BETTER BEEF AT THE SUPERMARKET:

SHOULD ANIMAL WELFARE STANDARDS BE MARKETED TO THE
CONSUMER?

by

Morgan Ashley Young

B.S., West Texas A&M University

A Thesis Submitted in Partial Fulfillment
of the Requirements for the Degree

MASTER OF AGRICULTURAL SCIENCES
Major Subject: Agricultural Media and Communication

Department of Agricultural Sciences
College of Agriculture and Natural Sciences

West Texas A&M University
Canyon, Texas
May 2019

ABSTRACT

Discoveries and standards concerning animal welfare have proven successful for beef producers from European countries. However, the United States has not yet had an animal welfare program marketed to the consumer. There are many programs within the U.S. that promote proper animal care. One of these programs is the Beef Quality Assurance program that is offered by the U.S. Beef Check-Off. The Beef Quality Assurance program sets standards for care for beef raised in the U.S. This raises the question of whether or not the program would be viable in the consumer market to receive a premium.

This research describes animal welfare standards set in Europe, branding of products currently in the U.S. that receive premiums, and consumer preference and purchase behaviors. A survey was conducted that captured the U.S. consumer perceived importance of animal welfare standards modeled by the Beef Quality Assurance guidelines, as well as, willingness-to-pay.

The project found there is a broad market for beef that comes from a Beef Quality Assurance Certified facility. This market is heavily determined by demographics as well as certain guidelines of the program that the consumer finds important in their purchasing decision. The results also indicated that if the Beef Quality Assurance

Certified Beef were marketed the consumer, consumers would be willing to pay a premium.

ACKNOWLEDGMENTS

Page intentionally left blank

Approved:

_____   _____

Dr. J. Tanner Robertson   Date

Chair, Thesis Committee

_____   _____

Dr. Troy Tarpley   Date

Member , Thesis Committee

_____   _____

Dr. Dee Griffin   Date

Member, Thesis Committee

_____   _____

Dr. Lance Keith   Date

Head, Department of Agricultural Sciences

_____   _____

Dr. Kevin Pond   Date

Dean, Paul Engler College of Agriculture and Natural Sciences

_____   _____

Dr. Angela Spaulding

Dean, Graduate School   Date

Table of Contents

List of Figures and Tables

CHAPTER 1

INTRODUCTION

Beef animal welfare (BAW) is not a new issue for many countries. The number of people who are commonly concerned about it is increasing by the year. Lives of the animals from birth to death is an important issue to consumers. The ethics and sustainability of the practices are starting to be questioned over meat quality aspects (Henchion, McCarthy, & Resconi, 2017). Quality is hard to define for the consumer but, for the beef industry, means a safe and wholesome product (Beef Quality Assurance, 2008).

Consumers have claimed to be worried about an animal's diet, free movement, stress, and transport space. The Beef Quality Assurance Program (Beef Quality Assurance, 2008), offered by the Beef Check-Off, provides the beef producer, transporter, feeder, and steward with the education that provides a safe and wholesome product for the consumer. The BQA program acts as a guidebook and certification program that creates an animal welfare plan for individuals who handle cattle used for consumption. The BQA program's guidelines are an in-depth set of practices of feeding, transporting, adequate housing, and reducing stress of beef animals effectively and efficiently (Beef Quality Assurance, 2008).

Trust in the producer to provide these necessary amenities and to abide by the practices is minimal and needs to be improved. Consumers trust labels and certifications (Ward, Lusk, & Dutton, 2008). If the beef industry marketed BQA certified beef to the consumer, the trust in animal welfare practices may increase. The consumer may be more drawn to buying safe and wholesome beef that was known to be produced ethically and sustainably. Consumers may even be willing to pay a premium on this type of beef that is certified by animal welfare standards of the BQA program.

Purpose for Research

There has been a boxed beef program called Certified Angus Beef that has received a premium at supermarkets for the perceived/ known quality of the product. In Sans and Sanjuán-López's (2015) study, 54.9% of respondents were willing to pay a premium for animal welfare certified beef that was labeled. However, socio-demographics did play a factor in the willingness to pay (Sans & Sanjuan-Lopez, 2015). The U.S. will be a key player in determining if the consumer will pay a premium for animal welfare standard certified beef. The BQA program is the premier animal welfare certification that, if consumers have knowledge of the program, would prove to consumers that producers do take precautions to create a safe and wholesome beef product (Beef Quality Assurance, 2008).

Research Questions

This study intends to answer the following research questions:

1. Would consumers buy BQA Certified Beef over another uncertified beef steak?

2. Would consumers be willing to pay a premium for BQA Certified beef?

3. Would the knowledge of the BQA program increase consumers' trust in the beef industry?

Limitations

The following limitations were identified in this study:

1. This study was limited to hypothetical buying situations where no money was exchanged.

2. This study was limited to giving a small amount of information about the BQA program to the respondent.

Assumptions

This study was conducted under the following assumptions:

1. Participants did not have a full understanding of the BQA program.

2. Participants answered all questions truthfully and accurately.

3. Participants did not use any other sources during the time of the survey to aid in answering any of the survey questions.

4. The results, findings, and implications can be generalized for the entire U.S. population.

CHAPTER 2

LITERATURE REVIEW

Consumers are very concerned about where their food originates. One sector of the agricultural industry that is under constant questioning of their practices is the meat animal sector, the beef industry specifically (Henchion et al., 2017; Sans & Sanjuan-Lopez, 2015). However, there are classes and certifications, such as Beef Quality Assurance, that cattle farmers and ranchers can obtain assuring they are implementing ways to raise their animals in the highest standard. Thus, this prompts the question of whether or not consumers would buy more beef or pay a premium based upon labeling of certified humanely raised beef. This literature review will discuss consumer concerns toward beef quality based upon previous studies, the content of the Beef Quality Assurance certifications and classes that beef producers can attend to certify themselves, and previous studies of consumer willingness to pay for beef from a certified beef animal welfare producer.

Consumer Concerns

Consumer trust in meat purchases is mostly based on the safety of meat (Cardello, 1995). Trust is based upon relational and calculative trust. Relational trust is trust in the relationship created by the producer and the consumer and the producer's intentions within the job he or she has. The definition of calculative trust is past behavior producing

restrictions on future behavior and competencies (Drescher, Jonge, Goddard, & Herzfeld, 2012). For this study's purpose, the focus will be on relational trust because the consumer should trust the intentions of the

producer from the birth of a calf to the processing of the beef (Drescher et al., 2012).

In Henchion's et al. (2017) study of beef quality, researchers found the top three credence attributes, the attributes the consumer does not physically experience, among studies conducted between the years of 2000 and 2013 are that of origin, animal welfare, and production system/feeding. Consumers like to romanticize the "farm" (Henchion et al., 2017). The idea of knowing where the beef they are eating came from brings them a step closer to the origin. Origin refers to the certification/labeling of beef (Henchion et al., 2017). Animal welfare concerns and the ethics that come with that is not a new issue.

"The number of people that are concerned about animal welfare is increasing and that the nature of the concern has changed over time with greater concern for the lives of the animal and the risks associated with intensive systems of meat production," (Henchion et al., 2017, p. 6).

The aspect of the production system/feeding of animals that consumer questions is whether the producer are feeding the beef animal in a way that produces health benefits for the consumer.

Sans and Sanjuan-Lopez's (2015) study on beef animal welfare, showed that living conditions of beef animals were most important to the consumer. These living condition items of concern for the Spanish and French consumers consisted of diet, free movement, stress, and transport space. The areas of lowest trust in the producer stemmed from transport conditions, rest before slaughter, stress prevention, and expression of

behavior. The consumers thought all the animal welfare characteristics tested were important, however, their trust in farmers and ranchers complying with animal welfare practices was no more than 40 % (Sans & Sanjuan-Lopez, 2015).

Animal welfare to the consumer was identified as "stress absence, environment sustainability, feeding, adequate space, suffering absence, animal dignity and respect" (Massaglia, Merlino, & Borra, 2018). Consumers indicated a greater value on ethical production.

"The negative trends in consumption of red meat are motivating producers to establish strategies of reassurance through quality certifications, such as voluntary communicating animal welfare in meat products. These certifications imply the satisfaction of quality standards more restrictive than those established by the binding legislation, but guarantee an added value to the product" (Massaglia, et al., 2018).

Research shows that the U.S. red-meat system is falling behind many of its major competitors and trading partners in terms of traceability, transparency, and other quality assurances (Dickson& Bailey, 2002). Europe has developed systems enhancing the credibility of assurances about certain attributes such as animal welfare, and food safety issues such as Bovine Spongiform Encephalopathy. Accountability is expected through all stages of the marketing chain in Europe. (Dickson & Bailey, 2002).

Living conditions of the animal before slaughter seem to be a driving force behind all consumer distrust in the beef producers around the world (Sans & Sanjuan-Lopez, 2015; Dickson & Bailey 2002; Henchion et al., 2017). According to consumers, beef

quality is not just based upon a good eating experience, it is the time before the slaughter and processing that makes the consumer happy in the end. Due to this demand, certain programs are set to assure the quality of beef is set to consumer standards. These programs assure animal welfare standards and accountability in all stages.

Beef Quality Assurance Program

The Beef Quality Assurance program began in the mid-1980s when many cattlemen's associations began state-level quality assurance programs. Now, it is a national program funded by the Beef Checkoff (Beef Quality Assurance, 2008). There are five formats used in animal welfare assurance programs. Non- mandatory welfare codes and guidelines, regulations, inter- governmental, assurance programs of corporate customers and their associations, and production differentiation and labeling programs. The Beef Quality Assurance program falls under the non-mandatory welfare code and guidelines. That is, the program does not impose change on the industry but rather is meant to generate support from the existing industry players. It serves more as an educational role for producers and for consumers about what practices are accepted in the industry (Fraser, 2008)

Although quality can be interpreted in many different ways, Beef Quality Assurance is committed to not only meeting expectations but also exceeding them. The BQA program not only focuses on food safety but also "encompasses performance, health, carcass characteristics and eating satisfaction." (Beef Quality Assurance, 2008, p.6).

Goal of the BQA. To create a positive eating experience and peace of mind for the consumer, the BQA has set objectives to set standards of the program to achieve its goals.

The BQA objectives include setting standards for quality and safety for elements that affect animal welfare, environmental stewardship, production performance, and biosecurity, record keeping that validates the fulfillment of program and Food and Drug Administration/ United States Department of Agriculture/ Environmental Protection Agency guidelines, hands-on training, and technical assistance. (Beef Quality Assurance, 2008). All of the objectives help, "to ensure the consumer that all cattle shipped from a beef production unit are healthy, wholesome and safe, their management has met FDA, USDA and EPA standards, they meet quality requirements throughout the production system and are produced with environmentally-sound production practices" (Beef Quality Assurance, 2008, p.7).

BQA content. The Beef Quality Assurance Program covers many different sectors. The program oversees the National Beef Quality Assurance, National Dairy BQA Producers, Antibiotic Stewardship for Beef Producers, Cattle Industry Guidelines for the Care and Handling of Cattle, and Transportation Quality Assurance. Because the primary focus is on beef instead of dairy in this literature review, this review will focus on National Beef Quality Assurance, Antibiotic Stewardship for Beef Producers, Cattle Industry Guidelines for the Care and Handling of Cattle, and Transportation Quality Assurance.

The National BQA covers everything from the environment to antibiotics to feedstuffs (Beef Quality Assurance, 2008). This course is a Total Quality Management philosophy for cow-calf and stocker producers. Cattle Care Practices covers the following guidelines: following a proper health plan, avoiding bruising, injury, and stress during handling and transporting, providing clean feed and water, proper management of feed, providing a safe environment for cattle, storage of health and traceability information.

