test was used to determine whether the level of importance for each attribute differed amongst the respondents. The simultaneous multiple comparison model ranked the attributes in order of importance. An ordered-probit model was used to estimate the impact of the consumer's demographic, geographic, and socioeconomic characteristics on the importance of each attribute. The dependent variables were the 12 selected attributes,

which included low fat content, low sodium content, low in cholesterol, lack of chemical additives, taste, red meat, white meat, appearance, price, freshness, USDA labels, and tenderness and their relative importance while the dependent variables consisted of the demographic, geographic, or socioeconomic characteristics.

The results from the ordered-probit model suggest that older consumers were more concerned with prices, a stated preference for red meat, appearance of meat, USDA labels and tenderness of meat. Larger households considered low sodium levels and lack of chemical additives as influential attributes. Low-income households indicated that low sodium content and red meat as valuable characteristics that influence meat purchases. Respondents from high-income households were more concerned about sodium levels and USDA labels and were worried least about fat, cholesterol, and prices.

The results from the Hui's (1995) study suggest that freshness and taste were the most important attributes to consumers, followed by appearance. The next tier of attributes consumers deemed important by included USDA labels, tenderness, and lack of chemical additives. The last group consisted of nutritional attributes, which included low levels of fat, sodium, and cholesterol. The results indicated that females were more concerned than males about attributes such as fat, sodium, cholesterol, chemical additives, prices, appearance, freshness, tenderness, and USDA labels when making buying decisions. Non-white respondents were more worried about fat, cholesterol, and price than white respondents.

According to the results, retailers, wholesalers, and processors should develop a marketing plan that emphasizes the tastiness, appearance, and freshness of the meat and include recipes when promoting meats. In addition, the marketing channels should

minimize transportation and holding time to ensure freshness. This study provided knowledge on the relationship between consumer characteristics and the significance of various meat attributes that may assist in creating effective marketing opportunities for farmers, processors, wholesalers, and retailers in the meat industry.

Melton et al. (1996) conducted experimental auctions to evaluate the significance of attributes and how to develop effective marketing plans for pork. The willingness to pay results suggests that the appearance of the meat is most important for first-time buyers and repeat purchasers were interested in the pork chop's taste. Melton et al. (1996) concluded that first-time buyers of fresh pork chops may be misled by relying on appearance when making purchases, selecting chops that were less desirable when eaten. As a result, these consumers were unlikely to make repeat purchases, hampering the product's long term market success.

Similar to the studies conducted by Hui et al. (1995) and Melton et al. (1996), Chen et al. (2002) examined the relative importance of fresh pork attributes among Asian-origin consumers in San Francisco, California. The results from the Kruskal-Wallis test suggest that freshness is the most important attribute followed by attributes of the color of meat, lowness in fat, and whiteness of fat. The price of fresh pork is also an attribute of considerable importance. The empirical results for the ordered-probit model indicate that particular demographic and socioeconomic characteristics influence the ranking of attributes among consumers. For instance, fat content was more important to highly educated males. They study also found differences within segments of Asian-origin populations; for example, Chinese origin respondents were more price sensitive than other Asian consumers. This final finding is important because one can infer that

Hispanic origin consumers were heterogeneous group and that the significance of various product attributes may differ amongst each identifiable subgroup.

In the United States, goat meat is viewed as specialty food item. The study conducted by Schupp et al. (1998), found that consumers expressed resistance to meats that they believed came from exotic animals. Species that respondents in the study considered exotic included but were not limited to deer, alligator, rabbit, goat, emu, and wild duck. Therefore, meat attributes that were deemed significant to consumers may differ for alternative meats.

McLean-Meyinsse (2000) conducted a study that utilized ordered probit models to evaluate the impact of socioeconomic, demographic, and geographic characteristics on the primary grocery shoppers' attitude toward rabbit; and previous consumption or intent of consuming the product. The data for the study were obtained from a random telephone survey that sought information regarding the meat purchasing and consumption decisions. The sample of consisted of 1,002 primary food shoppers from Louisiana and Texas. As previously mentioned, rabbit meat and goat meat both tend to be considered exotic amongst consumers.

The independent variables in the study were various socioeconomic, demographic, and geographic characteristics such as age, income gender, educational attainment, and race, to name a few. McLean-Meyinsse (2000) used an ordered probit model to determine whether the explanatory variables effect the probability of shoppers' attitudes towards rabbit meat and the likelihood of consumption or interest in eating it in the future consumption. The results from the attitudinal model suggest that gender, religion, and employment status have a statistically significant effect on shoppers' attitude towards

rabbit meat. The marginal effects suggest that men, Catholics, and white-collar workers are more positive about goat meat than their counterparts. Forty-eight percent of male shoppers possessed a positive opinion about rabbit meat, while 54 percent of women held a unfavorable opinion about the meat. The consumption model suggests that gender and employment status impact the likelihood of consuming or interest in consuming rabbit meat. For instance, if the grocery shopper was a male rather a female, the probability of rabbit meat consumption increased by 12.33 percentage points. Females were more willing to express a willingness to try rabbit meat. Also, if shoppers had a positive opinion about rabbit meat, they were more likely to have consumed it.

McLean-Meyinsse (1999) also evaluated the marketing outlook for specialty meats such as alligator, goat, and/or rabbit meat in southern states. The objectives of the study were to determine the percentage of individuals shopping at outlets offering specialty products, identify the demographic, socioeconomic, and geographic characteristics influencing shoppers' likelihood of buying from these stores, and profile of the consumers most likely to purchase specialty meats. The study analyzed various explanatory variables (i.e. age, household size, education, gender, income, martial status, religion and occupation) that were expected to affect likelihood of non-triers, late-triers, and early triers of specialty foods to shop at specialty stores using an ordered probit model. According to the results, a 42-year old grocery shopper or a shopper from a three person household was more likely to shop at stores offering specialty meats. Shoppers with less than a high school diploma were 18 percent more likely visit these outlets than individuals with higher level of education. Shoppers indicated that price effected their decisions to make purchases at stores offering specialty meats. In fact, there was a 22

percent difference between the early triers and nontriers on the relevance of prices to the meat purchasing decision. It is worth mentioning that the price of specialty meats is usually more expensive than traditional meats such as beef, pork, and chicken.

In conclusion, very few empirical studies that focus on goat meat consumption are available in literature. Existing studies conducted by McLean-Meyinsse (2003) and Degner and Lin (1993) identify target consumers for goat meat marketing and promotional efforts, but the studies stop short of identifying the underlying factors that encourage individuals to purchase or be willing to purchase the product. The meat goat industry is still in its developing stages, and before this industry experiences economic success, additional information explaining the demand characteristics for goat meat consumers is needed. Understanding these factors, as well as consumers' preferences and perceptions towards goat meat, is important when developing marketing strategies and increasing the presence of goat meat in supermarket.

CHAPTER 3 SUREVEY CONTENTS

Survey Instrument

Telephone surveying is a method of collecting data from respondents that is more cost efficient than conducting personal interviews (Dillman, 1978). The primary advantage of telephone surveying is that it provides the researcher the opportunity of controlling and monitoring the data collection process to ensure that data gathered is of high quality, thus providing accurate estimates. For instance, the researcher has the ability to regulate sampling, respondent selection, and questionnaire contents (Lavarakas, 1993). Telephone surveying is more cost efficient when compared to personal interviews because it allows a larger number of interviews in a short period of time. Telephone surveys are usually more expensive than mail surveys but due to the fact that telephone surveys have the potential of minimizing total survey error, this method is generally preferred. Additional advantages associated with telephone surveys include: (1) the scheduling of call-backs to contact hard to reach, but critical respondents, (2) the ability to minimize biased responses, and (3) the capability of the interviewer to clarify questions (Lavarakas, 1993).

Despite the advantages associated with telephone surveying, a few disadvantages exist. A major drawback with the telephone surveying technique is that surveyors are unable to reach the cell-phone-only population, making the sample statistically unbalanced because it does not contain both cell phone and land line users. The Associated Press (2005) found that the cell-phone-only population is growing rapidly and

it currently accounts for approximately 7 percent of the population. In fact, nearly one in every five individuals between the ages of 15 and 24 had only cell phones. Other limitations are related to the limitations with complexity of the questions asked and the length of the survey. Respondents may grow tired if kept on the telephone for longer than 20-30 minutes. However, respondents tend not to suffer from fatigue when participating in personal interviews and this issue is not applicable to mail surveys because the questionnaire is completed at the respondent's leisure (Lavarakas, 1993). Similarly, complicated questions are impossible to ask via telephone. In spite of the disadvantages associated with this surveying technique, the advancements in telephone technology and infrastructure give the researcher accessibility to nearly any population via telephone, making this surveying approach more attractive than other methods (Frey, 1989).

The Institute for Behavioral Research, Survey Research Center at the University of Georgia has a history of successfully conducting telephone surveys. This center was used to collect the data for this study. The trained research staff utilized the random digit dialing technique ensuring that all adult Florida residents with landline telephone service had an equal chance of selection for inclusion in the sample, regardless of whether the number is unlisted, which reduces the sampling error (Salant and Dillman, 1994).

The telephone survey in this study was administered twice, first to the general population and secondly to Hispanic households. An emphasis was placed on Hispanic households because previous research suggested that these individuals provide a steady year round demand for goat meat products (Spaugh, 1997). Two hundred thirty-seven households participated in the general population survey. For the latter survey, a

telephone directory data base was obtained that consisted of households with Hispanic surnames and it consisted of 198 observations. The surveyed Hispanic households were randomly selected from the directory database. The original survey was translated to Spanish to better serve the Hispanics consumers.

Once the potential participants were contacted, the objective of the study was explained to the respondents and they were asked to participate in the study. The surveyor spoke with the primary grocery shopper as they were expected to be primary decision maker in purchasing goat meat. The respondent was asked to complete the survey, which sought information on demographics and consumers shopping preferences for goat meat products.

Survey Contents

The purpose of the telephone survey was to collect information on consumer shopping preferences for goat meat. The survey sought three categories of information: (1) demographics, (2) family linkages with an emphasis on the introduction to goat meat products and the transmission of food habits from generation to generation including consumption levels, and consumer perception and (3) identifications of factors influencing consumption or the willingness to consume. All survey participants had to be 18 years old or older. If the respondent was unavailable to complete the interview, a callback was scheduled. The questionnaire used in this study is included in the Appendix.

The dependent variable in this study was the willingness to try goat meat. To estimate this variable, respondents were placed in one of three categories: respondents that had previously consumed goat meat, respondents willing to try, and respondents that have not consumed and are unwilling to try goat meat. Respondents were first asked if

they had ever consumed goat meat. If the respondents had previously consumed goat, they were then asked a series of questions regarding the size, age, cut, etc of the meat consumed. These questions were asked to develop an understanding of the type of product desired by different ethnic groups. Previous research suggested Hispanics, Muslims, African-Americans, Haitians, and Jamaicans consume goat meat product, but carcass preferences differs among each group. To estimate current consumption levels, respondents that had previously consumed goat were asked to quantify how many pounds their family consumed each year.

To identify potential consumption, respondents that had never consumed goat meat were asked if they were willing to consume if it was available in stores. Research suggests that availability is a major obstacle faced by the goat meat industry, thus, restricting consumption. Locascio and Degner (1988) surveyed supermarket representatives in Florida and found that 28 of 168 or 16.7 percent, of the stores run by six chains sold goat meat. A more recent study conducted by Degner and Moss (1999) found that 18 percent of meat wholesalers in Florida sold goat meat. As previously mentioned the dependent variable for the study is the willingness to try goat meat; therefore, respondents that had previously consumed or willing to try if available in grocery stores are considered those willing to try goat meat and all other respondent are non-triers.

The next section of the questionnaire solicited information on the psychographic factors that consumers' believed to have importance when making decisions to purchase meats. Previous meat studies indicated freshness, convenience, and sodium and cholesterol content influence meat consumption. However, because goat meat is a specialty food item, it is unknown if these characteristics are equally important to goat

consumption. Psychographic factors are needed because they provide information necessary to develop an understanding of how consumers feel and think about the product (Peter and Donnelly, 2003). Respondents were asked to rate the relative importance of factors such as price specials, convenience, safety, cholesterol, and fat to meat purchases. Participants were also asked how they viewed goat meat. The responses could have ranged from very positive to very negative. It was expected that this portion of the survey would reveal consumers knowledge about goat meat.

Information regarding respondents' consumption of other meats such as chicken, beef, and seafood was also collected because according to demand theory, consumption is expected to be affected by substitutable and complementary products. Participants were asked the frequency and then quantity of the alternative meat consumed. First, respondents were asked to specify if the selected food item was consumed everyday, more than once a week, once a week, more than monthly, monthly, on special occasions, or never. If the respondent indicated he/she had consumed the meat, respondent was then asked to identify the quantity consumed per sitting. When consumers make a decision to try or consume a product, they usually evaluate the alternative products available. This study incorporated a variable that captured the consumption of other meats to evaluate the relationships between other selected meats and the willingness to try goat meat.

The final section of the questionnaire solicited socio-economic and demographic information, such as household income, household size, educational attainment, gender, and race. Based on previous empirical studies, this information is expected to be significant when analyzing the factors that influence goat meat consumption.

CHAPTER 4 DATA

The data for this study were attained through a telephone consumer survey in conjunction with the SARE #LS502-138, An Investigation of the General Goat Meat Demand and the Sustainability of Goat Production. Adult consumers within the state of Florida were surveyed via telephone to establish consumer preferences for goat meat and the level of consumption and potential levels of consumption. The Survey Research Center at the University of Georgia collected the data during the Spring of 2004. Florida was targeted because the strongest demand for meat goats is found along the East Coast, especially within Florida (McKenzie-Jakes, 2004). In addition, Hispanics were targeted because these consumers are expected to provide a more stable demand for goat meat products throughout the year (Spaugh, 1997). Thus, understanding the factors that effect their demand for goat meat is imperative.

Florida households were surveyed utilizing random digit dialing to assess the factors influencing their consumption decisions of goat meat. As previously mentioned, telephone surveying is an effective method of data collection that allows a large amount of data to be collected in a short period of time. Additionally, random digit dialing ensures that all residents with a landline telephone have an equal chance of being included in the sample. Selection response is minimized, and inferences about Florida's adult population can be made with greater assurance from the results obtained in the survey. Four hundred thirty-five consumers participated in the survey, and data is summarized in Appendix B. However, due to incomplete demographic and

socioeconomic information such as age, educational attainment, and gender, sample observations were deleted. Thus, the information from 365 responses is summarized in this analysis.