The BQA asks that the producers follow a "Quality Assurance Herd Health Plan." This health plan includes guidelines that prevent disease and vaccinations. A veterinarian will work with the producer to develop, revise, and review the herd health plan annually. There are multiple sections in the manual as well as the course that cover many different types of operations and the expectations for the health plan (Beef Quality Assurance, 2008). The handling of cattle is the majority of the manual. Stress in cattle is caused by mishandling. Cattle have 300-degree sight. So distractions outside of the working area could cause frightened cattle thus inducing stress. Chutes and ramps should have solid walls to avoid this. Loud noises should also be avoided when working with cattle. More noise equates to more stress. Alleys and chutes should influence the natural movement of cattle which is a single file and in a curving fashion. Cattle should also be in a herd because if they are isolated, more accidents and a higher stress level occur. Adequate water and environmental protection is important when increasing the performance of the cattle. Pen maintenance of confined cattle should be a top priority due to mud and manure. Equipment involved in handling cattle should be inspected prior to processing. There should be no sharp corners or objects that would create injury. Floors in processing facilities must create traction for cattle to prevent injuries. Traceability and health information must be stored for a minimum as required by law.

Feed ingredient guidelines include a quality control program to protect feeds from mold or chemicals, testing feed for quality and contamination before use, strictly following the Food and Drug Administration protein source regulations, using scientifically proven techniques and strategies when selecting feed ingredients.

Medication used in cattle feed guidelines include: following: Food and Drug Administration's "Good Manufacturing Practices" when using FDA approved medications, follow "Judicious Antibiotic Use Guidelines", strictly following FDA approved medication labels when caring for cattle, avoid chemical residues in food from cattle by adhering to withdrawal times, and keeping records of feed rations and medicated feed.

Processing/treatment and records include: keeping extra-label use to a minimum, record the identification date treated, product administered (lot and serial number), dosage, route and location of administration, earliest date of satisfying the withdrawal date, the name of the person administering the treatment, all harvest animals are checked by personnel to ensure that animals have met the withdrawal times, and transferring treatment records to the next production stage. Injectable Animal Health products only had two guidelines that pertained to this study which were, following label requirements, and no more than 10cc of product administered in the intramuscular region.

Management practices for animal treatments and health maintenance is covered again within the manual. The headlines include Aminoglycosides (which are not allowed in the BQA program), Veterinarian Assistance, Treatment Protocol, Veterinary Prescription, Injections, and Bent and Broken Needles. Vaccines should always be given in the neck to avoid abnormalities in the meat. Implants, withdrawal times, and extra-label drug usage are the most important as far as consumer education is concerned. The withdrawal time is the amount of time indicated on the vaccine or antibiotic that an animal will need to clear the medication out of their system. The animal may not be slaughtered until that withdrawal time is up. Therefore, avoiding medication residue in

beef for consumption. Extra-label drug use is only used under the order of a veterinarian and animals may not be slaughtered until their last dose withdrawal time is up. Antibiotic use guidelines are also listed (Beef Quality Assurance, 2008).

Demand for the BQA Certification

There is a high demand for science-based animal welfare standards by consumers (Blandford, Bureau, Fulponi, & Henson, 2002). Quality assurance programs have been primarily focused on food safety. Today, livestock traceability, environment, and animal welfare are a "demonstration of due diligence" in livestock production (Edge, M. K., & Barnett, J. L., 2009). Beef Quality Assurance is a top-of-the-line animal welfare program that focuses on the sustainability of cattle and the best eating experience for the consumer (Beef Quality Assurance, 2008). Cargill, which is one of the world's top beef packers is dedicated to sustainability (Cargill: Sustainable Beef, n.d.). "Cargill is working to nourish the world in a safe, responsible and sustainable way." Sustainable beef is no exception. Cargill's "social responsibility" includes animal health and welfare, the health and safety of workers in the beef supply chain, and environmental stewardship. Thousands of farmers, ranchers, and producers work with Cargill to increase the efficiency of beef production which works and in hand with cattle health and welfare (Cargill: Sustainable Beef, n.d.).

> "We ensure that the animals under our care are raised in an environment that satisfies their physical, nutritional and health needs, and that they are treated in a manner that minimizes their distress.
>
> We work extensively with our employees, farmer partners and others to ensure they understand how to properly handle animals with care and dignity. We do not

tolerate abusive behavior directed at animals by employees, suppliers or others in our supply chain." (Cargill. Sustainable Beef, n.d.)

Because of Cargill's passion for the BQA program, Cargill had a goal that by 2018 90% of their U.S. beef cattle supply from feed yards would come from BQA- certified facilities (Cargill: Assessment & Certification, n.d.).

The Pennsylvania Beef Council was one of the first state Beef councils to implement a BQA Certified Producer label to place on beef. The label costs nothing to the producer. The marketing for the program is minimal compared to the PA Preferred Certification, which may be why the BQA program does not receive much of a premium.

BQA Assessments and Audits

Assessment guides and third-party audits are becoming a part of doing business in beef cattle production. (Eirch, R., n.d., Nebraska BQA). Beef processors, in particular, are implementing third-party BQA audits. The BQA audit is a tool used for educating and evaluating beef producers' BQA practices. The definition of an audit is the act of officially examining for verification. BQA audits and assessments can be done in first party, second party, or third party (Eirch, R., n.d., Nebraska BQA). The Beef Quality Assurance Feedyard Assessments are a useful tool for assessing sites for cattle handling practices (NCBA, 2009). The numeric scoring enables feedyard managers to improve cattle handling practices (Woiwode, Grandin, Kirch, & Paterson, 2016)

Most notably, Cargill performs annual third-party animal welfare audits strictly adhering to the BQA and North American Meat Institute's animal handling standards.

Cargill also follows and audits the Beef Transport Quality Assurance Certification, an extension of the BQA program (Cargill: Assessment & Certification, n.d.).

When today's consumers purchase beef products they want to know "How and where the cattle were raised." (Eirch, R., n.d., Nebraska BQA). This statement also contributes to the food safety aspect and the eating experience that a consumer will face. Product integrity will be verified during a third-party audit to ensure a wholesome, safe, and quality beef product for the consumer (Eirch, R., n.d., Nebraska BQA). Cattle handling practices are important to report using a systematic approach because feedlot managers can then measure improvement. Ongoing audits push for a positive change in cattle handling (Woiwode, et.al., 2006).

Branded Beef Products

Beef's share of domestic product meat demand is declining, and the U.S. beef herd continues to contract, as pork and poultry offer increasingly convenient, consistent, and less expensive products (Gillespie, Basarir, & Schupp, 2004). Branded beef programs market beef based upon specific qualities that are more likely to provide a pleasurable eating experience for consumers. Branded programs offer a means for satisfying consumer demand for high quality and differentiated beef products (Hanagriff, Rhoades, & Wilmith, 2008).

> "The welfare quality brands target consumer segments specifically selecting animal products with information that tells a story about the good and natural animal life—stories that correspond to consumers' ideas of animal welfare" (Borkfelt, Kondrup, Röcklinsberg, Bjørkdahl, & Gjerris, 2015, pg. 1064).

Beef branding began with the Certified Angus Beef Program. However, the effort to set products apart from each other, branding must occur. Today, consumers see the branding of All Natural, Grass Fed, Organic, No Antibiotics, and Guaranteed Quality to name a few. Despite the apparent growth in branded beef expenditures, relatively little is known about the characteristics of retail branded beef (Hanagriff, et al., 2008).

Brands can serve a valuable role for consumers purchasing beef at retail. Retail brands, price, special labels, quality grades, and packaging material are cues that consumers rely on to assess the expected quality or eating experience. Branding serves as two types of quality cues, non- physical and physical. Physical branding cue is specific to tenderness, flavor, and juiciness. For example, the branding for a physical cue could be "Guaranteed Tender" or "Lean" while non-physical branding cues reflect consistency or trust. For example, "Certified Angus Beef" or "Grass Fed." Brands also serve as a risk-reduction tool, which reduces the likelihood of an unsatisfactory experience. (Ward, et al., 2008).

Hanagriff's et al. (2008) team studied the decision variables that were most influential when consumers purchase branded beef products, focusing on consumer value associated with marketing attributes beef marketing companies used to promote their products. Variables that were tested included tenderness, color, source verified, and other factors. The researchers found that Guaranteed Tender, Guaranteed Satisfaction, Low Price, Low Fat or lean were the top four branded product labels that were considered "Always Important" to consumers. In addition, Researchers measured which form of advertising, coupon, website, recipe, or newsletter reached the largest buyers. This study identified that as far as steak advertising preference, recipes are preferred by higher

purchasing consumers. Ground beef consumers were mixed when it came to advertising preference (Hanagriff, et al., 2008).

Branding is a concern when it comes to the Beef Quality Assurance program. Due to the consumer not being able to see the physical appearance of the program, branding would be categorized as non-physical. BQA Certified beef would also provide for a uniform eating experience as the program's slogan is to provide, "a safe, wholesome, and healthy beef supply" (Beef Quality Assurance, 2008) thus the branding would serve as a risk reduction tool (Ward, et al., 2008). Branding creates experience at the market by cueing the consumer with non-physical and physical cues. However, advertising and a marketing plan would need to be explored.

The Original Branded Beef Program: Certified Angus Beef

To best look at branding options for the BQA program, researching the first branded beef program in the United States. The very first branded beef program that differentiated from other retailers was the Certified Angus Beef brand (Reiman, M., 2008). The CAB brand was the first USDA certified program and was designed with entirely science-based carcass specifications. (Certified Angus Beef, n.d)

> It's the tale of a group of farmers who, in the 1970s, got together and said
> collectively, "We can do better. We can produce beef that's extremely
> tender, juicier and always packed with flavor." (Certified Angus Beef, n.d)

The first pound of CAB was sold in 1978 at a supermarket in Columbus, Ohio. By the early '80s, the CAB brand was marketing a million pounds a month. In comparison, today a million pounds of CAB can be sold within a few hours (Rieman,

2008). Forty years later, CAB is a recognizable name at the supermarket. The CAB is a trademark of the American Angus Association to promote Angus cattle and to provide a uniform quality product (Henderson, 2012). The CAB program prides itselve on high-quality carcass characteristics (Rieman, 2008). Today, that consistent product is resembled by ten standards that fall under three different categories: marbling and maturity, consistent sizing, quality appearance, and tenderness. Modest or higher marbling, medium or fine marbling texture, and only cattle harvested younger than 30 months of age qualify as "A" maturity under the marbling and maturity category. In the consistent sizing category, a 10- to 16-square-inch ribeye area, 1,050-pound hot carcass weight or less, and less than 1-inch fat thickness is considered uniform. Lastly, superior muscling to restrict the influence of dairy cattle, a carcass practically free of capillary ruptures, for a most visually appealing steak, no dark cutters, and no neck hump exceeding two inches are influential in the quality appearance and tenderness category of the CAB Brand. The CAB brand has three product options to choose from that includes CAB Brand, CAB Brand Prime, and CAB Brand Natural. (Certified Angus Beef, n.d) The CAB Brand has also branched into value-added product categories like meats, frankfurters and heat-and-serve entrees (Certified Angus Beef, n.d).

Building demand for the CAB brand began when USDA quality grade standards had been lowered and the Angus influence had fallen to one-third of the nation's herd. The CAB brand knew consumers wanted a highly marbled and consistent product. However, an incentive needed to be implemented for producers to create that product. In the 1980s the first signs of premiums were noticed.

Because of this branding, the Angus breed influences 60% of the cowherd base. In 2007, packers were paid $250 million in premiums just for the CAB component. Restaurants and retailers are demanding the CAB Brand (Reiman, 2008).

Consumer Trust in Food Labels

Increasing consumer welfare is done through food labels because they provide better consumer protection enabling choice (Krissoff, et al., 2004). In correlation to labeling, to choose a food product, reading and understanding are highly related to the educational level of the consumers (Guerrero, 1995). In Meilke Janssen and Ulrich Hamm's study on Governmental and private certification labels for organic food: Consumer attitudes and preferences in Germany, consumer trust and preferences of organic labels. Germany has by far the largest market for organic food in Europe. While the organic market continues to grow, the European Union (EU) regulates the principles of production, certification and labeling. Thus, organic food carries out an EU label (Janssen & Hamm, 2014).

> "The German organic market is characterized by a number of different governmental and private organic certification labels. The variety of labels is the product of the manner in which the German organic market developed. Labels from private organic farmers' associations have the longest tradition. In 1992, the former EU logo for organic food was introduced at the EU level, but this label was rarely used in the German market. By contrast, the German governmental 'Bio-Siegel' logo quickly penetrated the German organic market after its introduction in 2001. The standards for using the Bio-Siegel logo are directly based on EU

standards, and the label can be used upon request on all organic products

that have been certified according to EU requirements (Öko-

Kennzeichengesetz). The newest organic certification label in the German

market is the new EU logo for organic food. In contrast to the

aforementioned voluntary labels, the use of the EU logo for organic

products is mandatory within the EU" (Janssen & Hamm, 2014).

Due to the variety, retailers, producers and processors must decide which labels

to display. In a study done by Franken, Parcell, & Tonsor (2011) one-third of

respondents currently purchased all-natural, grass-fed/lean, or locally produced beef

and around two-thirds purchase U.S. produced beef. Henson & Northen (2000)

reported that consumers request additional information with respect to meat quality

and safety which is typically indicated on labeling.

Consumer Behavior

When considering purchasing strategies, the theory of planned behavior may

explain why a consumer buys one product over another. Icek Ajez (1991) connected

anticipated behavior to intentions. Intentions are determined by three factors which are;

attitude toward behavior, subjective norm, and perceived behavioral control. The theory

is largely based upon the "presence or absence of requisite resources and opportunities"

(Ajzen, 1991, pg 196). These opportunities are influenced mostly by second-hand

information and reduce the difficulty of performing the behavior. Social norms may lead

the consumers to look to television resources or family/friend resources for

recommendations on their food options. Consumers could possibly grab a product that is

at an easier sight or arm level rather than a product that is on the top or bottom shelf or

further back into the meat stand. Items must be strategically placed or eye-catching if this is true (Ajzen, 1991).

Past behavior has residual effects that can influence habit if the indicator of the behavior is stable and reliable it will become a habit. (Ajzen, 1991) Thus, if a consumer buys a certain product of a certain brand that is trustworthy and stable it will become a habit to buy that product (Ajzen, 1991). Moral norms create a correlation between moral obligation and intentions. Perceived moral obligations add to predictive behavior by 3-6% adding to planned behavior (Ajzen, 1991). Thus, if consumers feel like there is a moral obligation to buy meat that is humanely raised they will typically buy meat that is approved by the BQA certification.

Consumer's purchasing decisions also depends on demographics as shown in Hanagriff, et. al. (2008) study. Demographics play a part in consumer behavior because the majority of respondents' household income was $45,000 to $70,000 with the mid-point being $73,000. The highest frequency purchased item was ground beef. Respondents that participated in the research were 44.20% male and 55.80% female. Most notably in this research, purchasing habits may be related to gender, especially when it comes to steak purchasing. Females are average purchasers (1 week) of steaks while males are highest in the above category in buying steaks (>1 week). The research also discovered the statistically significant difference is males tend to have a higher frequency in purchasing steaks. Also, in buying decision factors, all areas that were significant females valued these higher than males. Franken et al. (2011) proved that 62% of consumers made beef purchases based on health considerations. There are different thoughts, life experiences, needs, and wants (Ko¨ster, 1996). The product that the

consumer buys can be dependent on their generation, education, cultural background, etc (Issanchou, 1996).

Willingness to Pay

The consumers in Henchion, et. al. (2017) study, found consumers wanted to know the origin of the beef that they were buying. The Pyrenees (Sans & Sanjaun Lopez, 2015) created a study that not only encompassed beef quality attributes, but also the consumers' willingness to pay (WTP) for beef that was raised within the animal welfare standards. The willingness to pay for beef with quality labels was 54.9%. More than 65% of the consumers would purchase beef with a discount regardless of many factors. Even though animal welfare was very important to the consumers, only 20.4% of the consumers polled would purchase directly from the producer.

A negative correlation was found on the number of educated people willing to pay for the certification (Sans & Sanjaun- Lopez, 2015). Women and the elderly were willing to pay more for the animal welfare certification. Higher income levels also favored paying more for the certification.

In Jassen and Hamm's study on certification labels, willingness to pay measures can be determined if price is one of the systematically varied attributes. Measures are inferred by participants choices. Random Utility Theory assumes that an individual strives to maximize utility and therefore chooses the alternative with the highest perceived utility. Thus, a choice experiment, in this case, using the Random Utility Theory was used. The researchers' experiment used apples and eggs with the participants using a choice set of apples or eggs and made a buying decision for both products. Each alternative for each choice set carried different organic labels. Participants were similar to

real buying experiences using real apples and eggs as stimuli. The results of the choice experiments proved that tested labels had a much greater influence on consumer choices than the different price levels indicating low price elasticity. WTP for organic labels was seemingly high in all cases as price did not seem to influence choice as much as the labels did. However, WTP for the EU logo was relatively low compared to Bio-Siegel and Demeter logos. The comparison showed that WTP was highest for the label with the highest trust rating (Jassen & Hamm, 2014).

Consumers WTP for the traceability aspect of meat was explored by Dickson and Bailey in 2002. In terms of traceability of beef products, the average premium paid was $0.23 while assurances on animal treatment $0.50. A premium for extra assurances in food safety was $0.63. Subjects in the beef experiment would pay significantly more for animal welfare than traceability alone, and significantly more for extra food safety than traceability alone. Considering that this study was done in 2002, it can be assumed that the significance in extra food safety could have been attributed to the food scares that could have been occurring around that time frame. Cardello (1995) pointed out, the safety that is perceived by the consumer is critical to the purchase.

Each buyer has an upper limit and lower limit to what they are willing to pay (Steenkamp, 1989). Depending on what previous information and experience as well as quality cues there is at the point of purchase creates this limit. According to Lister (1995), if a consumer believes in production systems having an animal welfare system in place, consumers will not be willing to pay extra for what they believe to be normal.

CHAPTER 3

METHODOLOGY

This study was designed to be a two-part, questionnaire to first identify consumer's perceived importance of animal welfare standards and secondly to identify their willingness to pay for those attributes as it applies to the BQA program, The questionnaire was composed of 12 demographic questions, 20 perceived animal welfare importance questions, and two scenarios predetermined based on literature reviewed and was designed after a perception study and a pricing study (Checketts & Bailey, 2006).

The first set of questions respondents encountered was a consumer perception study. The beginning of the survey started with a qualifying question that asks if the participant eats beef. If the participant chose "Yes" then they moved on to the rest of the survey. Using a panel of experts, the survey was created by taking each of BQA's National Guidelines in the categories of Care and Husbandry Practices, Feedstuffs, Feed Additives and Medications, Processing/Treatment and Records, and Injectable Animal Health Products and asked participants to choose how important those attributes were to them on a 1- 10 scale with 1 being "not at all important" and 10 being "very important". An option of 0 for not knowing enough information was included. Composition of the survey was as follows: Cattle Care practices (eight questions), Feedstuffs (five questions), Medication in Feed (six questions), Processing and Treatment (five questions)

with a ranking question added, as well as Injectable Animal Health Products (two questions). The ranking question for Processing and Treatment asked respondents identified the rank of importance of issues including; recording identification of the animal, person administering treatment, date the animal was treated, route and location of administration, earliest date satisfying the withdrawal date. All perception questions were randomized to create accurate feedback and avoid respondent fatigue (Encyclopedia Of Survey Research Methods, 2008).

After the perception questions, a short video about the BQA program was displayed. The video aired on Cattlemen to Cattlemen and gives a brief explanation of the BQA program. The video describes the items that the BQA program finds important and how producers use them in their farm production practices. The video page was timed and could not be skipped, which was set in place to reduce the ability to skip and be uninformed of the program before moving on to the WTP study. The last question set gives two scenarios. Each scenario offered two steaks, one being a USDA inspected steak while the other was also USDA inspected but obtained the BQA certification. Participants were asked to choose between them. Pricing questions were presented to the participants asking whether they would be willing to pay a premium or discount for the BQA Certification which depended on the first steak choice (Checketts & Bailey, 2006). Prices for the baseline steaks were based on the December 2018 average for a ribeye steak according to the United States Department of Labor Statistics. The last question on the survey asked if a BQA program certification label was placed on beef at the supermarket would it increase the participants trust in the beef industry.

Table 1

Steak definitions

Steak	Definitions
#1	USDA inspected at $7.49 a pound.
#2	USDA inspected and Beef Quality Assurance Certified; also $7.49 a pound
#3	USDA inspected and Certified Angus Beef; also $7.49 a pound
#4	USDA inspected, Certified Angus Beef, and Beef Quality Assurance Certified; also $7.49 a pound

This survey and research were approved by the Institutional Review board in November of 2018.

Subject Selection

The researchers wanted to ensure the sample would give a scope into the entire U.S. beef consumer population. Sample size was determined by the formula presented by Krejcie & Morgan (1970). Sample size requirements for 1,000,000+ population, according to the table, is 384 subjects (Krejcie & Morgan,1970).

The sample population (N=384) consisted of a panel created by SurveyGizmo. SurveyGizmo is a company that allows researchers to create their survey online and will allow you to choose to administer the survey yourself or to pay for panel services. Panel

services uses a panel program manager to help researchers gain a diverse set of respondents according to the researchers needs. SurveyGizmo sent the survey out across the U.S. based upon information from the company's census representative. SurveyGizmo gave the questionnaire to a stratified random sample based upon age, gender, and location. Gender specifically was capped at 60% to ensure a good distribution among the stratified random sample. Distributing through SurveyGizmo cost $1,500.00 to ensure 384 participants and a well stratified random sample.

The survey results were downloaded from SurveyGizmo.com in a excel document. All respondent personal information was withheld. Respondents were labeled 1 through 541 Researchers omitted incomplete surveys and disqualifications out and put them each in their respective excel sheets. SurveyGizmo coded scaled answers 1 and 10 in a way that needed to be recoded before inputting into SPSS (ex. 1 = 10079 while 10 = 10080). Researchers recoded 1 as 1 and 10 as 10 to avoid a Type 2 error.

Validity and Reliability

Before administering the survey, the researchers asked a total of 10 test respondents and two university staff members to take the survey. After administering the survey, respondents gave feedback on language and challenges of the survey. Comments were gathered and issues concerning language were corrected to satisfy full understanding from respondents in the official sample.

Cronbach's Alpha scores were used to determine reliability. Cronbach's alpha was determined on all perceived importance questions. The ranking Processing and Treatment Records question was omitted from the Cronbach's Alpha co-efficient score because the question was not nominal data whereas all other perceived importance

questions were determined to be nominal data. The reliability co-efficient as per the Cronbach's Alpha Co-efficient for all ranking questions was 0.970 indicating high reliability. Individually, alphas for each category were as follows:

Cattle care 0.854, Feed Ingredients 0.914, Medication in Feeds 0.942, Processing and Treatment Records 0.894, Injectable Animal Health Products 0.567.

Response Rate

The data collection time totaled five days, from February 22, 2019 to February 26, 2019. In that five-day period, the survey had a total of 541 responses. Ninety-three of those responses were incomplete and 64 were disqualified because they did not meet the qualifying questions standard of having purchased or eaten beef. Partial and disqualifying responses were omitted. This left researchers with 384 complete responses. Total completion rate was 81%.

Regression Model

Researchers analyzed data using linear and binary logistic regression analysis using SSPS Version 24. to identify which perception questions and demographics influenced the probability that the respondents would choose the BQA steak over the baseline steak as well as whether they were willing to pay a premium for that steak. The selected variables were measured on a metric scale with proportional or interval scales, otherwise non-metric and categorical variables can be used for both independent and dependent variables.