When the sample results are compared with US Census data for Florida (US Census Bureau, 2000) Hispanics were over represented within the sample, accounting for 41.4 percent while making up only 16.1 percent Florida's population. However, Caucasians and other races were underrepresented in the sample making up 50.1 percent and 15.5 of the sample, respectively. An emphasis was placed on Hispanic consumers because these individual are perceived to have a historical preferences towards goat meat; therefore, the results were expected to be biased towards Hispanics. Among the Hispanic respondents, few inconsistencies exist between their geographic origins for their respective populations and sample, making the two reasonably comparable. For instance, Cubans represent 31.1 percent of the Hispanic population in Florida and 25.8 percent of the sample, Mexicans account for 13.6 percent of the population and 16.6 percent of the sample, Puerto Ricans represent 18 percent of the population and 16.6 percent of the sample, and all other Hispanics descents account for 37.4 percent of the population and 41.1 percent of the sample.

The majority of the survey respondents were female, 70.1 percent. The results are biased towards females because the questionnaire targeted the primary grocery shopper as a means of accurately estimating consumption history, the willingness to try, and psychographic characteristics sought by consumers and potential consumers of goat meat. According to literature, 70 percent of all females in the United States were considered the primary grocery shopper (Progressive Grocer, 2002).

Figure 4-1 illustrates the percentage of Florida's population and survey respondents in various age groups. The sample tolerance for this study is +/- 5.1 percent. With this in mind, the sample and population are comparable despite the small discrepancies that exist. The sample's median age fell in the 35-44 age category, comparing to the median age in Florida, 38.6. The sample's average household consisted of three people, which exceeds the state's average household size of 2.46 individuals. Additionally, the average household size for Florida's Hispanic population was 3.12 persons, slightly less than that of the sample, 3.32 persons. Finally, survey respondents were more educated than average. According to survey response, 47.7 percent of the respondents possessed either a high school diploma or lower, 26.5 percent had some college education, and nearly 25.8 percent had at least a college degree, which compares to the populations 49.8 percent, 29.6% and 20.6 % for the respective categories. Likewise, 52.3 percent of the Hispanic respondents had more than a high school diploma, only 40.1 percent of the Hispanic population had surpassed this mark. Furthermore, 25.8 percent of the Hispanic sample and 15.6 percent of the population had received degrees from a four year college or more advanced degree (Figure 4-2).

Among the 365 respondents, 43.6 percent expressed a willingness to try goat meat if it were available in food stores (159 respondents), whereas, 56.4 percent were uninterested in the product (206 respondents). Male respondents were more likely to try goat than females, 52.3 percent and 39.8 percent, respectively. Hispanics were more likely than Caucasians, but less likely than other races to express a willingness to try goat meat. Over 60 percent of respondents that perceived goat meat in a positive manner

indicated that they would try goat meat. However, only 6.1 percent of respondent with a negative view of goat meat were willing to try the product.

Other explanatory variables incorporated in the study include the frequency at which goat meat substitutes are consumed, psychographic characteristics, and various demographic and socioeconomic variables. Descriptive statistics for the survey sample are found in Table 4-2 and Table 4-3. Since a separate analysis involving Hispanic respondents will be conducted, reasoning is explained in the next chapter, descriptive statistics for only the Hispanic respondents are shown in Tables 4-4 and 4-5.

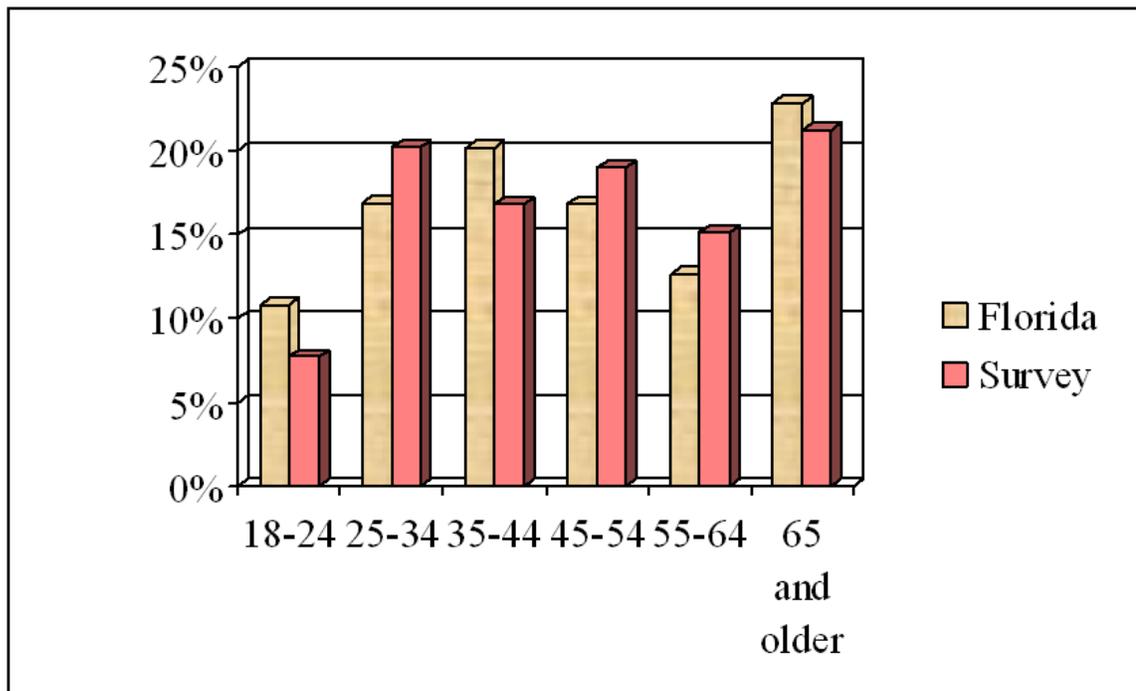


Figure 4-1. Comparison of Florida census data and survey respondents by age.

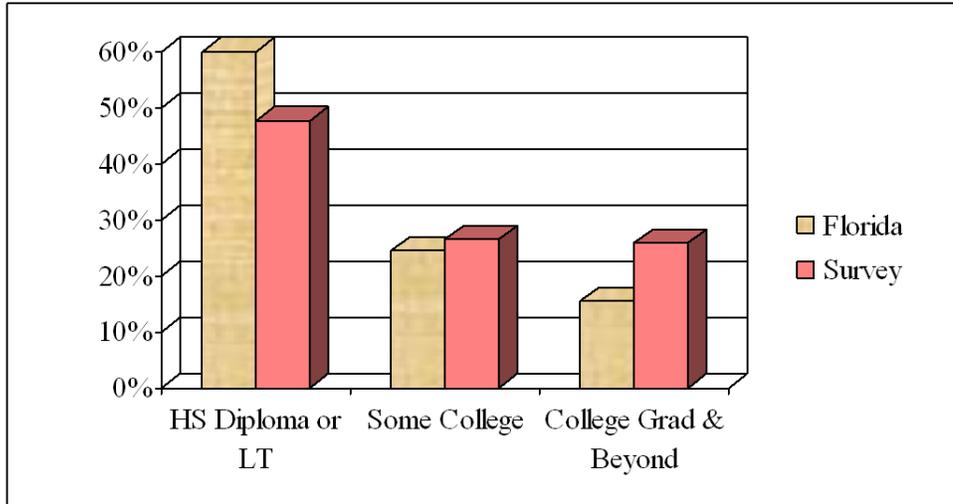


Figure 4-2. Comparison of Florida census data and Hispanic survey respondents by educational attainment levels.

Table 4-2. Summary of demographic information.

	Triers	Non-Triers	Overall Sample
Number of Observations	159	206	365
Ethnicity	%	%	%
Hispanic	45.9	37.9	41.4
Caucasian	44.0	54.9	50.1
Other races/ethnicities	10.1	7.3	8.5
Gender			
Percent Female	64.2	74.8	70.1
Education			
HS Diploma or less	37.7	37.9	37.8
Some College	26.4	25.2	25.8
College Degree and above	35.9	36.9	36.4
Household Size			
1 Only	9.4	11.2	10.4
2 People	34.0	33.0	33.4
3 People	18.2	17.0	17.5
4 People	17.0	25.2	21.6
5 and above	21.4	13.6	17.0
Age of Respondents			
18-24	7.6	8.7	8.2
25-34	23.9	17.5	20.3
35-44	13.8	19.9	17.3
45-54	18.9	27.5	18.1
55-64	18.2	12.1	14.8
65 and older	17.6	24.3	22.2

Table 4-3. Descriptive statistics on additional factors that influence the willingness to try.

	Triers	Non-Triers	Overall Sample
	%	%	%
Frequency of Chicken Consumed			
More than once a week	78.0	79.1	78.6
Once a week	17.6	13.6	15.3
Special Occasions	4.4	5.3	5
Never	0.0	1.9	1.1
Frequency of Beef Consumed			
More than once a week	52.8	49.0	50.7
Once a week	24.5	30.1	27.7
Special Occasions	18.9	15.1	16.7
Never	3.8	5.8	4.9
Frequency of Pork Consumed			
More than once a week	23.3	17.0	19.7
Once a week	23.3	24.8	24.1
Special Occasions	41.5	40.3	40.8
Never	12.0	18.0	15.3
Frequency of Fish/Seafood Consumed			
More than once a week	43.4	36.4	39.5
Once a week	34.6	23.3	28.2
Special Occasions	18.9	31.6	26.0
Never	3.1	8.7	6.3
Frequency of Lamb Consumed			
Previously Consumed	51.6	25.3	36.7
Never	48.4	74.8	63.3
Frequency of Turkey Consumed			
Previously Consumed	88.7	85.0	86.6
Never	11.3	15.1	13.4
View of Goat Meat			
Positive	60.4	16.0	35.3
Neutral	33.3	38.4	36.2
Negative	6.3	45.6	28.5
Importance of Cholesterol to Meat Purchasing			
Important	83.6	78.9	80.2
Unimportant	16.4	21.2	19.8
Importance of Fat in Purchasing Meat			
Important	86.6	87.4	86.8
Unimportant	13.8	12.6	13.2
Importance of Convenience in Purchasing Meat			
Important	67.3	61.7	64.1
Unimportant	32.7	38.4	35.9
Importance of Price to Meat Purchasing			
Important	83.0	65.1	72.9
Unimportant	17.0	35.0	27.1
Importance of Safety to Meat Purchasing			
Important	95.6	90.8	92.9
Unimportant	4.4	9.2	7.12

Table 4-4. Summary of demographic information for Hispanic respondents.

	Triers	Nontriers	Overall Sample
Number of Observation	73	78	151
Descent	%	%	%
Mexican	17.8	15.4	16.6
Cuban	28.9	23.1	25.8
Puerto Rican	15.1	18.0	16.6
Other Descents	38.7	43.6	8.5
Generation in U.S.			
First generation	65.8	60.3	62.9
Other generation	34.2	40.7	37.1
Gender			
Percent Female	67.1	74.4	70.9
Education			
HS Diploma or less	49.3	46.2	47.7
Some College	24.7	28.2	26.5
College Degree and above	26.0	25.6	25.8
Household Size			
1 Only	5.5	9.0	7.3
2 People	24.7	21.8	23.2
3 People	17.8	24.4	21.2
4 People	23.3	29.5	26.5
5 and above	28.8	15.4	21.9
Age of Respondents			
18-24	11.0	5.1	8.0
25-34	28.8	28.2	28.5
35-44	16.4	20.5	18.5
45-54	20.6	16.7	18.5
55-64	11.0	11.5	11.3
65 and older	12.3	18.0	15.2

Table 4-5. Descriptive statistics on additional factors that influence the Hispanic respondents' willingness to try.

	Triers	Non-Triers	Overall Sample
	%	%	%
Frequency of Chicken Consumed			
More than once a week	84.9	83.3	84.1
Once a week	11.0	7.7	9.3
Special Occasions	4.1	5.1	4.6
Never	0.0	3.9	2.0
Frequency of Beef Consumed			
More than once a week	54.8	38.5	46.4
Once a week	27.4	34.7	31.1
Special Occasions	16.4	15.4	15.9
Never	1.4	11.5	6.6
Frequency of Pork Consumed			
More than once a week	24.7	18.0	21.2
Once a week	26.0	18.0	21.9
Special Occasions	34.3	32.0	33.1
Never	15.0	32.0	23.8
Frequency of Fish/Seafood Consumed			
More than once a week	42.5	35.9	39.1
Once a week	37.0	26.9	31.8
Special Occasions	15.0	25.6	20.5
Never	5.5	11.5	8.6
Frequency of Lamb Consumed			
Previously Consumed	42.5	24.4	33.1
Never	57.5	75.6	66.9
Frequency of Turkey Consumed			
Previously Consumed	79.5	69.2	74.2
Never	20.5	30.7	25.8
View of Goat Meat			
Positive	72.6	29.5	50.3
Neutral	23.3	39.7	31.8
Negative	4.1	30.8	17.9
Importance of Cholesterol to Meat Purchasing			
Important	93.2	88.5	90.7
Unimportant	6.8	11.5	9.3
Importance of Fat in Purchasing Meat			
Important	89.0	88.5	88.7
Unimportant	11.0	11.5	11.3
Importance of Convenience in Purchasing Meat			
Important	72.6	60.3	66.2
Unimportant	27.4	40.7	33.8
Importance of Price to Meat Purchasing			
Important	87.7	62.8	74.8
Unimportant	12.3	37.2	25.2
Importance of Safety to Meat Purchasing			
Important	98.6	92.3	95.4
Unimportant	1.4	7.7	4.6

CHAPTER 5
THEORETICAL MODEL AND MODEL SPECIFICATIONS

Theoretical Model

Neoclassical demand theory indicates that the determinants of demand may be categorized under four headings: (1) population size and its distribution by various demographic and geographical characteristics, (2) consumer incomes, (3) prices and availability of complements and substitutes, and (4) consumer tastes and preferences. The homogeneity condition provides a theoretical basis for consumer behavior. The condition states that the sum of the own-price elasticity, cross-price elasticity and the income elasticity for a given commodity equals zero (Tomek and Robinson, 1990):

$$E_{ii} + E_{i1} + E_{i2} + \dots + E_{iy} = 0,$$

where E_{ii} is the own price elasticity, $E_{i1} \dots E_{i2}$ are the cross-price elasticities and E_{iy} is the income elasticity. The condition implies that the substitution and the income effect on own-price change must be consistent with the cross-price and income price elasticities for a particular commodity.