The relationships described in the linear regression results and conclusion sections were analyzed using linear regression where which steak will you buy, the premium paid, or increased trust in the beef industry was the dependent variable. Factors such as

demographics of respondents was used as independent variables. All of the perception study questions are considered variables explaining preference for the BQA certified steak over the baseline steak.

Researchers used a binary logistical analysis to identify which perception questions and demographics influenced the probability that the respondents would choose the BQA steak over the baseline steak as well as whether they were willing to pay a premium for that steak. The logit model holds all other things constant, if the explanatory variable goes up by a unit, the odds ratio in favor of purchasing one steak over the other goes up by the number of units. Thus, finding the interpretational value of the given variables (Gujarati, 1992).

Using the index function cases were inaction or action is observable is the best method. In this case, the action being not carried out or carried out is the statement being chosen by the respondent that he or she prefers the BQA steak over the baseline steak. "Marginal benefit-marginal cost calculation" is what the respondent evaluates to calculate the perceived benefit from purchasing the BQA certified steak. The difference between cost and benefit as an unobservable index variable, $y*$ in the following model:

$$y* = x'\beta + \varepsilon$$

Where the error term, ε, is described as an "innocent normalization" since the variance is not known. If the variance was known normalization of the observed data would not be changed (Greene, 2003). Estimates for the variables being tested are represented as β and x. Greene (2003) demonstrates observed choice as

$$y = 1 \text{ if } y* > 0 \text{ and } y* \leq 0$$

due to the survey only measuring whether respondents were impartial or not to genetically modified foods.

A constant term must be included in the latent regression if the threshold for y* is zero (Greene, 2003). Due to this, marginal benefit and cost is calculated with the participants that chose the BQA Certified steak (y = 1) and the participants that chose the baseline steak (y = 0). The model for probability if the distribution of the error term is symmetric is as shown:

Prob $(y * > 0 \mid x) = $ Prob $(\varepsilon < x'\beta \mid x) = F(x'\beta)$.

Either a logit or a probit model, for normally distributed disturbances, can be used to estimate probabilities (Greene, 2003).

All of the perception study questions are considered variables explaining preference for the BQA certified steak over the baseline steak.

CHAPTER 4

RESULTS

Chapter I addressed the purpose and need for the study. Also, discussed consumer concerns specifically about the life of an animal, introduction of the BQA program, and the possibility of the consumer to be willing to pay a premium for a BQA product.

Chapter II found correlations in consumer concerns and behavior and associated that with willingness to pay for an animal welfare certification. Branding programs and the BQA program was explored as well.

Methods and procedures to create a valid and reliable study were explained in chapter III.

Purpose

There has been a different program called Certified Angus Beef that has done well in the supermarkets. In a study from 2015, 54.9% of respondents were willingness to pay a premium for animal welfare certified beef that was labeled. However, socio-demographics did play a factor in the willingness to pay (Sans & Sanjuán-López, 2015). The United States will be a key player in finding out if the consumer will pay or pay a premium for animal welfare standard certified beef. The BQA program is the premier animal welfare certification that, if consumershave knowledge of the program, would prove to consumers that producers do take precautions to create a safe and wholesome beef product.

Research Questions

The research intends to answer these research questions.

1.   Would consumer buy BQA Certified Beef over another beef steak?

2.   Would consumers be willing to pay a premium for BQA Certified beef?

3.   Would the knowledge of the BQA program increase consumers trust in the beef

industry?

Findings based on Demographics

Due to the disqualifying question, 100% of respondents had eaten or purchased

beef. The sample population was generally diverse. Respondents were almost evenly split

with 50.3% being male (n = 193) and 49.7% female (n = 191). The majority (31.5%) of

respondents represented the 54 years or older age group. The second largest age group

was 45 to 54 (21.6%), followed by the equally represented age groups of 35 to 44

(19.3%) and 25 to 34 (19.3%). Lastly, 8.3% of the respondent population being

represented by the age group of 18 to 24.

Race was determined to be representative of the U.S. population. As shown in

Figure 1, 61.72% of the sample was represented by white respondents. The rest of the

responses were as follows: African American, 50 responses (13.02%), Hispanic, 46

responses (11.98%), Asian, 34 responses (8.85%), Native American, 6 responses

(1.56%), and other, 11 responses (2.86%).
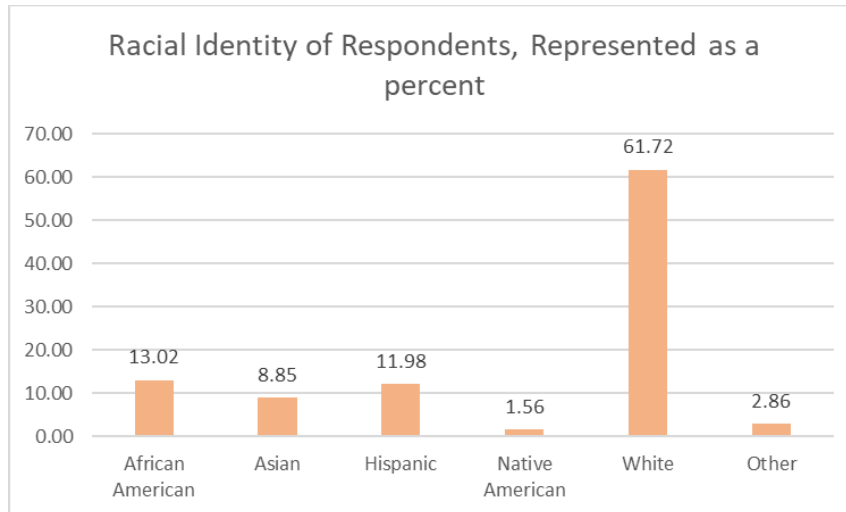
Figure 1: Racial representation of respondents shown as a percent

State representation was highly diverse with 45 states represented with the most respondents coming from California (9.90%), New York (8.33%), and Texas (6.77%), which is to be expected due to the U.S. population. The sample group was an educated group with about 65% of the participants having some college experience or degree shown in Figure 3.
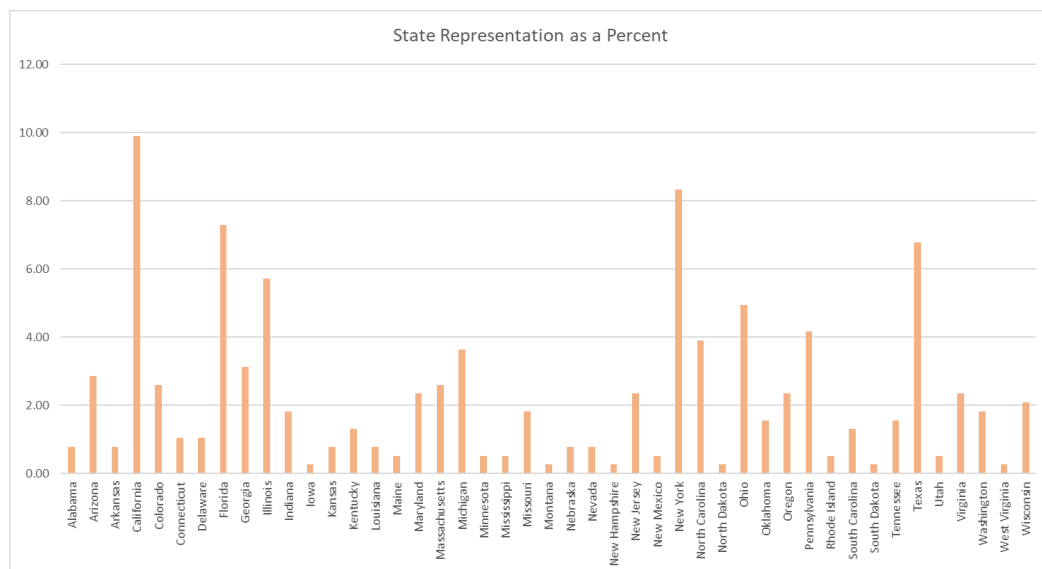
Figure 2: Percent of state representation by sample respondents

Respondents living in an urban area with a population of 50,000 or more people was 67.19%. Primary purchasing respondents represented 90.63% of the sample. Educationally, The majority held a high school diploma (32.29%). Another 30.21% held a Bachelor degree. 44.53% of the sample held a Bachelor degree or higher (Figure 3).
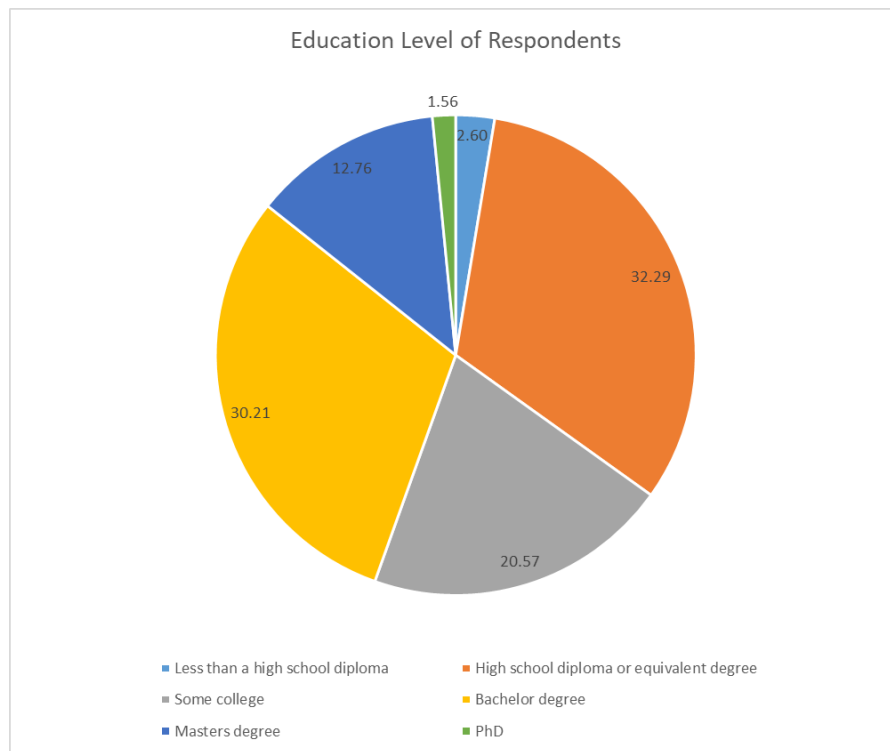
Figure 3: Percent of respondents based to their education

The researchers were interested in whether or not the respondent were making purchasing decisions for children, however, 69.53% of the sample did not have a child that were ages six and under meaning they did not make primary decisions about food for someone else. Having children ages 7 to 17 typically indicates that the purchasing decisions fall on the parent but, preferences of the child may influence the buying experience. Average amount of children ages 7 to 17 was 0.63 with a range of 0 to 7. Adults ages 18 and over in the household average was 2.06 adults indicating that the

primary purchaser must include the other consumers opinions in their purchasing decisions.

As shown in Table 2, Respondents were well distributed in income groups. The three largest populations of incomes occurred in the More than $100,000 ($n = 74$), $41,000 to $60,000 ($n = 72$), and $21,000 to $40,000 ($n = 70$).

Table 2

Summary of Income Groups of the Sample

Income Group	N	Percent
Less than $20,000	65.00	16.93
$21,000 to $40,000	70.00	18.23
$41,000 to $60,000	72.00	18.75
$61,000 to $80,000	56.00	14.58
$81,000 to $100,000	47.00	12.24
More than $100,000	74.00	19.27
Total	**384**	**100**

Perception Study

On a 1 to 10 scale, (1- not very important, 10- very important) Cattle Care practices showed a somewhat high importance ($M=8.21$, $SD=2.75$). Providing cattle with clean feed and water was the highest averaging question in the category.