Goat meat prices are very volatile and have been unavailable for many years; therefore, this research does not attempt to estimate demand nor calculate the elasticities. The prices of substitutes were not included in the study; however, information about the relationship between goat meat and its substitutes may give insight on the cross-price elasticities. The central focus of this study is to develop an understanding of factors influencing goat consumption and the willingness to try goat meat. Sensitivity of willingness to try goat meat with price and income is assessed in qualitative terms.

This study will examine factors influencing willingness to try goat meat among Hispanic and non-Hispanic consumers using data obtained from a telephone survey administered in Spring 2004. The survey instrument has been discussed in the previous chapter. This study utilizes a probit analysis to estimate the factors that influence the dependent variable, willingness to try goat meat. Since research suggested Hispanics have a historic preference for goat meat, two models are used: (1) an estimation of factors that influence consumption for the entire sample and (2) one that evaluates the factors that influence the willingness to try goat meat among Hispanics.

Probit Model

Due to their popularity, linear regressions models may be one of the most misused analytical techniques in the social sciences (Aldrich and Nelson, 1984). Linear regression models assume that the dependent variable is continuous; therefore, when the endogenous variable is qualitative, the estimates from the regression analysis may be robust in errors, causing inaccurate statistical inferences (Aldrich and Nelson, 1984). The endogenous variable in this study is a yes or no variable, the willingness to try goat meat. When the regressand is discrete rather than continuous a different analytical technique is needed.

Probit models estimate the probability of the binary dependent variable, y , occurring given K observable, explanatory variables, $k = 1, \dots, K$. Each of the observations on y , y_1, y_2, \dots, y_N , are statistically independent of each other, ruling out serial correlation. Additionally, the model assumes that data are generated from a random sample of size of N observations, with each sample point indicated by i , $i = 1, \dots, N$ (Aldrich and Nelson, 1984). Probit analysis requires that there is no exact linear

dependence among ξ_{ik} 's. This implies the number of observations exceed the number of explanatory variables, $N > K$, that there is variation among each explanatory variable across the observations, and that no two or more ξ_{ik} 's are perfectly correlated. The expected outcomes of the dependent variable, y_i , are considered to be mutually exclusive and exhaustive (Gujarati, 2003).

Probit models assume the dependent variable depends on a latent variable, y_i^* , which is and observed and determined by one or more independent variables.

$$y_i^* = \chi_i' \beta + \varepsilon_i, \quad \varepsilon_i \sim \text{NID}(0, \sigma^2)$$

The larger y_i^* , the greater the probability of an event, y , occurs. An event is assumed to occur if the utility differences exceed a certain threshold level. Probit analysis follows a cumulative normal probability distribution with the same mean and variance, providing information on the nature of the latent variable and its parameters. The dependent variable, y , may take on values of zero or one and if the latent variable is defined as y^* , then the probit model is described as follows:

$$y_i^* = \xi_i' \beta + \varepsilon_i, \quad \varepsilon_i \sim \text{NID}(0, \sigma^2)$$

$$y_i = 1 \text{ if } y_i^* > 0$$

$$= 0 \text{ if } y_i^* \leq 0,$$

The point of interest relates to the probability of the event occurring, $Y=1$. Utilizing the information above, we have:

$$P(y_i = 1) = P(y_i^* > 0) = P(\xi_i' \beta + \varepsilon_i > 0) = P(\varepsilon_i < \xi_i' \beta) = \Phi(\xi_i' \beta),$$

where Φ denotes the cumulative distribution of ε_i (Verbeek, 2004).

Maximum likelihood estimation techniques are used to obtain the value of the parameters, β , that maximize the probability of observing the outcome, y . The maximum

likelihood estimation model is nonlinear and asymptotic, producing better results as the sample size increases. It produces estimates that are nonbiased (estimates are centered around the true values on average), efficient (no other unbiased estimator has lower sampling variance) and normal (we can know how to perform hypothesis testing and draw other inferences) (Aldrich and Nelson, 1984). Maximizing and then taking the first derivative of the log likelihood function produce the parameters for each explanatory variable. The log likelihood function is as follows:

$$\log L(\beta) = \sum y_i \log F(\xi_i' \beta) + \sum (1 - y_i) \log y_i \log F(1 - (\xi_i' \beta)),$$

where β is included in the probabilities to accentuate that the likelihood function is a function of β . The parameters derived from the log likelihood function are known as marginal effects or marginal probabilities. The marginal probabilities measure the change in probabilities resulting from a unit change in one of the regressors while holding the other regressors constant. Predicted marginal probabilities assist in understanding the relationship between the dependent and independent variables and the signs of the parameter estimates and their statistical significance indicate the direction of the relationship (Gujarati, 2003; Verbeek, 2004).

A goodness of fit measure is a summary statistic suggesting the accuracy with which the model approximates the observed data (Verbeke et al., 2000). When the dependent variable is qualitative the accuracy of the model is determined by comparing the fit between the calculated probabilities and observed response frequencies or through the model's ability to forecast observed responses. Goodness of fit measures are usually based on a comparison between a model that contains only a constant as the independent variable. The *pseudo* R^2 takes into account the two likelihood values, $\log L_1$ and $\log L_0$,

where L_1 represents the maximum log likelihood value of the model of interest and L_0 stands for the maximum value of the log likelihood function when the intercept is the only parameter value that is not equal to zero. The difference between the log L_1 and log L_2 serves as an indicator of the explained variation of the underlying latent variable caused by the additional parameters (Laitila, 1993; Verbeek, 2004). In summary, the pseudo R^2 is a tool used to evaluate the explained variation in a model. It is important to mention that this measure has two shortcomings: (1) the pseudo R^2 usually decreases as additional parameters are included in the model and (2) the measure does not adjust for the degrees of freedom of the model (Laitila, 1993).

Model Specification

Existing empirical studies provide the basis for the variables selected in the model. Earlier studies conducted by McLean-Meyinsse (2003) and Degner and Lin (1993) used a probit analysis to evaluate the factors that influence consumers' willingness to consume goat meat and goat meat products. Their studies indicated that race, age, household size, geographical location, and gender affect the willingness to consume or try goat meat. For example, the studies found non-Caucasians, men, and those living in larger households were most likely consumers of goat. Studies conducted to assess the factors that influence the consumption of specialty meats McLean-Meyinsse (1999) and McLean-Meyinsse (2000) found ethnicity, education, household size, and gender influenced consumers' attitude toward exotic animal food item and their willingness to consume. Finally, studies by Hui et al. (1995) and Chen et al. (2002) used probit model simulations evaluated the impact selected meat attributes had on meat consumption among various demographic, socioeconomic, and geographical characteristics. The results from the Hui et al. (1995) study suggested that female and non-white consumers

are more concerned with fat, cholesterol, and price. Chen et al. (2002) suggested segments within Asian populations have specific taste and preferences and are not a homogenous group.

In this study, probit models are used to estimate the willingness to try goat meat for Hispanic and non-Hispanic populations with respect to several explanatory variables. The entire survey sample model will included demographic and socioeconomic factors (i.e. age, gender, income, household size, and educational attainment), perception of goat meat, frequency of other meat consumption, and consumer characteristics. It is believed that segments within the Hispanic population have different variables affecting their willing to try goat meat. Additional independent variables that will be included only in the Hispanic model are descent and generation in the U.S. Specification of the probit for the entire survey sample is as follows:

$$Y_{ki}^* = \beta_{k1}ETH2 + \beta_{k2} ETH3 + \beta_{k3} GENDER + \beta_{k4} AGE1 + \beta_{k5} AGE2 + \beta_{k6}AGE3 + \beta_{k7} AGE4 + \beta_{k8} AGE5 + \beta_{k9} HSIZE1 + \beta_{k10}HSIZE2 + \beta_{k11} HSIZE3 + \beta_{k12} HSIZE4 + \beta_{k13} BEEF1 + \beta_{k14} BEEF2 + \beta_{k15} CHICK1 + \beta_{k16} CHICK2 + \beta_{k17}FISH1 + \beta_{k18}FISH2 + \beta_{k19} PORK1 + \beta_{k20}PORK2 + \beta_{k21} TURK + \beta_{k22}LAMB + \beta_{k23}VIEW1 + \beta_{k24}VIEW2 + \beta_{k25}FAT + \beta_{k26}SAFETY + \beta_{k27}CONVEN + \beta_{k28}PRICE$$

Specification of the Hispanic model is as follows:

$$Y_{ji}^* = \beta_{j1}MEXICAN + \beta_{j2} PTRICAN + \beta_{j3}OTHERD + \beta_{j4} GENERA + \beta_{j5} AGE1 + \beta_{j6}AGE2 + \beta_{j7}AGE3 + \beta_{j8}AGE4 + \beta_{j9}AGE5 + \beta_{j10}HSIZE1 + \beta_{j11}HSIZE2 + \beta_{j12}HSIZE3 + \beta_{j13}HSIZE4 + \beta_{j14}BEEF1 + \beta_{j15}BEEF2 + \beta_{j16}CHICJ1 + \beta_{j17}CHICJ2 + \beta_{j18}FISH1 + \beta_{j19}FISH2 + \beta_{j20}PORJ1 + \beta_{j21}PORJ2 + \beta_{j22}TURJ + \beta_{j23}LAMB + \beta_{j24}VIEW1 + \beta_{j25}VIEW2 + \beta_{j26}FAT + \beta_{j27}SAFETY + \beta_{j28}CONVEN + \beta_{j29}PRICE$$

$$Y_i = \begin{cases} 1 & \text{if respondent is willing to try goat meat} \\ 0 & \text{if respondent is unwilling to try goat meat} \end{cases}$$

The probit model estimates the influence the selected explanatory variables have on consumers' preferences of goat meat. The analysis also predicts the probabilities of the consumers' willingness to try goat meat under several variable levels. A description of the variables used in this study can be seen in Table 5-1.

Table 5-1. Probit model variables and description.

Variant	Variable Name	Description
Willingness to try goat meat	TRY	1 if willing to try goat meat
Ethnicity	ETH	1 if Hispanic, 0 otherwise
Hispanic Origin	MEXICAN	1 if of Mexican, 0 otherwise
	CUBAN	1 if of Cuban, 0 otherwise
	PTRICAN	1 if of Puerto Rican, 0 otherwise
	OTHERD	1 if of Mexican, 0 otherwise
Gender	GENDER	1 if male,
Age	AGE1	1 if 35 or older, 0 otherwise
Education	EDU1	High School diploma or less
	EDU2	Some College
	EDU3	College 4 year degree and beyond
Household Size	HSIZE1	1 if one person
	HSIZE2	1 if two people
	HSIZE3	1 if three people
	HSIZE4	1 if four people
	HSIZE5	1 if five or more people
Perception of Goat Meat	VIEW1	1 if positive view
	VIEW2	1 if neutral view
	VIEW3	1 if negative view
Consumer Attributes	FAT	1 if fat is important to the consumer
	SAFETY	1 if safety is important to the consumer
	CHOLES	1 if convenience is important to the consumer
	CONVEN	1 if convenience is important to the consumer
	PRICE	1 if price specials are important to consumer
Substitutes Consumed	BEEF1	1 if consumed more than once a week
	BEEF2	1 if consumed once of week
	BEEF3	1 if consumed during monthly or less frequently
	BEEF4	1 if never consumed
	CHICK1	1 if consumed more than once a week
	CHICK2	1 if consumed once of week
	CHICK3	1 if consumed during monthly or less frequently
	CHICK4	1 if never consumed
	LAMB1	1 if consumed, 0 otherwise
	PORK1	1 if consumed more than once a week
	PORK2	1 if consumed once of week
	PORK3	1 if consumed during monthly or less frequently
	PORK4	1 if never consumed
TURK1	1 if consumed, 0 otherwise	

CHAPTER 6 EMPIRICAL RESULTS

Using data collected from a consumer survey, the specification set forth in the previous chapter and maximum likelihood procedures, two independent probit models were estimated with the dependent variable representing the consumers' willingness to try goat meat. Due to the nature of the dichotomous dependent variable, a probit analysis was utilized to predict the likelihood of trying goat meat given various exogenous variables. The probit model coefficients and marginal probabilities from the two models - one for the survey population and one for only Hispanic respondents are shown in Tables 6-1 and 6-2, respectively. According to Greene (2003), marginal probabilities should be used to draw inferences about the relationship between the dependent and independent variables rather than coefficient estimates. The marginal probabilities measure the change in probability of the willingness try goat meat from a unit change in one of the explanatory variables, while holding the other regressors at their sample means. The results from these models are discussed in this chapter, beginning with the whole population model and followed by the Hispanic only model.

Entire Survey Sample Probit Estimates

The entire survey sample probit model (Table 6-1) correctly predicted 75.8 percent of consumers' responses (incorrectly predicting both a consumers' willingness to try goat meat and non-willingness to try 12.1 percent of the time). This compares to a naïve, which resulted in correct prediction 56.4 percent of the time. The chi-squared

value is 137.0 is statistically significant to the .01 confidence level, which implies good predictive power of the variables included in the model.

Table 6-1. Empirical results from the whole survey probit model.