Table 3

Descriptive Statistics: Cattle Care

Question	Mean	Std. Deviation
Provide Clean Feed and Water	8.58	2.60
Evaluate and Enforce Disease Protection Plans	8.45	2.69
Proper Management of Feed	8.29	2.58
Proper Health Plan	8.28	2.75
Store Records for a Minimum of 2 Years	8.17	2.73
Provide a Safe Environment for Cattle	8.14	2.78
Inspection of Pens	8.04	2.80
Avoiding Bruising, Injury, and Stress during Transport	7.76	3.03
Total	**8.21**	**2.75**

Feed ingredients (*M*=8.13, *SD*=2.82) also showed a somewhat high importance. Quality Control Program to Protect Feeds from Mold or Chemicals was the highest averaging question at 8.35. The lowest averaging question was Use Scientifically Proven Techniques and Strategies When Selecting Feed Ingredients.

Table 4

Descriptive Statistics: Feed Ingredients

Question	Mean	Std. Deviation
Quality Control Program to Protect Feeds from Mold or Chemicals	8.34	2.76
Strictly Follow Food and Drug Administration's Protein Source	8.22	2.72
Keep Records of Pesticides Used on Pastures	8.19	2.84
Test Feed for Quality and Contamination Before Feeding	8.16	2.83
Use Scientifically Proven Techniques and Strategies When Selecting Feed Ingredients	7.74	2.94
Quality Control Program to Protect Feeds from Mold or Chemicals	8.34	2.76
Strictly Follow Food and Drug Administration's Protein Source	8.22	2.72
Keep Records of Pesticides Used on Pastures	8.19	2.84
Total	**8.13**	**2.82**

Medication used in Cattle Feeds(M=8.19) highest averaging question was following medication labels. However, every question in this category had an averaged around 8.

Table 5

Descriptive Statistics: Medication Used in Cattle Feeds

Question	Mean	Std. Deviation
Strictly Follow the Food and Drug Administration's Approved Medication Labels When Caring for Their Cattle	8.4089	2.66042
"Good Manufacturing Practices"	8.2292	2.70568
Only Food and Drug Administration- Approved Medications to be Used in Cattle Feeds	8.2005	2.78262
Follow "Judicious Antibiotic Use Guidelines"	8.125	2.93444
Avoid Chemical Residues in Food from Cattle	8.1146	2.91344
Keep records of Feed Rations and Medicated Feed	8.0729	2.8136
Total	**8.19**	**2.80**

Processing and Treatment Records *M*=7.85 and *SD*= 2.99. Keeping Extra- Label use to a Minimum was the lowest average out of all the questions in the Processing and Treatment category.

Table 6

Descriptive Statistics: Processing and Treatment

Question	Mean	Std. Deviation
Follow Food and Drug Administration/United States Department of Agriculture/ Environmental Protection Agency Guidelines	8.16	2.76
Harvest Animals are Checked to Make Sure Withdrawal Times Have Been Met	8.16	2.91
Treatment Records are Being Transferred Throughout Each Production Phase	7.72	3.08
Have Their Own Identification	7.63	3.07
Keep Extra-Label Use to a Minimum	7.60	3.15
Total	**7.86**	**2.99**

Between the two injectable animal health product questions the category (*M*=7.18) an average of 25.05 respondents answered 0 (Do not know enough to answer)

on the questions. No more than 10cc of medication was the lowest averaging question out of all categories. This question also had the highest amount of 0 answers.

Table 7

Descriptive Statistics: Injectable Animal Health Products

Question	Mean	Std. Deviation
Always Follow the Label Requirement on Injectable Animal Health Products	8.24	2.78
No More than 10 cc of Medication is Administered IM	6.12	3.93
Total	**7.18**	**3.35**

In all questions the ranking of 10 (Very Important) was over 50% except for: how important to you is avoiding bruising, injury, and stress during cattle handling and transporting (43.0%), farmers and ranchers to inspect their pens that are used to hold cattle from potentially harmful areas (49.2%), farmers and ranchers to use scientifically proven techniques and strategies when selecting feed ingredients (43.8%), farmers and ranchers following Food and Drug Administration/United States Department of Agriculture/ Environmental Protection Agency guidelines and following label instructions for each product they use (49.2%), farmers and ranchers keep extra-label use "the use of a drug product in a manner that is not consistent with what is indicated on the label" to a minimum unless prescribed by a veterinarian (42.7%), how important is it to you that each animal have their own identification when processing and treating them

individually (41.7%), treatment records are being transferred throughout the beef

animal's life treatment records are being transferred throughout the animal's life (44.3%),

and no more than 10 cc of medication are administered into the muscle region (29.9%).

The question surrounding the 10 cc of medication was one of the highest 0 values

throughout the survey with 88 responses (22.9%) and has one the most diverse answering

pattern of all the perception questions.

Double-bonded Willingness to Pay

In scenario I and II, there was a high frequency of respondents choosing the BQA

certified steak over the baseline steak (Table 8). Scenario II highlighted the Certified

Angus Beef Brand. There was a small (4%) increase in the number of respondents who

chose the baseline steak over the BQA steak.

Table 8

Descriptive statistics for scenarios I & II

Scenario	Percentage Preferring Baseline Steak	(Frequency)	Percentage Preferring Enhanced Steak	(Frequency)
I	13.5	52	86.5	332
II	17.2	66	82.8	318

In scenario I, 86.5% of respondents chose the BQA certified steak (Table 8). The 332 respondents that did choose the BQA certified steak, 62.2% indicated that they would pay the 20% premium (Table 9).

Table 9

Individuals who chose the BQA steak in scenario I. If respondents indicated that they would pay the premium they moved to the next premium level. If the respondents chose no they did not move on the next premium level.

Premium Level	Percentage Yes	(Frequency)	Percent of original total	Percentage No	(Frequency)	Percentage of original total
5%	85.8	285	74.2	14.2	12.2	12.2
10%	74.4	212	55.2	25.6	73	19.0
20%	62.2	136	35.4	35.8	76	19.8

While, 86% of the individuals that responded that they would prefer the baseline steak would have paid a 5% discount (Table 10).

Table 10

Individuals who did NOT choose the BQA steak in scenario I. If respondents indicated that they would not pay the discount they moved to the next discount level. If the respondents chose yes they did not move on the next discount level.

Discount Level	Percentage Yes	(Frequency)	Percentage of original total	Percentage No	(Frequency)	Percentage of original total
5%	86.3	44	11.5	13.7	7	1.5
10%	28.6	2	0.5	71.4	5	1.3
20%	0.0	0	0.0	100.0	5	1.3

In scenario II, 69.7% of those that chose the BQA steak would pay a 20% premium for the BQA certified steak (Table 11) while 87.9 that did not choose the BQA Certified steak would pay for the steak at a 5% discount (Table 12).

Table 11

Individuals who chose the BQA steak in scenario II. If respondents indicated that they would pay the premium they moved to the next premium level. If the respondents chose no they did not move on the next premium level.

Premium Level	Percentage			Percentage		
	Yes	(Frequency)	Percentage of original total	No	(Frequency)	Percentage of original total
5%	84.0	267	69.5	16.0	51	13.3
10%	70.4	188	49.0	29.6	79	20.6
20%	69.7	131	34.1	30.3	57	14.8

Table 12

Individuals who did NOT choose the BQA steak in scenario II. If respondents indicated that they would not pay the discount they moved to the next discount level. If the respondents chose yes, they did not move on the next discount level.

Discount Level	Percentage			Percentage		
	Yes	(Frequency)	Percentage of original total	No	(Frequency)	Percentage of original total
5%	87.9	58	15.1	12.1	8	2.1
10%	50.0	4	1.0	50.0	4	1.0
20%	0.0	0	0.0	100.0	4	1.0

Regression Models

Scenario I, regression models showed there was a statistical significance on multiple variables. Researchers retained a 95% confidence level. Linear Regression was used to acknowledge a relationship between responses. Researchers tested the relationship of the demographics against respondents choosing the BQA certified steak, the premium they were willing to pay for that steak, answer for each of the perception groups, and increased trust in the beef industry if a BQA label was placed on beef.

Age was statistically significant in both scenarios when the respondents were choosing which steak to buy. In both scenarios, age was significant in choosing the steaks ($p = .000$). (Tables 13 & 14).

43

Table 13

Summary of Binary Logistical Regression Demographic Analysis for Scenario I, Which Steak will you buy?

Variable	B	SE(B)	Sig. (p)
Age	.680	.130	.000

Note: R^2 .177

Table 14

Summary of Binary Logistical Regression Demographic Analysis for Scenario 2, Which Steak will you buy?

Variable	B	SE(B)	Sig. (p)
Age	.114	.014	.000

Note: R^2 .0.88

Choosing "yes" for the 5% premium income group was significant ($p \leq .05$) in scenario I (Tables 15). Age ($p = .040$) played a was statistically significant in influencing the decision to pay a 20% premium in scenario I (Table 16). Demographics were not significant in influencing the choice to pay a 10% premium in either scenario. In scenario II, no statistical significance was found when evaluating the relationship between paying 20% premium and demographics of respondents.

Table 15

Summary of Binary Logistical Regression Demographic Analysis for Scenario 1, 5% Premium.

Variable	B	SE(B)	Sig. (p)
Income Group	-.191	.097	.049

Note: R^2 .026

Table 16

Summary of Binary Logistical Regression Demographic Analysis for Scenario 1, 20% Premium.

Variable	B	SE(B)	Sig. (p)
Age	0.249	.121	.040

Note: R^2 .030

Each scenarios' significance was created by certain demographics or the consumers feelings on certain BQA guidelines. The first and second "Which Steak Will You Buy?" question, buying the BQA steak was statistically significant in age and gender of respondents. For example, out of the 191 females that participated in the study nearly 90.5% chose the BQA certified steak while only 82.38% of men chose the BQA certified steak in scenario 1. This indicates that a larger number of women were inclined to purchase the BQA certified steak. This also occurred in scenario 2, with 90.15% of females choosing the BQA steak whereas, 75.54% of men "purchased" the BQA steak. Generally speaking, the higher the amount of income, the more inclined the respondent was to pay the 5% premium. In scenario I specifically, in the income groups of $81,000 to $100,000 and More than $100,000 the percentage of respondents willing to pay for the

BQA certified Beef was around 80%. However, in scenario II the $41,000 to $60,000 income group were the second largest income group (72.22%) that was inclined to buy the CAB steak that was also BQA certified at a 5% premium.

Each category of BQA guidelines were evaluated against demographics as well. Cattle Care Practices did not have any demographical influence on responses while all other categories were heavily influenced by one or two demographical groupings. Gender determined answers in the Feed Ingredient (p = .008), Medicated Feed (p =.011), and Injectable Animal Product (p = .031) groups. Age was another determining factor in the Medicated Feed Perception categories (p = .021).

Table 17

Summary of Linear Regression Demographic Analysis for Feed Ingredient Perception.

Variable	B	SE(B)	β	*t*	Sig. (p)
Gender	3.268	1.231	.135	2.653	.008

Note: R^2 .016

Table 18

Summary of Linear Regression Demographic Analysis for Medicated Feed Perception.

Variable	B	SE(B)	β	*t*	Sig. (p)
Gender	3.826	1.491	.129	2.565	.011
Age	1.301	.561	.117	2.319	.021

Note: R^2 .031

Table 19

Summary of Linear Regression Demographic Analysis for Injectable Animal Products

Perception

Variable	B	SE(B)	β	t	Sig. (p)
Race	-.478	.186	-.130	-2.572	.010
Gender	1.241	.573	.109	2.166	.031

Note: R² .029

A somewhat surprising significant demographic in how consumers responded to the Processing category was income group (p = .023). This could be explained as a higher income group expects a higher quality of processing standards. Another surprising demographic significance occurred in the Injectable Animal Products category being race (p = .010) (Table 20).