Variable	Estimated Coefficient	Standard Error	Marginal Effects
ETH2	0.0554	0.2020	0.0217
ETH3	0.0424	0.3031	0.0165
GENDER	-0.2985	0.1783	-0.0830
AGE1	0.0404	0.3484	0.0159
AGE2	0.0862	0.2719	0.0317
AGE3	-0.0493	0.2898	-0.1922
AGE4	0.0780	0.2536	0.0307
AGE5	0.4215	0.2606	0.1668***
EDU2	0.0883	0.2006	0.0347
EDU3	0.0761	0.3031	-0.2973
HSIZE1	-0.6960**	0.3234	-0.2235**
HSIZE2	-0.4697***	0.2451	-0.1790**
HSIZE3	-0.5380**	0.2606	-0.1984**
HSIZE4	-0.6253*	0.2508	-0.2295*
VIEW1	1.6244*	0.2286	0.5829*
VIEW2	0.7787*	0.2070	0.3019*
FAT	-0.5495**	0.2818	-0.2165**
SAFETY	-0.2617	0.3042	-0.1037
CHOLE	0.1972	0.2471	0.0760
CONVEN	-0.0671	0.1691	-0.0263
PRICE	0.5373*	0.5376	0.2017**
BEEF1	-0.1805	0.2132	-0.0709
BEEF2	-0.2505	0.2305	-0.0967
CHICK1	-0.7486**	0.3215	-0.2918*
CHICK2	-0.7544**	0.3728	-0.2662**
PORK1	0.0635	0.2136	0.0249
PORK2	-0.1158	0.1955	-0.0451
FISH1	0.3839**	0.1951	0.1505**
FISH2	0.4458**	0.2103	0.1756**
TURK	0.0635	0.2502	0.0318
LAMB	0.4887**	0.1690	0.1915*

Log- Likelihood = -181.45

R² (Psuedo) = 27.2 %

Chi-squared = 137.03

% of corrected predictions = 75.9%

*, **, *** indicate significance at .01, .05, and .10 levels, respectively

The results indicate that there is no significant difference between the willingness to try amongst demographic characteristics such as ethnicity, gender, nor educational attainment levels. Caucasians or consumers of other races levels of willingness to try were compared to those of Hispanics consumers, the base. Unexpectedly, the willingness to try goat meat amongst ethnic groups was not statistically different, even though apparent differences existed between each groups responses. Raw statistics indicated that 24.5 percent of Hispanics currently ate goat meat, compared to 12.0 percent of Caucasians. However, 31.6 percent of non-goat meat consuming, Hispanics were willing to goat meat, compared to 29.8 percent of non-consuming Caucasians.

Statistically significant demographics variables include household size and age. As hypothesized, if less than five individuals were present in a household the chances of trying goat meat diminishes (Figure 6-1). For example, as the household changes from five or more people to one person, the willingness of trying goat meat decreased by 22.3 percent. Additionally, as household size changes from the base, five or more individuals, to a two, three, or four person household the likelihood of trying goat decreased 17.9, 19.8, and 23 percent, respectively. Respondents' age also had a significant effect on the willingness to try goat meat, with respondents between the ages of 55 and 64 more 42.2 percent likely the participants 65 years and older to try goat meat.

The study failed to investigate the reasons respondents were willing or not willing to try goat meat and goat meat attribute that influence consumption such as, but not limited to freshness, price, presence of chemical additive, and various nutritional attributes. However, the survey did focus on the psychographic characteristics that are important to consumers when making all meat purchases.

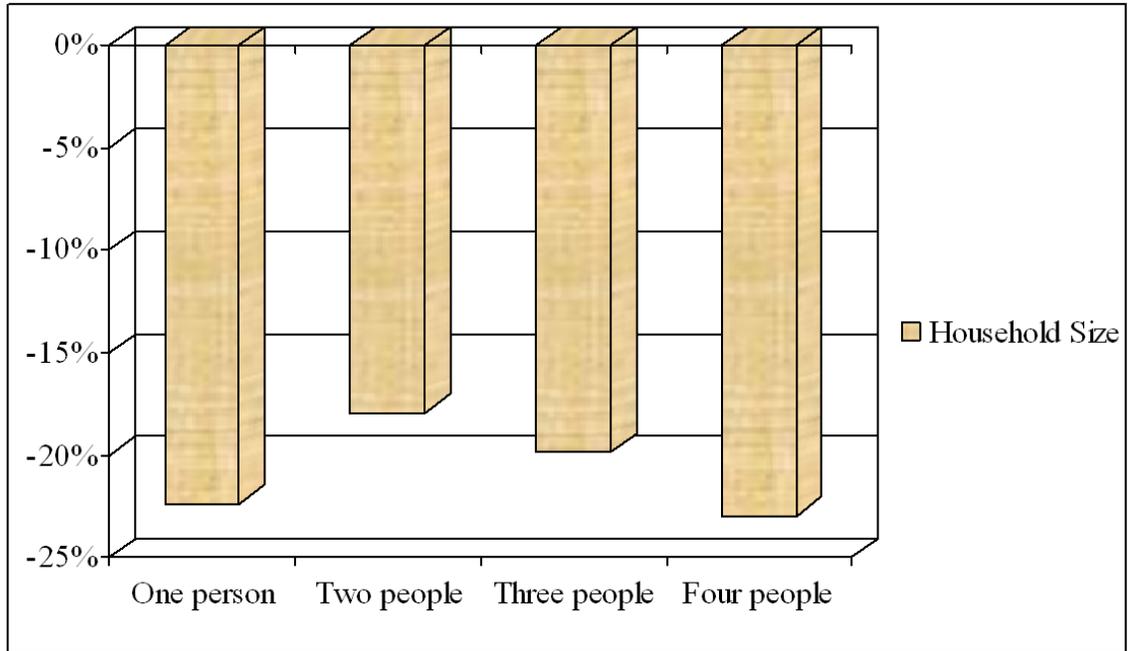


Figure 6-1. Changes in the probability of trying goat meat with respect to household size. (All household sizes are compared to the base, households containing five or more individuals).

The psychographic factors were included in the model to provide insight on potential goat meat consumers. Of convenience, price specials, fat content, cholesterol, and safety, price specials and fat content were the only significant variables. The relationships between price specials and fat content with willingness to try were the opposite of the original hypotheses. Consumers that viewed price specials as important were 20 percent more likely than consumers that rated price special as unimportant to be willing to try goat meat. Additionally, consumers that perceived fat content as relevant were 21.6 percent less likely to be willing to try goat meat than those that view fat levels as insignificant. These results reveal that many consumers are not knowledgeable of the on the characteristics, of goat meat, including price. As mentioned in previous chapters, goat meat is a lean meat and a high source of proteins. Therefore, consumers that believe fat levels are important should be more inclined to try goat meat. One potential

explanation for the opposite result is that people believe goat meat is high in fat. Also, goat meat prices are usually higher than traditional meats (McLean-Meyinsse (1999) found that goat prices range from \$1.79 to \$2.79 per pound in Louisiana), suggesting those that believe price specials are important should have been less willing to try goat meat. The same potential explanation, lack of knowledge about goat meat, could explain this result. It is not alarming that convenience was not significant. If respondents lack information on preparation methods, they may be unaware if goat meat is easy to cook or not.

The probit model indicated that consumers' perception of goat meat had a statistically significant impact on the likelihood of trying goat meat. As the consumers' perception changed from negative to positive, the probability of willingness to try goat meat increased 58.3 percent. Likewise, if consumers possessed a neutral view of goat meat rather than a negative view the likelihood of consuming goat meat increased 30.2 percent. Based on the results, one can assume that as the consumers' attitude towards goat meat becomes more positive, their chances of trying goat meat increases at significant rates.

Finally, the relationship between trying goat meat and the frequency of consumption of other meat substitutes was examined. Chicken, fish, and lamb consumption were found to significantly affect the willingness to try goat meat. Respondents that had previously consumed lamb were more willing to try goat meat. In fact, participants that had consumed lamb were 48.9 percent more likely to be willing to try goat meat than individuals that had not eaten lamb. The probit estimates also indicated that fish and other seafood consumption positively affect the likelihood of trying goat

meat. Participants that consumed seafood more than once a week were 15 percent more likely to express a willingness to try goat meat. Whereas, respondents that consumer fish weekly were 17.6 percent more incline to be willing to try goat meat. Respondents that consume chicken more than once a month are less likely to be willing to try goat meat. If a respondent consumed chicken more than once a week, the probability of consumer goat meat decreased by 29.1 percent. Likewise if the respondent consumed chicken at least once a week, the chances of trying goat meat declined 26.6 percent. For the results, one can infer that goat meat consumption will occur less often as the frequency of chicken consumed increases. On the other hand, fish and lamb consumption may serve as an indicator of potential goat consumption.

Hispanic Model

The probit model that focused on the Hispanic respondents only correctly predicted consumers' willingness to try goat meat 76.2 percent of the time (incorrectly predicting a consumers' willingness to try goat meat 12.5 percent of the time and non-willingness to try 11.3 percent of the time). This is better than naïve prediction, 51.7. The chi-squared value is 64.3 and is statistically significant to the .01 confidence level, which implies this model has good predictive ability of forecasting the willingness to try.

Although ethnicity was statistically insignificant in the general population model, a separate probit analysis was conducted using Hispanic respondents to reveal if different factors affected the willingness to consumers between Hispanics and the general population.

Table 6-2. Empirical results from the Hispanic probit model.

Variable	Estimated Coefficient	Standard Error	Marginal Effects
MEXICAN	-0.4283	0.4764	-0.1673
PTRICAN	-0.7114	0.4405	-0.2690***
OTHERD	-0.2024	0.3570	-0.8056
GENERA	-0.1514	0.2801	-0.0603
GENDER	0.1312	0.3171	0.0522
AGE1	2.0406*	0.7452	0.5417*
AGE2	0.1318	0.4631	0.0525
AGE3	0.1973	0.5136	0.0785
AGE4	0.3302	0.4392	0.1307
AGE5	0.3676	0.5432	0.1448
EDU2	0.0520	0.3108	0.0275
EDU3	0.1250	0.3545	0.4983
HSIZE1	-0.3877	0.5957	-0.1510
HSIZE2	-0.2943	0.3831	-0.1164
HSIZE3	-0.8757*	0.4041	-0.3267*
HSIZE4	-0.5672	0.3782	-0.2206
VIEW1	1.4971*	0.4403	0.5457*
VIEW2	0.8390	0.4239	0.1521
FAT	-0.6843	0.5699	-0.2603
SAFETY	-1.0338	0.7084	0.3605*
CHOLES	0.3370	0.6091	0.1321
CONVEN	0.1072	0.2887	0.0427
PRICE	1.2540*	0.3541	0.4469*
BEEF1	0.3021	0.3544	0.1201
BEEF2	0.3916	0.3902	0.1551
CHICK1	-1.5846*	0.6051	-0.5132*
CHICK2	-1.6177**	0.7845	-0.4825*
PORK1	0.5338	0.3672	0.2087
PORK2	0.3141	0.3477	0.1245
FISH1	0.7546**	0.3583	0.2936**
FISH2	0.3966	0.3689	0.1570
TURK	0.2715	0.3294	0.1076
LAMB	0.3545	0.299	0.1406

Log- Likelihood = -72.41

R² (Psuedo) =15%

Chi-squared = 64.44

% of corrected predictions = 76.2%

*, **, *** indicate significance at .01, .05, and .10 levels, respectively

Additionally, the second probit analysis was conducted to examine if the levels of trying goat meat vary amongst the consumers of various Hispanics origins and as the generations the respondent had spent in the United States (and expected acculturation level) increases. Consistent with the whole survey sample results, there is no significant difference between the willingness to try amongst genders and educational attainment levels. When willingness to try levels for individuals of Puerto Rican, Mexican, and other descents were compared to those of Cuban descent a statistical significant difference was found when the individual are of Puerto Rican descent. The results revealed that if the respondent was of Puerto Rican rather than Cuban descent, the respondents' willingness to try levels decreased 25.9 percent. According to probit results there was not a significant difference in the willingness to try goat meat between first generation Hispanics and Hispanics whose families have been in the United States for more than one generation. This may suggest that as acculturation increases, consumption patterns for goat meat remain unchanged, a positive indicator for the goat meat industry.

When only considering Hispanic respondents, the results of the demographic variable did change. Household size remained significant, but now only the household size of three was statistically different from the size of five, (32.7 percent less likely to be willing to try), unlike the larger model, where all sizes were significantly different. Again only one age variable was significant, but this time it was the youngest age group (18 and 24). Respondents in this group were 51.4 percent more likely to indicate a willingness to try goat.

Psychographic factors were again were slightly different in the Hispanic only model. Safety and price specials were the only significant variables. Consumers that

rated safety as important were 36 percent less likely than individuals that feel safety is unimportant to try goat meat. Similar to the entire sample, as the significance of price specials changed from important to unimportant, the chances of trying goat meat increased 44.7 percent.

Respondents' perception of goat meat again had a statistically significant impact on the willingness of try goat meat. As the respondents' perception changed from negative to positive, the likelihood of willingness try goat meat increased 54.6 percent. Unlike the general population model, there is no significant difference between the levels of trying goat meat as the consumers' opinion towards the products change from negative to neutral.

Finally, the analysis examined the relationship between trying goat meat and the frequency of consumption of other meat substitutes. Chicken and fish and seafood consumption were found to significantly affect the willingness to try goat meat. Similar to the entire survey sample model, respondents that consume chicken at least once a week were less likely to exemplify a willingness to consume goat meat. Respondents that ate chicken once a week were 48.2 percent less likely to be willing to try goat meat than those that consume chicken on special occasions or less frequently. When the frequency of consuming chicken changed from special occasions to more than once a week the chances of being willing to try goat meat decreased 51.3 percent. Fish and other seafood consumption positively effected goat meat only when they were consumed more than once a week. The willingness to try goat meat increased 29.4 percent as the frequency of fish and seafood consumption varied from more than once a week to on special occasion and less frequently.

CHAPTER 7 CONCLUSIONS AND IMPLICATIONS

Summary

This thesis focuses on developing an understanding of factors that influence willingness to consume goat meat in Florida. Researchers believe Florida has the potential for a meat goat market that is profitable and the demand for goat meat products in Florida is expected to continue growing as target populations within the niche market increase. However, the lack of consumer information has hindered producers', processors', and marketers' ability to fully delineate the profitability and viability of Florida's meat goat industry. Consumer information is a critical component to totally understand the possible economic impact of goat meat production and marketing in Florida. Thus, the primary objective of this research is to identify factors that influence and barriers that reduce consumption of goat meat.