Table 20

Summary of Linear Regression Demographic Analysis for Processing Perception.

Variable	B	SE(B)	β	t	Sig. (p)
Income Group	2.909	1.276	.116	2.281	.023

Note: R² .013

Education (p = .049) was determined to be significant when it came to increased trust in the beef industry (Table 23). Only 80% of respondents with an education that is less than a high school diploma indicated they would trust the beef industry more if the BQA

certification were to be labeled on beef at the supermarket. Whereas the average

percentage of respondents with some college experience or a completed degree was

96.5%.

Table 21

Summary of Linear Regression Demographic Analysis for Increased Trust in the Beef Industry

Variable	B	SE(B)	β	t	Sig. (p)
Education	-.017	.009	-.100	-1.972	.049

Note: R^2 .010

Researchers also used linear regression to test which of the perception questions

were influential in the respondent choosing the BQA Certified Steak and which premium

level they chose. In considering to buy a USDA inspected steak or a USDA inspected

steak that was BQA Certified for $7.49 per pound three questions were influential in

choosing the BQA Certified Steak, proper management of feed (p = .042), records of

pesticides used on pastures for grazing (p = .043), feed quality control program (p =

.0.27), following "Judicious Antibiotic Use Guidelines" (p = .042), and only 10cc of

medication administered into the muscle region (p = .017).

Table 22

Summary of Binary Logistical Regression Analysis for Scenario I, "Which Steak will you buy?"

based on Perception Questions

Variable	B	SE(B)	Sig. (p)
Properly Manage Feed	-.497	.173	.004
Keep Records of Pesticides Used on Pastures that are Grazed	.220	.109	.043
Quality Control Program	.256	.116	.027
Follow "Judicious Antibiotic Use Guidelines"	.248	.122	.042
No more than 10cc administered IM	-.241	.101	.0

Note: R^2 .168

When choosing the 5% premium in scenario I, keeping records of pesticides used on pastures that are grazed ($p = .024$) and follow "Judicious Antibiotic Use Guidelines" ($p = .039$) were a significant factor in respondents' decisions.

Table 23

Summary of Binary Logistical Regression Analysis for Scenario 1, 5% Premium Payment based on Perception Questions

Variable	B	SE(B)	Sig. (p)
Keep Records of Pesticides Used on Pastures that are Grazed	-.311	.137	.024
Follow "Judicious Antibiotic Use Guidelines"	-.243	.118	.039

Note: R² .117

A significance was found at the 10% premium payment in following FDA, USDA, EPA guidelines (*p*=.025) (Table 26). The 20% premium payment had a significant relationship with three factors, providing clean feed and water (*p* = .025), using only FDA approved medication in cattle feed (*p* = .035), and injecting no more than 10cc into the muscle region (*p* = .035) (Table 24).

Table 24

Summary of Binary Logistical Regression Analysis for Scenario 1, 10% Premium Payment based on Perception Questions

Variable	B	SE(B)	Sig. (p)
Following FDA/USDA/EPA Guidelines	.330	.147	.025

Note: R² .117

Table 25

Summary of Binary Logistical Regression Analysis for Scenario 1, 20% Premium Payment based on Perception Questions.

Variable	B	SE(B)	Sig. (p)
Provide Clean Feed and Water	.476	.213	.025
Only FDA Approved Medication in Feed	.300	.142	.035
No more than 10cc administered IM	-.101	.048	.035

Note: R^2 .155

Scenario II, asked respondents to pick between a Certified Angus Beef steak that was USDA inspected and a steak that was BQA Certified, as well as, Certified Angus Beef and USDA inspected for $7.49 a pound. Significant relationships were identified in the following questions: proper management of feed ($p = .040$), quality testing of feed ($p = .048$), use "Good Manufacturing Practices" ($p = .011$), avoidance of chemical residues ($p = .019$), transfer of treatment records($p = .009$), and following label requirements on injectable animal health products ($p = .013$).

Table 26

Summary of Binary Logistical Regression Analysis for Scenario II, "Which Steak will you buy?" based on Perception Questions

Variable	B	SE(B)	Sig. (p)
Proper Management of Feed	-.302	.147	.040
Quality Test Feed	.217	.110	.048
Use "Good Manufacturing Practices"	-.350	.137	.011
Avoid Chemical Residues	.221	.094	.019
Transfer Treatment Records	-.318	.122	.009
Always Follow Label Requirements (Injectable Animal Health Products)	.297	.119	.013

Note: R^2 = .175

The 5% premium did not show any significance in the perception questions when using the binary logistical regression. The 10% premium level did have significant relationships with following perception questions: following FDA/ USDA/EPA guidelines (*p*=.012). Following the "Judicious Antibiotic Use Guidelines" (*p* = .041), was determined to have a significant relationship with respondents choosing to pay a 20% premium (Table 30).

Table 27

Summary of Binary Logistical Regression Analysis for Scenario II, 10% Premium Payment Based on Perception Questions

Variable	B	SE(B)	Sig. (p)
Follow "Judicious Antibiotic Use Guidelines"	.430	.211	.041

Note: R^2= .121

Table 28

Summary of Binary Logistical Regression Analysis for Scenario II, 20% Premium Payment based on Perception Questions

Variable	B	SE(B)	Sig. (p)
Following FDA/USDA/EPA Guidelines	.428	.171	.012

Note: R^2= .121

Increased trust in the beef industry was assessed at the end of the survey to evaluate the public response that the industry could anticipate if the BQA program was commercialized to consumers. In the linear regression questions, a significant relationship was found proper feed management (p = .013), using scientifically proven strategies when selecting feedstuffs (p = .040), only Food and Drug Administration approved medication used in feed (p = .002), and avoid chemical residues (p = .013).

Table 29

Summary of Binary Logistic Regression Analysis for Increased Trust in the Beef Industry based on Perception Questions

Variable	B	SE(B)	Sig. (p)
Proper Management of Feed	.525	.212	.013
Use Scientifically Proven Strategies When Selecting Feedstuffs	-.225	.110	.040
Using Only FDA Approved Medication in Feed	-.389	.128	.002
Avoid Chemical Residues	-.291	.117	.013

Note:R^2= .119

CHAPTER 5

CONCLUSIONS AND IMPLICATIONS

The Beef Quality Assurance program is one of the United States only animal welfare programs. While it is mainly a program for the United States beef producer to practice common sense husbandry techniques and to learn other scientifically proven practices it also provides the consumer with a safe and wholesome product. Consumers are more inclined to buy beef when it is of the best quality (Beef Quality Assurance, 2008).

The sample was well diverse in all areas which was ensured by the diverse sample. Educationally, the sample was well educated with 44.53% having obtained a Bachelor's degree or higher. While the sample did not indicate have many children between the ages of 0 and 17 lived in the household, the sample had an average of 2.06 adults in the home. This means that buying decisions may be influenced by the other individuals in the home. Economically, the sample was well diverse in incomes giving researchers a good scope into the purchasing decisions of the consumer and what they might be willing to pay based upon their economic standing.

The theoretical framework described in Chapter II indicates the consumer wants a program that is based upon their perception of quality. A good quality of life for the animal from life to death is the consumer's definition of quality. This study does describe a sample of the United States population. However, it is important

to note that this study did not include the actual exchange of money. The hypothetical situations described in this study are strictly that, hypothetical.

As an industry a few programs and labels have set themselves apart from the rest. Physical branding is influential in the consumers buying experience because it is a quality cue (Ward, Lusk, & Dutton, 2008). Certified Angus Beef is one of the most successful branding programs in the beef industry. Premiums are rightfully given because of the programs many guidelines to create a quality eating experience and is recognized all over the United States (Certified Angus Beef, n.d).

The Theory of planned behavior indicates that consumers will purchase a product due to their moral obligations (Ajzen, 1991). Perceived importance questions had a mean of 25.61 respondents to answer "0- Do not know enough to answer" with a median of 21. The question with the greatest amount of people that answered "0- Do not know enough to answer" was about giving no more than 10cc of injection into the muscle (n = 88). This is to be expected as consumers may not know the importance of giving only 10cc into the muscle to avoid lesions. On all perception questions, the consumers were skewed to the right indicating that there was a strong perceived importance for scaled questions. While some questions did not receive over 50% of respondents choosing "10- Very Important", the data is still positively skewed toward importance. The perceived importance questions were used to indicate what guidelines participants agree with, may not know enough to understand, and are willing to pay for.

Since majority of respondents have responded very important with almost all of the perception questions researchers can assume that the reason why respondents chose the BQA certified steak is because they felt morally obligated because of the guidelines

that it represents. Demographics play a part in buying decisions as well. Women and the elderly were observed in earlier studies to pay for an animal welfare certification. The higher income groups were most willing to pay a premium for the certification (Henchion, 2017). The age demographic factor is also what is seen in this study. Also, in premium scenarios there is a relationship between those of a higher income group to pay the premium. Select demographics such as income or age played a key role in choosing which steak to buy or whether or not to pay the premium for the steak. Respondents were very inclined to trust the beef industry more if the certification was labeled on beef because of their educational standing.

In this study, the overall perceived importance of all categories of guidelines was high. As said before, consumers like to romanticize the "farm". In Henchion's 2017 study as well as, Sans and Sanjuán-López's 2015 study, animal welfare was a concern of consumers when it came to their buying experience. Living experience of the animal in particular was the most concerning to consumers in both studies (Henchion et al., 2017 ; Sans & Sanjuán-López, 2015). Multiple of the BQA guidelines covered the living conditions of an animal. The respondents in this study indicated that almost all guidelines important to them with 50% or more choosing very important. These guidelines also played a critical role in willingness to pay. Disease protection plans and following label requirements on injectable animal health products were influential in choosing both of the BQA certified steaks. These two relationships were quite interesting as today consumers are concerned about antibiotics and hormones in meat animals. Relating back to being 4 generations removed from the farm, (Henchion, et. al.2017) consumers do not have a good understanding of items such as withdrawal dates and other precautions that the

industry takes. If the industry was to market the BQA program to the consumer there might be value in educating the consumer about these specific guidelines that farmers and ranchers follow.

The Theory of planned behavior indicates that consumers will purchase a product due to their moral obligations (Ajzen, 1991). Since majority of respondents have responded "very important" with almost all of the perception questions in the survey can assume the reason why respondents chose the BQA certified steak is because they felt morally obligated because of the guidelines that it represents. Demographics play a part in buying decisions as well. Women and the elderly were observed in earlier studies to pay for an animal welfare certification. The higher income groups were most willing to pay a premium for the certification (Henchion, 2017). These demographic variables were also seen in this study. The percentage of women buying the BQA steak in scenario I and scenario II were higher than the percentage of men buying the product. Also, in both 5% premium scenarios we see a relationship between those of a higher income group to pay the premium.

This research revealed there is a demand for BQA Certified beef. In scenario I, 86.5% of respondents chose the BQA certified steaks while in scenario II 82.8 chose the BQA certified steak. Which is not surprising as previous research from Sans and Sanjuán-López (2015) indicated that consumers were inclined to buy animal welfare certified beef. There could have be a 4% decrease in the number of respondents who chose the BQA Certified Steak in Scenario II because the consumer may have recognized the branding of the Certified Angus Beef and had chosen that over the BQA certified steak because of the level of trust that is already established.

Premiums in this study were also heavily favored. Premium payment levels were also incredibly overwhelming. The average amount of respondents that were willing to pay a 10% premium was 200 respondents between the two scenarios which is 52% of respondents. An average of 133.5 respondents (34%) of respondents would have paid the 20% premium.

To answer each of the research questions, consumers would buy BQA certified beef over another steak. They are inclined to buy the BQA steak to moral obligation and based upon their perceived importance of animal welfare in the beef industry. A majority of consumers would be willing to pay a premium as their income allows and due to certain animal welfare attributes in the BQA program. The knowledge of the BQA program would increase consumers trust, as 92.7% of respondents indicated.