A probit analysis of willingness to try goat meat indicated that factors influencing willingness try goat meat differed between the whole survey model and the Hispanics model. Hispanic consumers were unaware of the safety standards, which may be a result of the lack of grades and standards in the meat goat industry. The general population sample participants were uninformed of goat meats nutritional attributes (i.e. low levels of fat and cholesterol). Results from a partial nutrient analysis (Johnson, 1995), suggested that goat meat was comparable to chicken in total grams of fat, percent calories from fat and cholesterol. Also, the nutrient profile indicated that goat meat was similar beef in iron content. According to probit model results, safety and fat content had a

negative influence on the willingness to try. Indicating that overall, consumer awareness of goat meat attributes is low, and more information should be made available to consumers. Both groups of shoppers indicated that price specials were important when purchasing meat at the grocery store. Price specials increased the likelihood of trying goat meat; however, specialty meat prices are usually more expensive than traditional meat prices. Therefore, marketers may want to implement various pricing strategies, pricing the meat lower than other meats to increase sales. This study did not identify reasons for not consuming goat meat. Further research should be conducted to identify these factors so that the industry can address and attempt to rectify these issues that restrict consumption.

Perception of goat meat influenced respondents' willingness to try goat meat. As the respondents' view of goat meat became more positive, the likelihood of trying goat meat increased at least 30 percent. Unlike the results of the entire survey model, there was not a significant relationship between the willingness to try goat meat and the perception as the respondent's view changed from negative to neutral.

Results show that the frequency of chicken and fish consumption affects the willingness to try goat meat in both models. In addition to those meats, respondents that consumed lamb were also more likely to be willing to try goat meat in the model including the entire sample. Prices of substitutes were not included in the model, as prices for goat meat were not available either. However, the relationship between the willingness to try goat meat and chicken, fish, and lamb indicated that goat meat has substitutes and complements. Therefore, members of the goat meat industry could develop strategies that differentiate goat meat from its competitors in an effort to increase market share. The

likelihood of trying goat meat increased when participants consumed fish on a weekly basis and if consumers had previously consumed lamb; thus, meat marketing strategies should be aimed at these individuals.

Income was not included in the model due to a high refusal rate in answering the question; therefore income elasticities were not calculated. However, education was used as a proxy for income and was found to be insignificant.

The most unanticipated result from this study was that ethnicity or race was insignificant, which implies that the willingness to try goat meat is the same for Hispanics, Caucasians, and other races is statistically the same. This notion means that marketers should develop marketing strategies that target all consumers, and not focus on one particular group *per se* Hispanics. Furthermore, our results indicate that there is opportunity for growth in the goat meat industry. Gender was not significant, however, females are usually the primary grocery shoppers; goat meat should be promoted in a manner that accentuates the characteristics that have been identified as important to female shoppers.

Other demographic factors that influenced the willingness to try goat meat were household size and age. Consistent with previous research, larger households, those containing five or more individuals were most likely to try goat for the entire sample. Larger households may be more willing to try goat meat because consumers perceive it to be inexpensive; thus, making goat meat an affordable meat alternative when feeding a large family. The consumers in the youngest age group, 18-24, were most likely to express a willingness to try goat meat among Hispanic consumers, whereas there was a decrease in willingness to consume between the age of 55-64 years were most likely for the entire sample. This is

an important finding for the goat meat industry, because if an individual develops a fondness for goat meat at an earlier age, more than likely these individuals will become life long consumers of the product, which may result an overall in goat meat consumption.

Conclusions

This research suggests opportunities for expanding the goat meat industry exists in Florida, with 43.6 percent of the sample indicating a willingness to try goat meat if it was available in supermarkets. Demographic characteristics such ethnicity, gender, nor educational attainment levels did not affect the dependent variable, but other demographic characteristics did affect the willingness to try. The results revealed that as the descent of the respondent changed from Cuban to Puerto Rican, the willingness to try decreased 25.9 percent. Psychographic factors that effect the willing to try included price specials, fat content, safety, and the consumers' perception of the product.

Consumers indicated fat content and safety were important to their purchase decisions were less likely to be willing to goat meat, while perception of goat meat and price specials has a positive relationship with the willingness to try. As goat meat is low in fat and often more expensive than other meats, these results seem counter-intuitive. However, this may all be an indicator that knowledge about the attributes of goat meat are low and in industry may benefit from educational efforts.

Finally, the analysis describes relationship between the willing to trying goat meat and the frequency of consumption of other meats. Chicken, fish, and lamb consumption were found to significantly effect the willingness to try goat meat. Respondents that had previously consumed lamb were more willing to try goat meat. If the participants consumed fish and seafood a minimum of once a week, the probability of trying goat

meat increases. Consumers that ate chicken more than once a month were less likely to try goat meat. Pork and beef consumption were found to have no significant effect on trying goat meat. One can conclude that goat meat consumption will occur less often as the frequency of chicken consumed increases. On the other hand, fish and lamb consumption may serve as an indicator of potential goat consumption.

Implications

In recent years the demand for goat meat has increased in the United States and it appears that opportunities for expansion exist for Florida's goat meat industry. The findings from this study can be used by the industry to develop marketing strategies that will provide assistance in increasing the demand for the product. The results also suggest potential consumers that should be targeted by the industry.

This study identified new consumers for goat meat. In order for the goat meat industry to expand, market development strategies, which involve targeting new consumers with a present product, can be used to enhance the demand for goat meat. It is easier to target consumers that have an interest in trying goat meat than to market the product to those that are unwilling to try it. If the goat meat industry wishes to increase the demand for goat meat it is necessary to expand its target market beyond ethnic populations and promote the products to all individuals. This study suggests that this opportunity exists because there was no difference in willingness to try among the ethnic/racial groups suggesting that the industry should tap into the Caucasian market. Research suggests that the industry should direct its marketing efforts to individuals living in larger households and those between the ages of 18-24. It is imperative for the industry to attract long term consumers in order to have long run success and by targeting younger consumers this is possible. If younger consumers develop a preference for goat meat

products at an earlier age, they are more than likely to consumer the product as they grow older. Additionally, since ethnicity/race was an insignificant factor in this study, the industry should also target Caucasian females. Other potential consumers are those that live in larger households and lamb consumers.

It seems a major barrier that hinders the prosperity of the goat meat industry is that consumers lack knowledge on goat meat. Consumers are becoming more health conscious and they are consuming products that possess nutritional qualities such as chicken and fish more frequently. Goat meat is very healthy, low in fat and cholesterol and high in proteins, however consumers are unaware of these qualities; therefore, educational information that increases consumers' awareness of goat meat. If this information was known by consumers the industry may be able to repositioning the product in consumers' mind. It seems that consumers perceive the product as cheap and containing high levels of fat, but the in untrue. In store demonstrates, educational advertising, recipes are promotional strategies that would increase consumers' awareness of goat meat, resulting in increased consumption.

As a result of this study it is evident that further research that involves knowledge testing is needed. This type of research would reveal the familiarity levels consumers have for goat meat. These results would inform industry official on the subject matter that needs to be discussed in the educational advertisements. Additionally, since ethnicity/race was non-significant and more balance sample, on the does not place an emphasis on Hispanics, should be conducted to investigate the reasons for consuming and not consuming goat meat is needed. The Florida's goat meat industry has the opportunity

to flourish; however, effective marketing strategies are needed to increase consumers' awareness and the availability of goat meat.

APPENDIX A
SOUTHERN REGION GOAT CONSUMPTION SURVEY

March 15, 2004

Hello, this is (NAME) calling from the University of Georgia in Athens. The Survey Research Center is conducting a study this evening in conjunction with Mack C. Nelson, a professor from Fort Valley State University (GA) concerning the use of goat meat and we'd like to talk to the primary food shopper of your household. Do you have a few minutes right now to complete an interview?

1. Yes (CONTINUE)
2. No (GET SR'S NAME, ARRANGE CALLBACK; APPLY PERSUADERS. EVEN IF RESPONDENT DOESN'T EAT GOAT MEAT, WE WANT THEM TO COMPLETE THE SURVEY—IT WILL BE SHORTER.)

[INTERVIEWER NOTE: IF PRIMARY FOOD SHOPPER DID NOT HEAR INITIAL INTRODUCTION BUT DOES COME TO THE PHONE, REPEAT INTRO]

S1 - Are you 18 years or older?

1. Yes (CONTINUE)
2. No (ASK TO SPEAK TO ADULT 18 YEARS OR OLDER. RETURN TO INTRO. IF NECESSARY, GET SR'S NAME AND SET CALLBACK.)

Great! Before we begin, I need to let you know that the interview is completely voluntary. All of the information you provide will be kept strictly confidential and you don't have to answer any questions you don't want to. Also, my supervisor may listen to part of the interview to be sure that I'm not making any mistakes.

Q1. Have you or any member of your immediate family ever eaten goat meat?

1. Yes [SKIP TO Q4]
2. No
3. Don't know
9. Ref/NA

Q2. DELETED

Q2.1 - If goat meat was available in your area food stores, do you think you would try it?

1. Yes
2. No
9. Ref/DK/NA

Q2.2 If there were a cooperative that sold the meat of animals grown organically, would you be willing to join?

1. Willing
2. Not willing
9. Ref/DK/NA

[ALL ANSWERS SKIP TO Q14]

Q3. DELETED

Q4. What's your preference in goat meat? Would it be the kid, small male, small female, wether or something else?

1. Kid
2. Small male
3. Small female
4. Wether (castrated male)
5. Other [Specify] _____
9. Ref/DK/NA

Q5. What live weight do you prefer?

1. Less than 30 pounds
2. 30 - 50 pounds
3. 51 – 69 pounds
4. 70 pounds or more
9. Ref/DK/NA

Q6. Do you prefer a certain cut of meat?

1. Yes
2. No [SKIP TO Q7]
9. Ref/DK/NA [SKIP TO Q7]

Q6.1 How much do you prefer the shoulder? Do you prefer the shoulder very much, somewhat, not much or not at all?

1. Very much
2. Somewhat
3. Neutral (Doesn't matter)
4. Not much
5. Not at all
9. Ref/DK/NA

Q6.2 How much do you prefer the ribs? Would it be very much, somewhat, not much or not at all?

1. Very much
2. Somewhat
3. Neutral (Doesn't matter)
4. Not much
5. Not at all
9. Ref/DK/NA

Q6.3 How much do you prefer the hind leg?

1. Very much
2. Somewhat
3. Neutral (Doesn't matter)
4. Not much
5. Not at all
9. Ref/DK/NA

Q6.4 How much do you prefer loin chops?

1. Very much
2. Somewhat
3. Neutral (Doesn't matter)
4. Not much
5. Not at all
9. Ref/DK/NA

Q6.5 How much do you prefer loin cubes?

1. Very much
2. Somewhat
3. Neutral (Doesn't matter)
4. Not much
5. Not at all
9. Ref/DK/NA

Q6.6. Are there any other cuts of meat that you prefer to eat?

1. Name cuts of meat _____
9. No, Ref/DK/NA

Q7. Do you normally buy a whole goat?

1. Yes
2. No
3. Don't know
9. Ref/NA

Q8. Are there certain seasons of the year that you eat more goat meat?

1. Yes
2. No [SKIP TO Q9]
9. Ref/DK/NA [SKIP TO Q9]

Q8.1 What seasons are those?

[INTERVIEWER NOTE: CHOOSE ALL THAT APPLY]

[PROGRAMMER NOTE: YES/NO TOGGLE]

1. Winter
2. Spring
3. Summer
4. Fall
5. Ref/DK/NA
6. Exit

Q9 Do you eat goat meat on special occasions?

1. Yes
2. No [SKIP TO Q10]
9. Ref/DK/NA [SKIP TO Q10]

Q9.1 Which special occasions are those?

[INTERVIEWER NOTE: CHOOSE ALL THAT APPLY]

[PROGRAMMER NOTE: YES/NO TOGGLE]

1. Christmas
2. 4th of July
3. Family re-unions
4. Marriages
5. Ramadan
6. Cinco de Mayo
7. Other [Specify] _____
8. Ref/DK/NA
9. Exit

Q10. About how many pounds of goat meat do you think your family eats each year?

[INTERVIEWER NOTE: USE PERSUADERS IF NECESSARY: "I JUST NEED A BALLPARK FIGURE."]

_____ pounds
 998 – 998 or more
 999 – Ref/DK/NA
 [RANGE: 1 – 999]

Q11. Would your family eat more goat meat if it was available in your local grocery stores?

1. Yes
2. No [SKIP TO Q12]
3. Don't know [SKIP TO Q12]
9. Ref/NA [SKIP TO Q12]

Q11.1 Which meat product would you eat less of if you increased the family consumption of goat meat?

[INTERVIEWER NOTE: IF NECESSARY, READ: BEEF, PORK, SEAFOOD, LAMB, CHICKEN OR TURKEY?]

1. Enter response _____.
9. Ref/DK/NA

Q12. Please tell me how important the following attributes are in your decision to purchase goat meat products. Would you say fresh, never frozen product is very important, important, not very important or not at all important?

1. Very important
2. Important
3. Neutral (Doesn't matter)
4. Not very important
5. Not at all important
9. Ref/DK/NA

Q12.1 How important is the color of the meat—very important, important, not very important or not at all important?

1. Very important
2. Important
3. Neutral (Doesn't matter)
4. Not very important
5. Not at all important
9. Ref/DK/NA

Q12.2 How important is the government inspection label?

1. Very important
2. Important
3. Neutral (Doesn't matter)
4. Not very important
5. Not at all important
9. Ref/DK/NA

Q12.3 How important is it that the goat meat is organically grown?

1. Very important
2. Important
3. Neutral (Doesn't matter)
4. Not very important
5. Not at all important
9. Ref/DK/NA

Q12.4 How important is it that there are a variety of cuts available?

1. Very important
2. Important
3. Neutral (Doesn't matter)
4. Not very important
5. Not at all important
9. Ref/DK/NA

Q12.5 How important is it that there are prepackaged cuts?

1. Very important
2. Important
3. Neutral (Doesn't matter)
4. Not very important
5. Not at all important
9. Ref/DK/NA

Q12.6 How important are cooking instructions?

1. Very important
2. Important
3. Neutral (Doesn't matter)
4. Not very important
5. Not at all important
9. Ref/DK/NA

Q12.7 How important are marinade cuts?

1. Very important
2. Important
3. Neutral (Doesn't matter)
4. Not very important
5. Not at all important
9. Ref/DK/NA

Q12.8 How important are convenience foods, such as sausage?

1. Very important
2. Important
3. Neutral (Doesn't matter)
4. Not very important
5. Not at all important
9. Ref/DK/NA

Q12.9 How important is the price in your decision to purchase goat meat products?

1. Very important
2. Important
3. Neutral (Doesn't matter)
4. Not very important
5. Not at all important
9. Ref/DK/NA

Q13. When you cook your goat meat, how often do you make soup? Would you say frequently, some of the time, not very often or never?

1. Frequently
2. Some of the time
3. Not very often
4. Never
9. Ref/DK/NA

Q13.1 When you cook your goat meat, how often do you make meat sauce? Would you say frequently, some of the time, not very often or never?

1. Frequently
2. Some of the time
3. Not very often
4. Never
9. Ref/DK/NA

Q13.2 How often do you make chili when you cook goat meat?

1. Frequently
2. Some of the time
3. Not very often
4. Never
9. Ref/DK/NA

Q13.3 How often do you make meat loaf when you cook goat meat?

1. Frequently
2. Some of the time
3. Not very often
4. Never
9. Ref/DK/NA

Q13.4 When you cook your goat meat, how often do you broil it? Would you say . . .

1. Frequently
2. Some of the time
3. Not very often
4. Never
9. Ref/DK/NA

Q13.5 When you cook goat meat, how often do you oven roast it?

1. Frequently
2. Some of the time
3. Not very often
4. Never
9. Ref/DK/NA

Q13.6 When you cook goat meat, how often do you have sausage made?

1. Frequently
2. Some of the time
3. Not very often
4. Never
9. Ref/DK/NA

Q13.7 When you cook your goat meat, how often do you barbeque the meat?

1. Frequently
2. Some of the time
3. Not very often
4. Never
9. Ref/DK/NA

Q13.8 Are there any other ways that you cook your goat meat?

1. Enter response _____
9. Ref/DK/NA

Q14. This section is about which meats you eat most often. Would you say that you eat beef every day, more than once a week, once a week, more than once a month, once a month, on special occasions or never?

1. Every day
2. More than once per week
3. Once per week
4. More than once per month
5. Once per month
6. Special occasions
7. Never [SKIP TO Q15]
9. Ref/DK/NA [SKIP TO Q15]

Q14.1 When you eat beef how much do you usually eat? Would you say less than $\frac{1}{4}$ pound, $\frac{1}{4}$ pound, $\frac{1}{2}$ pound, 1 pound or more than one pound?

1. Less than one-fourth pound
2. One-fourth pound
3. One-half pound
4. One pound
5. More than one pound
9. Ref/DK/NA

Q15 And how often would you say that you eat chicken? Would it be . . .

1. Every day
2. More than once per week
3. Once per week
4. More than once per month
5. Once per month
6. Special occasions
7. Never [SKIP TO Q16]
9. Ref/DK/NA [SKIP TO Q16]

Q15.1 When you eat chicken how much do you usually eat? Would you say less than $\frac{1}{4}$ pound, $\frac{1}{4}$ pound, $\frac{1}{2}$ pound, 1 pound or more than one pound?

1. Less than one-fourth pound
2. One-fourth pound
3. One-half pound
4. One pound
5. More than one pound
9. Ref/DK/NA

Q16 What about turkey, how often do you eat turkey?

1. Every day
2. More than once per week
3. Once per week
4. More than once per month
5. Once per month
6. Special occasions
7. Never [SKIP TO Q17]
9. Ref/DK/NA [SKIP TO Q17]

Q16.1 When you eat turkey how much do you usually eat? Would you say less than $\frac{1}{4}$ pound, $\frac{1}{4}$ pound, $\frac{1}{2}$ pound, 1 pound or more than one pound?

1. Less than one-fourth pound
2. One-fourth pound
3. One-half pound
4. One pound
5. More than one pound
9. Ref/DK/NA

Q17 And how often do you eat lamb?

1. Every day
2. More than once per week
3. Once per week
4. More than once per month
5. Once per month
6. Special occasions
7. Never [SKIP TO Q18]
9. Ref/DK/NA [SKIP TO Q18]

Q17.1 When you eat lamb how much do you usually eat? Would you say less than $\frac{1}{4}$ pound, $\frac{1}{4}$ pound, $\frac{1}{2}$ pound, 1 pound or more than one pound?

1. Less than one-fourth pound
2. One-fourth pound
3. One-half pound
4. One pound
5. More than one pound
9. Ref/DK/NA

Q18 How often do you eat goat meat or chevon?

1. Every day
2. More than once per week
3. Once per week
4. More than once per month
5. Once per month
6. Special occasions
7. Never [SKIP TO Q19]
9. Ref/DK/NA [SKIP TO Q19]

Q18.1 When you eat goat/chevon how much do you usually eat? Would you say less than $\frac{1}{4}$ pound, $\frac{1}{4}$ pound, $\frac{1}{2}$ pound, 1 pound or more than one pound?

1. Less than one-fourth pound
2. One-fourth pound
3. One-half pound
4. One pound
5. More than one pound
9. Ref/DK/NA

Q19 How often do you eat fish or seafood?

1. Every day
2. More than once per week
3. Once per week
4. More than once per month
5. Once per month
6. Special occasions
7. Never [SKIP TO Q20]
9. Ref/DK/NA [SKIP TO Q20]

Q19.1 When you eat fish or seafood, how much do you usually eat? Would you say less than $\frac{1}{4}$ pound, $\frac{1}{4}$ pound, $\frac{1}{2}$ pound, 1 pound or more than one pound?

1. Less than one-fourth pound
2. One-fourth pound
3. One-half pound
4. One pound
5. More than one pound
9. Ref/DK/NA

Q20 And finally, how often do you eat pork?

1. Every day
2. More than once per week
3. Once per week
4. More than once per month
5. Once per month
6. Special occasions
7. Never [SKIP TO Q23]
9. Ref/DK/NA [SKIP TO Q23]

Q20.1 And when you eat pork how much do you usually eat? Would you say less than $\frac{1}{4}$ pound, $\frac{1}{4}$ pound, $\frac{1}{2}$ pound, 1 pound or more than one pound?

1. Less than one-fourth pound
2. One-fourth pound
3. One-half pound
4. One pound
5. More than one pound
9. Ref/DK/NA

Q21 Question deleted (duplicate of Q11)

Q22 DELETED

Q23. In your household, has your spouse consumed goat meat products?

1. Yes
2. No
3. Do not have spouse
8. Ref/DK/NA

[PROGRAMMER NOTE: IF Q23 = 3, SKIP Q36]

Q23.1 Have your children consumed goat meat products?

1. Yes
2. No
3. Do not have children [SKIP TO Q26.1]
9. Ref/DK/NA [SKIP TO Q26.1]

[PROGRAMMER NOTE: IF Q23.1 = 3, SKIP Q37]

Q24. Now I'd like to ask you the gender of your children. Remember, this is confidential and the answers will not be connected with your phone number in any way.

Q24.1 DELETED

Q24.2 Gender of first child under 18?

1. Male
2. Female
9. Ref/DK/NA **[SKIP TO Q25]**

Q24.3 DELETED

Q24.4 Gender of second child under 18?

1. Male
2. Female
3. No more children [SKIP TO Q25]
9. Ref/DK/NA [SKIP TO Q25]

Q24.5 DELETED

Q24.6 Gender of third child under 18?

1. Male
2. Female
3. No more children
9. Ref/DK/NA

Q25. If you and/or your spouse eat goat meat but your children don't, what are the reasons your children don't consume the product?

[INTERVIEWER NOTE: CHOOSE ALL THAT APPLY]

[PROGRAMMER NOTE: YES/NO TOGGLE]

1. They don't like it
2. They were not reared where it was consumed regularly
3. It wasn't available
4. Their friends don't eat it, so they don't
5. Others (please list) _____
6. Ref/DK/NA
7. Exit

Q26. DELETED

Q26.1 To your knowledge, have any of the following family members eaten goat meat products?

[INTERVIEWER NOTE: READ RESPONSES. CHOOSE ALL THAT APPLY]

[PROGRAMMER NOTE: YES/NO TOGGLE]

1. Mother
2. Father
3. In-Laws
4. Others [Please specify _____]
5. Ref/DK/NA
6. Exit

Q27 I would like to know how you see goat meat products. Would you say your view is:

1. Very positive
2. Positive
3. Somewhat positive
4. Neutral
5. Somewhat negative
6. Negative
7. Very negative
9. Ref/DK/NA

For the next few items, I'd like you to rate the importance of several factors in your decision to buy or not to buy a goat meat product. Even if you do not currently consume goat meat, please tell me how important the following items are in your decision to buy goat meat and other kinds of meat.

Q28. How important are food page advertisements in your decision to buy goat meat?

1. Very important
2. Important
3. Neutral
4. Not very important
5. Not at all important
10. Ref/DK/NA

Q28.1 How important are food page advertisements in your decision to buy other meats?

1. Very important
2. Important
3. Neutral
4. Not very important
5. Not at all important
9. Ref/DK/NA

Q29. How important are store displays in your decision to buy goat meat?

1. Very important
2. Important
3. Neutral
4. Not very important
5. Not at all important
9. Ref/DK/NA

Q29.1 How important are store displays in your decision to buy other meats?

1. Very important
2. Important
3. Neutral
4. Not very important
5. Not at all important
9. Ref/DK/NA

Q30. How important are price specials in your decision to buy goat meat?

1. Very important
2. Important
3. Neutral
4. Unimportant
5. Not important at all
9. Ref/DK/NA

Q30.1 How important are price specials in your decision to buy other meats?

1. Very important
2. Important
3. Neutral
4. Unimportant
5. Not important at all
9. Ref/DK/NA

Q31. How important are in-supermarket taste tests in your decision to buy goat meat?

1. Very important
2. Important
3. Neutral
4. Unimportant
5. Not important at all
9. Ref/DK/NA

Q31.1 How important are in-supermarket taste tests in your decision to buy other meats?

1. Very important
2. Important
3. Neutral
4. Unimportant
5. Not important at all
9. Ref/DK/NA

Q32. How important are safety assurances such as USDA inspections of goat meat?

1. Very important
2. Important
3. Neutral
4. Unimportant
5. Not important at all
9. Ref/DK/NA

Q32.1 How important are safety assurances such as USDA inspections of other meats?

1. Very important
2. Important
3. Neutral
4. Unimportant
5. Not important at all
9. Ref/DK/NA

Q33. How important are convenience products such as sausage or ground meat from goat meat?

1. Very important
2. Important
3. Neutral
4. Somewhat unimportant
5. Not important at all
9. Ref/DK/NA

Q33.1 How important are convenience products such as sausage or ground meat from other meats?

1. Very important
2. Important
3. Neutral
4. Somewhat unimportant
5. Not important at all
9. Ref/DK/NA

Q34. How important is the fat content in goat meat?

1. Very important
2. Important
3. Neutral
4. Somewhat unimportant
5. Not important at all
9. Ref/DK/NA

Q34.1 How important is the fat content in other meats?

1. Very important
2. Important
3. Neutral
4. Somewhat unimportant
5. Not important at all
9. Ref/DK/NA

Q35. How important is the cholesterol content of goat meat?

1. Very important
2. Important
3. Neutral
4. Somewhat unimportant
5. Not important at all
9. Ref/DK/NA

Q35.1 How important is the cholesterol content of other meats?

1. Very important
2. Important
3. Neutral
4. Somewhat unimportant
5. Not important at all
9. Ref/DK/NA

For each of the following that I read to you, please rate how important each would be in your decision to purchase goat meat products, just as you make decisions to buy beef, poultry, or pork. Please use a scale of 1 to 5 where "1" is very important and "5" is not important at all.

Q36. First, how important is your spouse's opinion on your decision to purchase or not purchase goat meat products?

1. Very important
2. Important
3. Neutral
4. Somewhat unimportant
5. Not important at all
9. Ref/DK/NA

[PROGRAMMER NOTE: IF Q23 = 3, THIS QUESTION IS SKIPPED (Q36)]

Q37. How important are your children's opinions on your decision to purchase or not purchase goat meat products?

1. Very important
2. Important
3. Neutral
4. Somewhat unimportant
5. Not important at all
9. Ref/DK/NA

[PROGRAMMER NOTE: IF Q23.1 = 3, THIS QUESTION IS SKIPPED (Q37)]

Q38. How important is your own opinion on your decision to purchase or not purchase goat meat products?

1. Very important
2. Important
3. Neutral
4. Somewhat unimportant
5. Not important at all
9. Ref/DK/NA

[PROGRAMMER NOTE: IF Q1 > 1, SKIP TO Q47]

Q39. DELETED

Q40. DELETED

Q41. How often does your family eat goat meat?

- | | |
|------------------------|---------------|
| 1. Weekly | 5. Quarterly |
| 2. Bi-Weekly occasions | 6. Special |
| 3. Monthly | 7. Refused |
| 4. Less than quarterly | 8. Don't know |

Q42. Do you get your goat meat from . . . ?

[INTERVIEWER NOTE: READ LIST, CHOOSE ALL THAT APPLY]

[PROGRAMMER NOTE: YES/NO TOGGLE]

1. Supermarket
2. Farmer
3. A friend not a farmer
4. Farmer's Market
5. Grow our own
6. Restaurant
7. Other place (SPECIFY) _____
8. Ref/DK/NA
9. Exit

Q43. Would you be willing or not willing to join a consumer-farmer cooperative if prices for goat meat were lower?

1. Willing
2. Not willing
9. Ref/DK/NA

Q44. Would you be willing or not willing to join a co-op if it had a more dependable source of goat meat?

1. Willing
2. Not willing
9. Ref/DK/NA

Q45. Would you be willing or not willing to join a cooperative that grew its animals organically?

1. Willing
2. Not willing

9. Ref/DK/NA

46. Would you be willing or not willing to join a cooperative that sold its members fresh, never frozen goat meat?

1. Willing
2. Not willing
9. Ref/DK/NA

Q47. How many people live in your home?

_____ number of people

99 – Ref/DK/NA

[RANGE: 1 – 99]

Q48 How many of the people are less than 18 years old?

_____ less than 18 years old

99 – Ref/DK/NA

[RANGE: 0 – 99]

Now I just need to ask a few questions about you personally so that we can compare your answers with different types of people.

Q49. What do you consider your race to be?

1. White [SKIP TO Q54]
2. African-American/Black [SKIP TO Q54]
3. Black Non African American [SKIP TO Q54]
4. Hispanic
5. Asian [SKIP TO Q54]
6. Multi-Racial (SPECIFY)(_____)[SKIP TO Q54]
9. Ref/DK/NA [SKIP TO Q54]

Q50. Are you of . . . ?