Based on the findings for this study an overwhelming number of respondents chose the BQA Certified steaks over the baseline steaks. It is safe to assume that a premium could be offered at the supermarket and the beef would be purchased at that pricing. Currently, researchers see that at a premium 10% consumers, are very comfortable paying. However, at a premium of 20% consumers, begin to reject the price point. A 15% premium may be a more stable price point.

Recommendations for Future Research

The hypothetical buying situation has proven that if the BQA certification program was marketed to the consumer, it would thrive and increase trust in the beef industry. Future research should explore studying an actual buying situation where there is an actual exchange of money. Consumers may be less inclined to pay a 20% premium in real money is exchanged. Future research should find the exact price point to create a

profitable price point to cover costs to print BQA Certification labels. Researchers are confident that this program certification will be profitable for producers and packers combined. This program should offer consumers a good insight into the care of beef animals if marketed.

References

Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human

    Decision Processes, 50(2), 179-211.

Beef Quality Assurance (2008). Beef Quality Assurance National Manual. Retrieve 09

    September 2017 from:https://www.bqa.org/Media/BQA/Docs/nationalmanual.pdf

Blandford, D., Bureau, J. C., Fulponi, L., & Henson, S. (2002). *Potential implications of*

    animal welfare concerns and public policies in industrialized countries for

    international trade. In Global food trade and consumer demand for quality (pp.

    77-99). Springer, Boston, MA.

Borkfelt, S., Kondrup, S., Röcklinsberg, H., Bjørkdahl, K., & Gjerris, M. (2015). *Closer*

    to nature? A critical discussion of the marketing of "ethical" animal products.

    Journal of Agricultural and Environmental Ethics, 28(6), 1053-1073.

Cargill: Assessment & Certification. (n.d.). Retrieved 02 February, 2019, from

    https://www.cargill.com/sustainability/beef/beef-assessment-certification

Cargill: Sustainable Beef. (n.d.). Retrieved 02 February, 2019, from

    https://www.cargill.com/sustainability/sustainable-beef

Cardello, A. V. (1995). Food quality: relativity, context and consumer expectations. *Food*

    quality and preference, *6*(3), 163-170.

Certified Angus Beef ® brand | Our Story. (n.d.). Retrieved from

    https://www.certifiedangusbeef.com/brand/

Checketts, L., & Bailey, DeeVon. (2006). *Two-step Tracking, Traceability, or BSE*

    Testing: Which Do United States Beef Consumers Prefer?, ProQuest Dissertations

    and Theses.

Dickinson, D. L., & Bailey, D. (2002). "Meat traceability: Are US consumers willing to

    pay for it?'. *Journal of agricultural and resource economics*, *27*(1835-2016

    148786), 348.

Drescher, L. S., de Jonge, J., Goddard, E., & Herzfeld, T. (2012). "Consumer's stated

    trust in the food industry and meat purchases." *Agriculture and Human*

    Values, *29*(4), 507-517.

Encyclopedia Of Survey Research Methods. (2008). Sage Publications.

Edge, M. K., & Barnett, J. L. (2009). *Development of animal welfare standards for the*

    livestock transport industry: process, challenges, and implementation. Journal of

    Veterinary Behavior: Clinical Applications and Research, 4(5), 187-192.

Eirich, R. (n.d.). *Nebraska BQA: Audits and Assessments in Beef Cattle Production.*

    Retrieved 02 February, 2019 from

    https://newsroom.unl.edu/announce/beef/3169/17670

Franken, J. R., Parcell, J. L., & Tonsor, G. T. (2011). *Consumers' Willingness-to-Pay for*

    Retail Branded Beef Products with Bundled Attributes (No. 321-2016-11253).

Fraser, D. (2006). *Animal welfare assurance programs in food production: a framework*

    for assessing the options.

Gillespie, Jeffrey M., Aydin Basarir, and Alvin R. Schupp. (2004). "Beef producer choice

    in cattle marketing." Journal of Agribusiness 22.345-2016-15103

Greene, W.H. (2003). Econometric analysis, 5th ed. Upper Saddle River, NJ: Prentice

Hall. Gujarati, D.N. (1992). Essentials of econometrics. 2nd ed. Columbus, OH: Irwin/

    McGraw-Hill.

Guerrero, L. (1995). In: *Product information and food acceptance, AIR-CAT*
Measurements of consumer attitudes and their influence on food choice and
acceptability. Helsinki, November 17-18.

Hanagriff, R. D., Rhoades, R. D., & Wilmeth, D. (2008). *Consumer Preferences in*
Purchasing Beef and the Values They Attribute to Branded Products. In Southern
Agricultural Economics Association annual meeting, Atlanta GA (Vol. 31).

Henchion, M. M., McCarthy, M., Resconi, V.C. (2017). *Beef quality attributes: A*
Systematic review of consumer perspectives, Volume 128, Issue June 2017, pages
1-7, https://doi.org/10.1016/j.meatsci.2017.01.006

Henderson, M. K. (2012). *Comparison of the Effect of the Economic Recession on*
Certified Angus Beef to All Beef Products on Restaurant Menus (Doctoral
dissertation, Oklahoma State University).

Henson, S., & Northen, J. (2000). *Consumer assessment of the safety of beef at the point*
of purchase: a pan-European study. Journal of Agricultural Economics, 51(1),
90-105.

Issanchou, S. (1996). *Consumer expectations and perceptions of meat and meat product*
quality. Meat science, 43, 5-19.

Janssen, M., & Hamm, U. (2014). Governmental and private certification labels for
organic food: Consumer attitudes and preferences in Germany. Food Policy, 49,
437-448.

Lister, D. (1995). In: 41st International Congress of Meat Science and Technology. San
Antonio, Texas, August 20-25, p. 3.

Ko¨ster, (1996) AGORAL 96. *Production industrielle et qualite´sensorielle*, Lavoisier

Technique & Documentation, Paris (1996), p. 9

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities.
Educational and psychological measurement, 30(3), 607-610.

Krissoff, B., Kuchler, F., Nelson, K., Perry, J., & Somwaru, A. (2012). *Country-of-origin
labeling: Theory and observation*. BiblioGov

Massaglia, S., Merlino, V., & Borra, D. (2018). *Marketing strategies for animal welfare
meat identification: Comparison of preferences between millennial and
conventional consumers.* CALITATEA-ACCES LA SUCCES, 19(S1), 305-311.

Reiman, M. (2008). *Certified Angus Beef Turns 30*. AgriMarketing, 46(9), 42.
Retrieved from
https://login.databases.wtamu.edu/login?url=https://search.proquest.com/docview/
214010243?accountid=7143

Sans, P.; Sanjuán-López, A. I. (2015). *Beef animal welfare, attitudes and Willingness to
Pay: A regional comparison across the Pyrenees.* Spanish Journal of Agricultural
Research, Volume 13, Issue 3, e0105, 14 pages. http://dx.doi.org/10.5424/
sjar/2015133-7273.

Steenkamp, J.-B. E. M. (1989). Product quality.

Ward, C. E., Lusk, J. L., & Dutton, J. M. (2008). *Extent and characteristics of retail fresh
beef branding*. Journal of Food Distribution Research, 39(856-2016-57859), 79.

Woiwode, R., Grandin, T., Kirch, B., & Paterson, J. (2016). *Compliance of large
feedyards in the northern high plains with the Beef Quality Assurance Feedyard
Assessment.* The Professional Animal Scientist, 32(6), 750-757.

APPENDIX

IRB APPROVAL

West Texas A&M University

Academic Research Environmental Health and Safety

WTAMU Box 60217 Canyon, Tx 79016
806.651.2270

INSTITUTIONAL REVIEW BOARD FOR HUMAN SUBJECTS
Letter of Approval

November 1, 2018

Dr. J. Tanner Robertson.:

The West Texas A&M University Institutional Review Board is pleased to inform you that upon review, proposal **01-10-18** for your study titled, **"Better Beef At the Supermarket: Should Beef Animal Welfare Standards Be Marketed to the Consumer?"** meets the requirements of the WTAMU Standard Operating Procedure (SOP) No. 15.99.05.W1.01AR Institutional Review Board (Human Subject Research). Approval is granted for one calendar year. This approval expires on **October 31, 2019**.

Principal investigators assume the following responsibilities:

1. **Continuing Review:** The protocol must be renewed on or before the expiration date if the research project requires more than one year for completion. A Continuing Review form along with required documents must be submitted on or before the stated deadline. Failure to do so will result in study termination and/or loss of funding.
2. **Completion Report:** At the conclusion of the research project (including data analysis and final written papers), a Close out form must be submitted to AR-EHS.
3. **Unanticipated Problems and Adverse Events:** Pursuant to SOP No. 15.99.05.W1.13AR, unanticipated problems and serious adverse events must be reported to AR-EHS.
4. **Reports of Potential Non-Compliance:** Pursuant to SOP No. 15.99.05.W1.05AR, potential non-compliance, including deviations from the protocol and violations, must be reported to the IRB office immediately.
5. **Amendments:** Changes to the protocol must be requested by submitting an Amendment form to AR-EHS for review by the IRB. The Amendment must be approved by the IRB before being implemented. Amendments do not extend time granted on the initial approval
6. **Consent Forms:** When using a consent form, only the IRB approved form is allowed.
7. **Audit:** Any proposal may be subject to audit by the IRB Administrator during the life of the study. Investigators are responsible for maintaining complete and accurate records for five years and making them available for inspection upon request.
8. **Recruitment**: All recruitment materials must be approved by the IRB. Recruitment materials distributed to potential participants must use the approved text and include
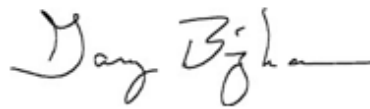
the study's IRB number, approval date, and expiration dates in the following format: WTAMU IRB##-##-## Approved: ##/##/####. Expiration Date: ##/##/####.

9. **FERPA and PPRA:** Investigators conducting research with students must have appropriate approvals from the Family Education Rights and Privacy Act (FERPA) administrator at the institution where the research will be conducted in accordance with the Family Education Rights and Privacy Act (FERPA) if applicable to the research being proposed. The Protection of Pupil Rights Amendment (PPRA) protects the rights of parents in students ensuring that written parental consent is required for participation in surveys, analysis, or evaluation that ask questions falling into categories of protected information.

Sixty days prior to the expiration of this proposal, you will receive a notification of the approaching expiration date at which time you will need to submit an Amendment/Continuation/Close out form.

Thank you for your cooperation with the IRB and we wish you well with your research project.

Sincerely,

Dr. Gary Bigham
Angela Spaulding
Chair, WTAMU IRB

Dr.

Vice President of Research and Compliance

APPENDIX

SURVEY INSTRUMENT

Page 1: Survey Consent and Voluntary Withdrawal/Explanation of Study

Preview

Hello:

Dr. Tanner Robertson, Dr. Troy Tarpley, Dr. Dee Griffin and myself, from West Texas A&M University, are conducting research concerning the importance of beef animal welfare to the consumer. Beef animal welfare is the well-being of beef cattle while in the care of humans. We are asking for your voluntary involvement. This research will start with the attached survey.

There are two purposes of this survey. The first is to assess consumer's perceived importance of beef animal husbandry practices. A video will be accessible after completing the first portion of the survey. The video must be watched completely before moving on to the second portion of the survey. If the video is not completed then your responses will be omitted. The second portion of the survey is to assess what beef you, as a consumer, would prefer to buy at the market. This survey will take approximately 15 minutes to complete. Please respond to the questions in terms of your perceptions. Your prompt response is greatly appreciated. This survey is voluntary and will be treated with the upmost confidentially.

Responses to this survey will be stored online in a password-protected account until the survey is closed and then will be stored for approximately three years in a password-protected spreadsheet on the researcher's computer. You may choose at any time to withdraw from the study without penalty. If you choose to participate in this voluntary project, please complete the attached survey. Thank you in advance for your time and cooperation with this study.