[INTERVIEWER NOTE: READ RESPONSES. CHOOSE ONLY ONE]

1. Mexican descent
2. Cuban descent
3. Puerto Rican descent
4. Spaniard
5. Or Other (Please list) _____

7. Ref/DK/NA

Q51. Are you the 1st generation, 2nd generation or another generation to live in the contiguous U. S. States?

1. 1st generation
2. 2nd generation
3. Other

9. Ref/DK/NA

Q52. DELETED

Q53. Which of your family members are Hispanic?

[INTERVIEWER NOTE: CHOOSE ALL THAT APPLY]

[PROGRAMMER NOTE: YES/NO TOGGLE]

1. Mother
2. Father
3. Spouse
4. Aunts or uncles
5. Cousins
6. Other
7. Ref/DK/NA
8. Exit

Q54. What is your age range?

- | | |
|-----------------------|-------------------|
| 1. Less than 20 years | 7. 60 - 64 years |
| 2. 20 - 24 years | 8. 65 - 74 years |
| 3. 25 - 34 years | 9. 75 - 84 years |
| 4. 35 - 44 years | 10. 85 years plus |
| 5. 45 - 54 years | 11. Refused |
| 6. 55 - 59 years | |

Q55. What is the highest grade of school or year of college you completed?

1. <HS School Diploma
2. High School Diploma/GED
3. Associate/Technical Degree
4. Some College
5. College Graduate
6. Post Graduate/Professional
9. Ref/DK/NA

Q56. INTERVIEWER: (If necessary: I know the answer to this question, but I am required to ask. Are you:)

1. Male
2. Female
9. N/A

Q57. We're almost finished and I would like to ask what your total gross household income for 2003 was – I don't need an exact figure, just an approximate category. So, from the list I am about to read to you, could you tell me if your total household income was:

- | | |
|------------------------|----------------|
| 1. <\$10,000 | 10. Don't Know |
| 2. \$10,000 - \$14,999 | 11. Refused |
| 3. \$15,000 – \$19,999 | |
| 4. \$20,000 - \$24,999 | |
| 5. \$25,000 - \$34,999 | |
| 6. \$35,000 - \$49,999 | |
| 7. \$50,000 - \$74,999 | |
| 8. \$75,000 - \$99,999 | |
| 9. \$100,000 or more | |

Q58. And finally, what state do you live in?

1. AL
2. AR
3. FL

4. GA
5. MS
6. NC
7. OK
8. LA
9. SC
10. TN
11. TX
- 99 Ref/DK/NA

This completes the survey and I want to thank you for taking the time to answer these questions. Have a nice evening. Good bye.

IMPORT FIPS

IMPORT MSA/NON-MSA

QUOTA: 250 FOR EACH STATE

APPENDIX B
SUMMARY OF DEMOGRAPHIC INFORMATION

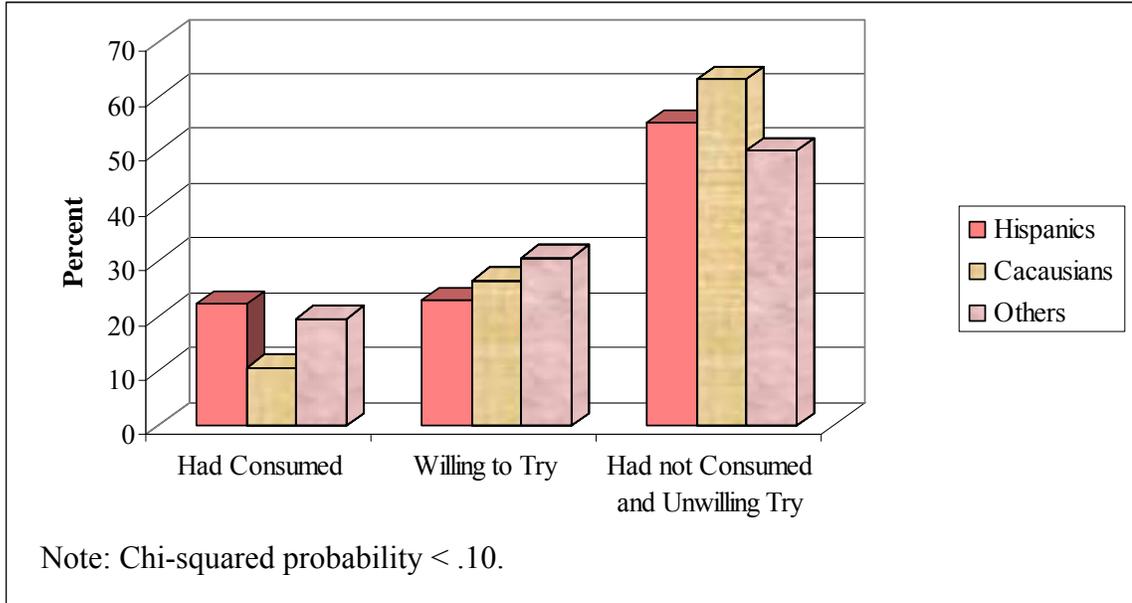


Figure B-1. Respondents' consumption preference for goat meat by ethnicity/race.

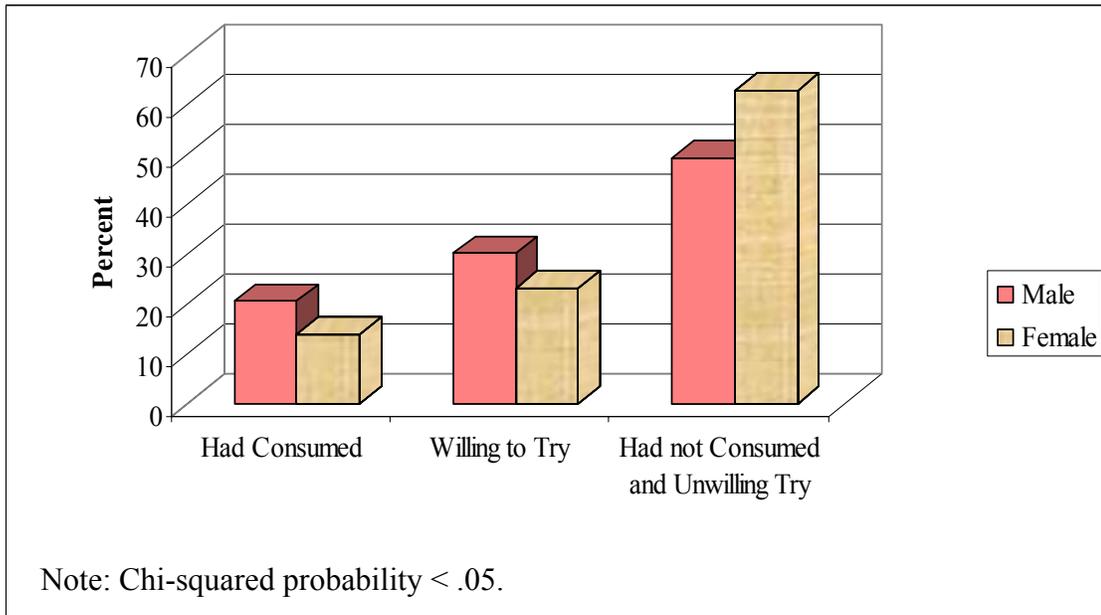


Figure B-2. Respondents' consumption preference for goat meat by gender.

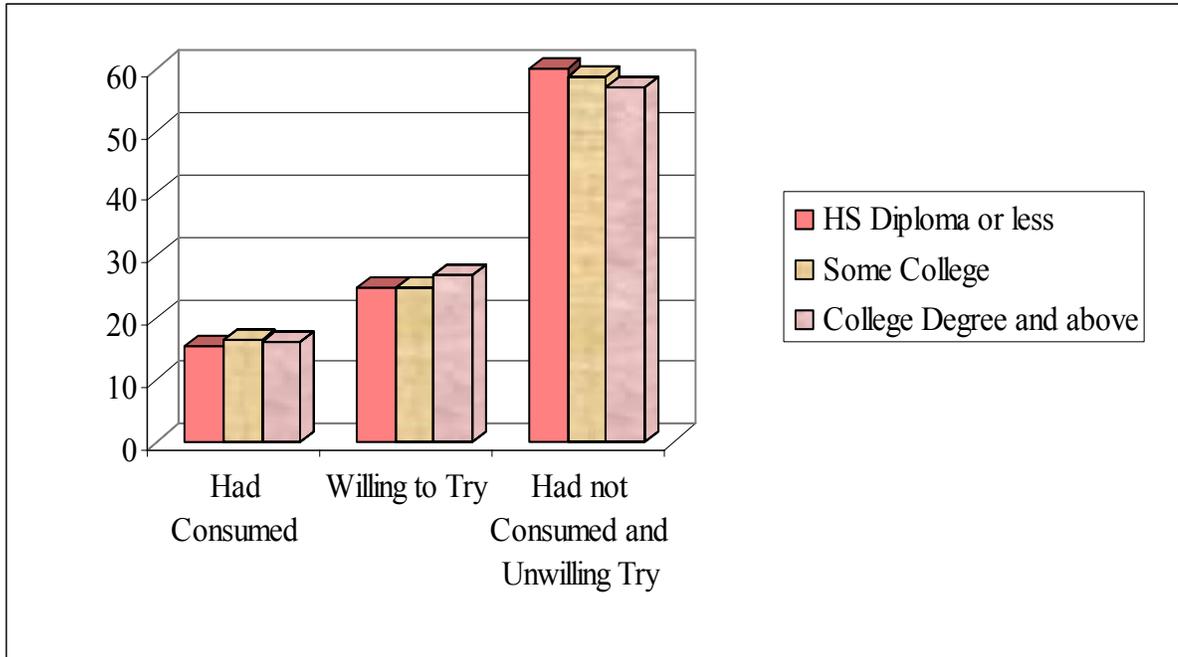


Figure B-3. Respondents' consumption preference for goat meat by educational attainment levels.

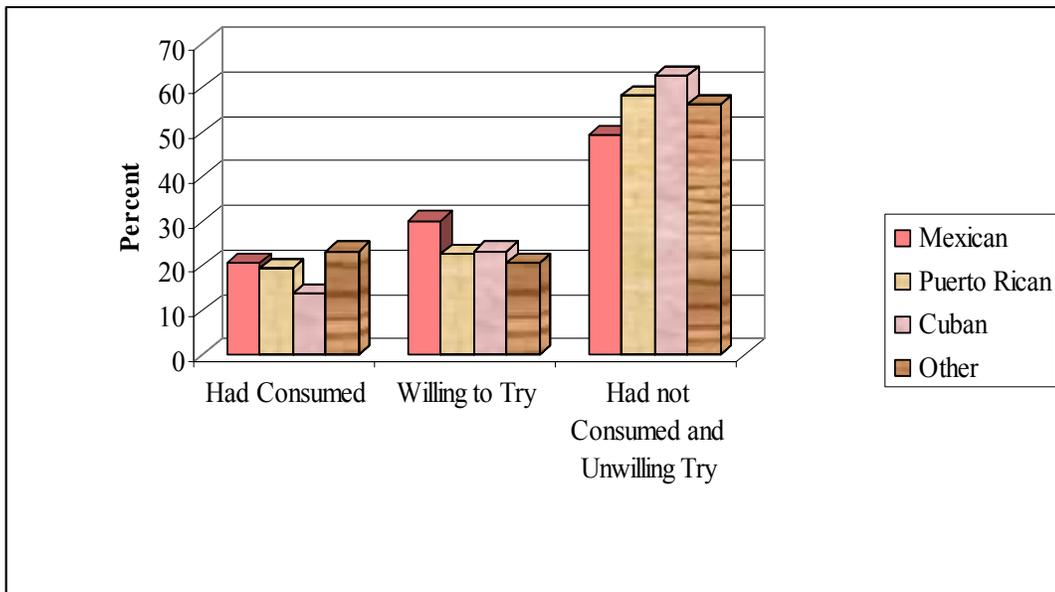


Figure B-4. Hispanic respondents' consumption preference for goat meat by origin.

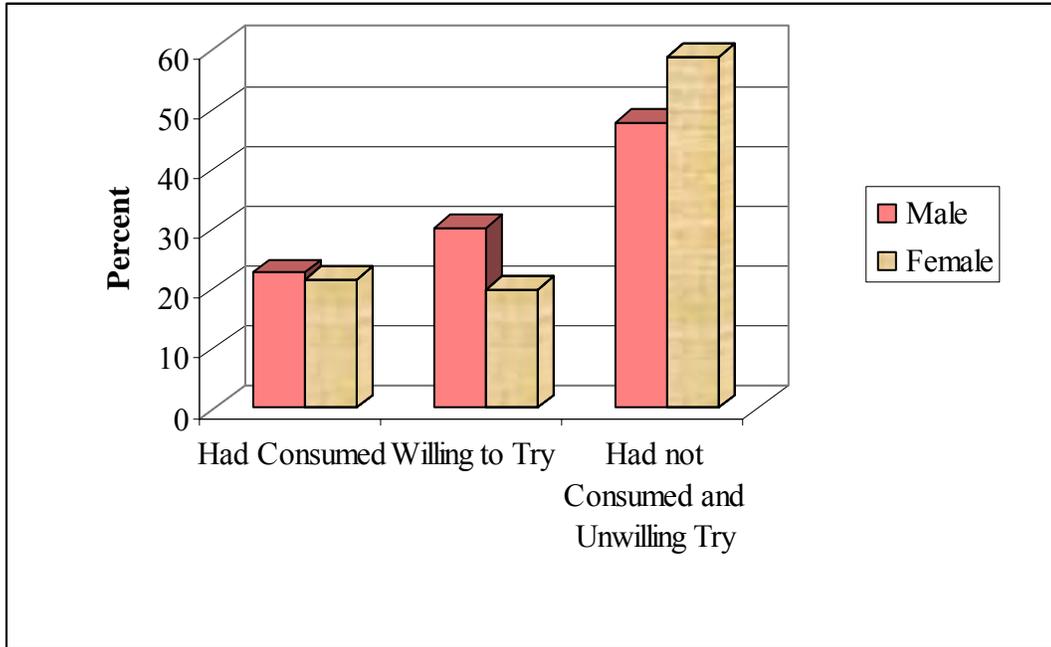


Figure B-5. Hispanic respondents' consumption preference for goat meat by gender.

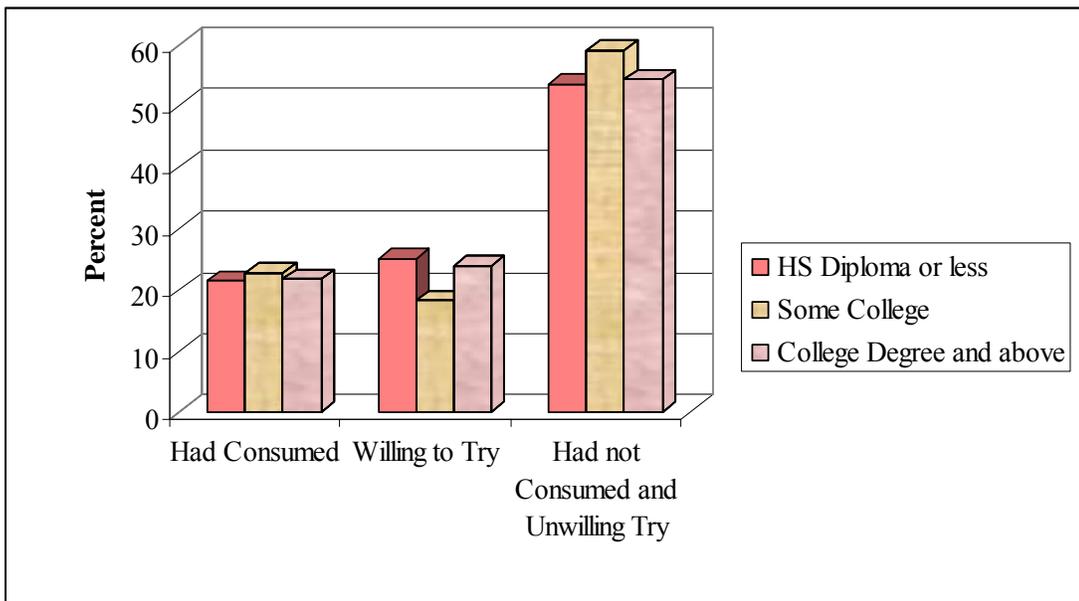


Figure B-6. Hispanic respondents' consumption preference for goat meat by educational attainment levels.

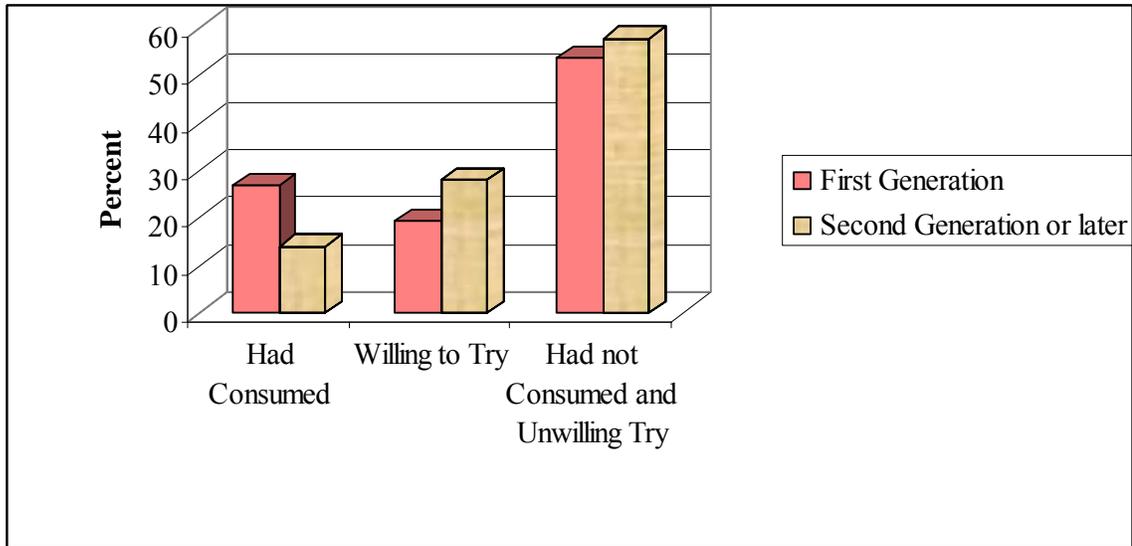


Figure B-7. Hispanic respondents' consumption preference for goat meat by generation in United States.

LIST OF REFERENCES

- Aldrich, John H., and Forrest D. Nelson. *Linear Probability, Logit, and Probit Models*. Edited by Michael S. Lewis-Beck. Vol. 45, *Quantitative Applications in the Social Sciences*. Newbury Park, CA: Sage Publications, Inc., 1984.
- Associated Press. 2005. "Polling the 'Cell Phone Only' Crowd: Pollsters, Researchers Tackle Hard-to-Track Population." In, Cable News Network, <http://www.cnn.com/2005/TECH/02/25/polling.cell.users.ap/index.html>. (accessed February 25, 2005).
- Chen, Kevin, Murad Ali, Michele Veeman, Jim Unterschultz, and Theresa Le. "Relative Importance Rankings for Pork Attributes by Asian-Origin Consumers in California: Applying an Ordered Probit Model to a Choice-Based Sample." *Journal of Agricultural and Applied Economics* 34 (2002): 67-79.
- Davis, Ernie and Zane Willard. 1996. "Goat Meat the "New" Lean Meat." In, Texas A&M University, Texas A&M Agriculture News, <http://agnews.tamu.edu/dailynews/stories/AGEC/Dec2096a.htm>. (accessed May 22, 2003).
- Degner, L. Robert. "Should You Market Chevron, Cabrito, or Goat Meat." Paper presented at the Regional Small Farm and Trade Show Conference, Tallahassee, FL, November 7, 1991.
- Degner, L. Robert and J. David Locascio. "Distribution of Goat Meat in Selected Metropolitan Florida Markets." Gainesville, FL: University of Florida, Food Resource Economics Department, Florida Agricultural Market Research Center, 1988.
- Degner, L. Robert, and C. T. Jordan Lin. "Marketing Goat Meat: An Evaluation of Consumer Perceptions and Preferences." University of Florida, Food Resource Economics Department, Florida Agricultural Market Research Center, 1993.
- Degner Robert, L., and Susan D. Moss. "The Florida Market for Goat Meat: 1999 Survey of Florida Meat Wholesalers." Gainesville, FL: University of Florida, Food Resource Economics Department, Florida Agricultural Market Research Center, 1999.
- Dillman, Don. *Mail and Telephone Surveys: The Total Design Method*. New York: Wiley-Interscience Publication, 1978.

- Frey, James, A. *Survey Research by Telephone*. 2nd ed. Vol. 150. Newbury Park, CA: Sage Publications, 1989.
- Gipson, Terry A. 1999. Demand for Goat Meat: Implications for the Future of the Industry. In *Demand for Goat Meat: Implications for the Future of the Industry*, Langston University, E(Kika)de la Garza Institute for Goat Research, http://www2.luresext.edu/goats/library/field/goat_meat_demand99.htm. (accessed January 20, 2004).
- Greene, William H. *Econometric Analysis*. 5th ed. Upper Saddle River, NJ: Pearson Education, Inc., 2003.
- Gujarati, Damodor. *Basic Econometrics*. International Edition 2003 ed. New York, NY: McGraw Hill Irwin, 2003.
- Harwell, Lynn. "Goat Marketing Strategies Along the East Coast." In *Florida's Goat Meat Industry*, edited by James R. Simpson, 15-21: Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, 1995.
- Hui, Jianguo, Patricia E. McLean, and Dewitt Jones. "An Empirical Investigation of Importance Rating of Meat Attributes by Louisiana and Texas Consumers." *Journal of Agricultural and Applied Economics* 27 (1995): 636-43.
- James, N. A. and B. W. Berry. "Use of Chevron in the Development of Low-Fat Meat Products." *Journal of Animal Science* 75 (1997): 571-77.
- Johnson, Dwain. "Composition and Quality of Goat Meat Produced." edited by James R. Simpson, 39-41: Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, 1995.
- Latalia, Thomas. "A Pseudo R² Measure for Limited and Qualitative Dependent Variable Models." *Journal of Econometrics* 56 (1993): 341-56.
- Lavrakas, Paul J. *Telephone Survey Methods: Sampling, Selection, and Supervision*. Edited by Leonard Bickman. Vol. 7, *Applied Social Research Method Series*. Newbury Park, CA: Sage Publications, Inc., 1987.
- McKenzie-Jakes, Angela. 2004. "Markets for Goat Meat." In, Florida A&M University, <http://smallfarms.ifas.ufl.edu/Livestock/goats.htm>. (accessed July 18, 2003).

- McLean-Meyinsse, Patricia E. "Assessing Factors Affecting Consumers' Decisions to Shop at Stores Offering Specialty Meat." *Journal of Food Distribution Research* 78 (1999): 134-39.
- . "Assessing the Market Outlook for Rabbit Meat in Louisiana and Texas." *Journal of Food Distribution Research* 31 (2000): 139-44.
- . "Factors Influencing Consumption or Willingness to Consume a Variety of Goat-Meat Products." *Journal of Food Distribution Research* 34 (2003): 72-79.
- Melton, Bryan, E., Wallace E. Huffman, Jason F. Shogren, and John A. Fox. "Consumer Preferences for Fresh Food Items with Multiple Quality Attributes: Evidence from an Experimental Auction of Pork Chops." *American Journal of Agricultural Economics* 78 (1996): 916-23.
- Miller, Pat. "Marketing Strategies for Goat Meat." In *Florida's Meat Goat Industry*, edited by James A. Simpson, 22-26: Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, 1995.
- Nelson, Mack C., N.B. Brown, Jr., S. Mobini, S. Gelaye, and S. Leak. "Production and Marketing Challenges for Goat Producers: Implication for Supply and Demand." Paper presented at the Professional Ag Workers Conference (PAWC), December 1999.
- Ohio Cooperative Development Center. "Market Analysis of Meat Goat in Ohio". Ohio Cooperative Development Center. Available at http://ocdc.osu.edu/pdf/anal_proposal.pdf. Accessed on. (accessed February 19, 2004).
- Peter, J. Paul, and James H. Donnelly, Jr. *A Preface to Marketing Management*. 9th ed. New York, NY: McGraw-Hill Irwin, 2003.
- Pinkerton, Frank, Lynn Harwell, William Drinkwater, Nelson Escobar. "Marketing Meat Goats: Channels, Supply, and Demand." Langston University, OK: Oklahoma Cooperative Extension Service, 1994.
- Pinkerton, Frank, David Scarfe, and Bruce Pinkerton. "Meat Goat Productions and Marketing." Langston University, E(Kika)de la Garza Institute for Goat Research, 1992.
- Putnam, Judith Jones, and Jane E. Allshouse. "Food Consumption, Prices, and Expenditures, 1970-97." edited by Economic Research Service (USDA-ERS) U.S. Department of Agriculture, 196, April 1999.
- Progressive Grocer. "Progressive Grocer, 69th Annual Report of the Grocery Industry." April 2002.

- Rhee, K. S., C.E. Meyers, and D.F. Waldron. "Consumer Sensory Evaluation of Plain and Seasoned Goat Meat and Beef Products." *Meat Science* 65 (2003): 785-89.
- Rhee, K. S., M. Oltman, and J. Han. "A Consumer Survey of Goat Meat: Perception, Knowledge, and Use." *Sheep and Goat Research Journal* 16 (2000): 111-16.
- Russell, Jeremy. "Targeting Hispanic Consumers." *National Provisioner* 216 (2002): 44-53.
- Salant, Priscilla, and Don A. Dillman. *How to Conduct Your Own Survey*. New York: Wiley, 1994.
- Schupp, Alvin, Jeffery Gillespie, and Debra Reed. "Consumer Choice among Alternative Red Meats." *Journal of Food Distribution Research* 29 (1998): 35-43.
- Sherman, David. 2002. Current Trends in Goat Production in the United States. In, http://www.neahi.org.nejlah/articles/articles_goatmeat.html. (accessed May 22, 2003).
- Simpson, James. "Introduction to Florida's Meat Goat Industry." In *Florida's Goat Meat Industry*, edited by James R. Simpson, 1-4: Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, 1995.
- Smith, C. G., M. I. Pike, and Z. L. Carpenter. "Comparison of the Palatability of Goat Meat and Meat from Four Other Animal Species." *Journal of Food Science* 39 (1974): 1145-46.
- Spaugh, Beth C. 1997. "Goat Carcass Characteristics." In, Cornell Cooperative Extension, <http://www.cce.cornell.edu/clinton/ag/goat-carcass.html>. (accessed August 20, 2004).
- Tomek, William G., and Kenneth L. Robinson. *Agricultural Product Prices*. 3rd ed. Ithaca, New York: Cornell University Press, 1990.
- U.S. Census Bureau. 2000. U.S. Census 2000. In, http://factfinder.census.gov/home/saff/main.html?_lang=en. (accessed August 20, 2004).
- U.S. Department of Agriculture, National Agricultural Statistical Service (USDA-NASS). 2002. Census of Agriculture 2002. In, USDA-NASS, <http://www.nass.usda.gov>. (accessed December 17, 2004).
- Verbeek, Marno. *A Guide to Modern Econometrics*. Southern Gate, Chichester, West Sussex, England: John Wiley & Sons, 2004.

Verbeke, Wim, Ronald W. Ward, and Jacques Viaene. "Probit Analysis of Fresh Meat Consumption in Belgium: Exploring BSE and Television Communication Impact." *Agribusiness* 16 (2000): 215-34.

Walsh, Robb. "Getting Your Goat." *Natural History* 104 (1995): 48-49.

Zachery, Nikki, and Mack C. Nelson. "Consumers Knowledge and Use of Goat Products: An Atlanta Case Study." Paper presented at the Professional Ag Workers Conference (PAWC), Tuskegee University, December 1992.

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Erika Knight was in Warner Robins, GA. After graduating from Warner Robins High School, she attended Fort Valley State University, Fort Valley, GA, and earned a Bachelor of Science degree in agricultural economics. In August 2004, Erika began the Food and Resource Economics Master of Science program and specialized in marketing.