If you have any questions about this research project, please feel free to call or contact me or Tanner Robertson at 806-651-2592 or trobertson@wtamu.edu. For more information on the Beef Quality Assurance (BQA) program please visit www.bqa.org. If you have questions about your rights as a research volunteer, you may make contact with Dr. Angela Spaulding, at 806-651-2730 or aspaulding@wtamu.edu.

Morgan Young,
Graduate Student
West Texas A&M University
Canyon, TX 79016
mayoung@wtamu.edu
970-589-5708

1. Have you purchased or eaten beef? *
- ○ Yes
- ○ No

2. What is your gender? *
- ○ Male
- ○ Female
- ○ Prefer not to answer

3. What is your age *
- ○ 18-24
- ○ 25-34
- ○ 35-44
- ○ 45-54
- ○ 54 or older

4. What is your race? *
- ○ African American
- ○ Asian
- ○ Hispanic
- ○ Native American
- ○ White
- ○ Other

5. In what state do you reside in? *
- ○ Alabama
- ○ Alaska
- ○ Arizona
- ○ Arkansas
- ○ California
- ○ Colorado
- ○ Connecticut
- ○ Delaware
- ○ Florida
- ○ Georgia
- ○ Hawaii
- ○ Idaho
- ○ Illinois
- ○ Indiana
- ○ Iowa
- ○ Kansas
- ○ Kentucky
- ○ Louisiana
- ○ Maine
- ○ Maryland
- ○ Massachusetts
- ○ Michigan
- ○ Minnesota
- ○ Mississippi
- ○ Missouri
- ○ Montana
- ○ Nebraska

○ Nevada

○ New Hampshire

○ New Jersey

○ New Mexico

○ New York

○ North Carolina

○ North Dakota

○ Ohio

○ Oklahoma

○ Oregon

○ Pennsylvania

○ Rhode Island

○ South Carolina

○ South Dakota

○ Tennessee

○ Texas

○ Utah

○ Vermont

○ Virginia

○ Washington

○ West Virginia

○ Wisconsin

○ Wyoming

6. Do you live in an urban area of 50,000 or more residents? *

○ Yes

○ No

7. What is your highest qualification? *
- ○ Less than a high school diploma
- ○ High school diploma or equivalent degree
- ○ Bachelor degree
- ○ Masters degree
- ○ PhD
- ○ Some college

8. Under which income group does your household fall? *
- ○ Less than $20,000
- ○ $21,000 to $40,000
- ○ $41,000 to $60,000
- ○ $61,000 to $80,000
- ○ $81,000 to $100,000
- ○ More than $100,000

9. Are you the primary purchaser in the household? *
- ○ Yes
- ○ No

10. What is the number of people your household that are ages 6 and younger? *

0   ○———————————————— 10+

11. What is the number of people your household that are ages 7-17? *

0   ○———————————————— 10+

12. What is the number of people your household that are ages 18 and older? *

0   ○———————————————— 10+

Thinking about *cattle care practices*, on a scale of 1 to 10, how important to you is it that farmers and ranchers follow a proper health plan for their cattle. (1 being not at all important and 10 being very important) *

- ○ 0 (Do not know enough to answer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9
- ○ 10 (Very important)

Thinking about *cattle care practices*, on a scale of 1 to 10, how important to you is avoiding bruising, injury, and stress during cattle handling and transporting. (1 being not at all important and 10 being very important)

*

- ○ 0 (Do not know enough to answer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9
- ○ 10 (Very important)

Thinking about *cattle care practices*, on a scale of 1 to 10, how important is it to you for farmers and ranchers to inspect their pens that are used to hold cattle from potentially harmful areas. (1 being not at all important and 10 being very important) *

- ○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9
- ○ 10 (Very important)

Thinking about *cattle care practices*, on a scale of 1 to 10, how important is it to you for farmers and ranchers to provide clean feed and water. (1 being not at all important and 10 being very important) *

- ○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9
- ○ 10 (Very important)

Thinking about *cattle care practices*, on a scale of 1 to 10, how important is it to you for farmers and ranchers to properly manage their cattle's feed. (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *cattle care practices*, on a scale of 1 to 10, how important is it to you for farmers and ranchers to provide a safe environment for their cattle. (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *cattle care practices*, on a scale of 1 to 10, how important is it to you that farmers and ranchers evaluate and enforce disease protection plans. (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *cattle care practices*, on a scale of 1 to 10, how important is it to you for farmers and ranchers to store records to have readily available for future inspection, for at least a minimum of two years, as required by law. (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *feed ingredients*, on a scale of 1 to 10, how important is it to you to have farmers and ranchers keep records of pesticides used on pastures that are grazed by cattle. (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *feed ingredients*, on a scale of 1 to 10, how important is it to you for farmers and ranchers to have a quality control program to protect feeds from mold or chemicals. (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *feed ingredients*, on a scale of 1 to 10, how important is it to you for farmers and ranchers to have the ingredients in their cattle feeds tested for quality and contamination before feeding to their animals. (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *feed ingredients*, on a scale of 1 to 10, how important is it to you for farmers and ranchers to strictly follow Food and Drug Administration's protein source regulations when choosing feed ingredients for their cattle. (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *feed ingredients*, on a scale of 1 to 10, how important is it to you for farmers and ranchers to use scientifically proven techniques and strategies when selecting feed ingredients? (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *medication used in cattle feeds*, on a scale of 1 to 10, how important is it to you for only Food and Drug Administration- approved medications to be used in cattle feeds? (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *medication used in cattle feeds*, on a scale of 1 to 10, how important is it to you for farmers and ranchers to use the Food and Drug Administration's "Good Manufacturing Practices" when using Food and Drug Administration approved medications? (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *medications used in cattle feed*, on a scale of 1 to 10, how important is it to you for farmers and ranchers to follow "Judicious Antibiotic Use Guidelines" meaning to prevent problems, selecting antibiotics carefully, and avoid inappropriate antibiotic use? (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *medication used in cattle feeds*, on a scale of 1 to 10, how important is it to you for farmers and ranchers to strictly follow the Food and Drug Administration's approved medication labels when caring for their cattle? (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)　○ 1 (Not at all important)　○ 2　○ 3　○ 4　○ 5　○ 6　○ 7　○ 8　○ 9

○ 10 (Very important)

Thinking about *medication used in cattle feeds*, on a scale of 1 to 10, how important is it to you for farmers and ranchers to avoid chemical residues in food from cattle, by strictly adhering to Food and Drug Administration's assigned medication withdrawal times before marketing their cattle? (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)　○ 1 (Not at all important)　○ 2　○ 3　○ 4　○ 5　○ 6　○ 7　○ 8　○ 9

○ 10 (Very important)

Thinking about *medication used in cattle feeds*, on a scale of 1 to 10, how important is it to you for farmers and ranchers to keep records of feed rations and medicated feed. (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)　○ 1 (Not at all important)　○ 2　○ 3　○ 4　○ 5　○ 6　○ 7　○ 8　○ 9

○ 10 (Very important)

Thinking about *Processing/ Treatment and Records*, on a scale of 1 to 10, how important is it to you that farmers and ranchers following Food and Drug Administration/United States Department of Agriculture/ Environmental Protection Agency guidelines and following label instructions for each product they use. (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to answer)　○ 1 (Not at all important)　○ 2　○ 3　○ 4　○ 5　○ 6　○ 7　○ 8　○ 9

○ 10 (Very important)

Thinking about *Processing/ Treatment and Records*, on a scale of 1 to 10, how important is it to you that farmers and ranchers keep extra-label use "the use of a drug product in a manner that is not consistent with what is indicated on the label" to a minimum unless prescribed by a veterinarian (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)　○ 1 (Not at all important)　○ 2　○ 3　○ 4　○ 5　○ 6　○ 7　○ 8　○ 9

○ 10 (Very important)

Thinking about *Processing/ Treatment and Records*, on a scale of 1 to 10, how important is it to you that each animal have their own identification when processing and treating them individually (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)　○ 1 (Not at all important)　○ 2　○ 3　○ 4　○ 5　○ 6　○ 7　○ 8　○ 9

○ 10 (Very important)

Thinking about *Processing/ Treatment and Records*, rank each of these in order of importance to you from most to least important: *

Drag items from the left-hand list into the right-hand list to order them.

Record the identification	↱
Date the animal was treated	↱
Product administered (lot and serial number)	↱
Dosage	↱
Route and location of administration	↱
Earliest date of satisfying the withdrawal date	↱
The name of the person administering the treatment	↱

Thinking about *Processing/ Treatment and Records*, on a scale of 1 to 10, how important is it to you that all harvest animals are checked by personnel to ensure that animals have met the withdrawal times (the amount of time required after administration of a drug to assure drug residues are depleted from the animal) on products that were administered to the animal. (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *Processing/ Treatment and Records*, on a scale of 1 to 10, how important is it to you that treatment records are being transferred throughout it's life. (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *Injectable Animal Health Products*, on a scale of 1 to 10, how important is it to you that farmers and ranchers always follow the label requirements. (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)

Thinking about *Injectable Animal Health Products*, on a scale of 1 to 10, how important is it to you that no more than 10 cc of medication are administered into the muscle region. (1 being not at all important and 10 being very important) *

○ 0 (Do not know enough to anwer)   ○ 1 (Not at all important)   ○ 2   ○ 3   ○ 4   ○ 5   ○ 6   ○ 7   ○ 8   ○ 9

○ 10 (Very important)
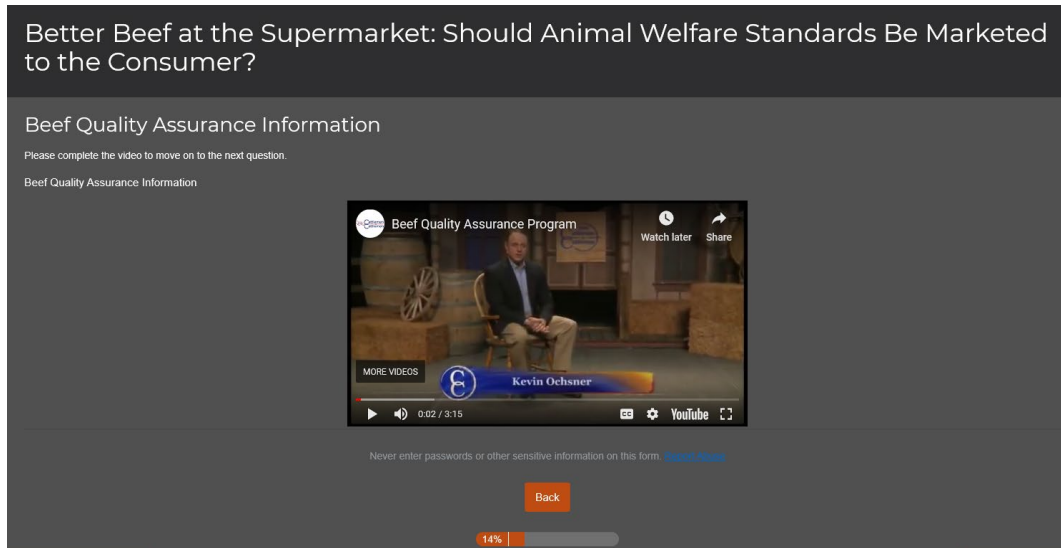
https://www.youtube.com/watch?time_continue=7&v=_nB2oTOMLBA

Screenshot	Time Stamp	Transcript
	0.01	"Hello and welcome to a special edition of NCBA's Cattlemen to Cattlemen."
	0.07	"In the beef cattle business, caring for your animals is without a doubt a top priority an outstanding resource for animal care is the Beef Quality Assurance program..."

0.17   "or BQA. It is a research based and field tested program."

0.21   "That provides guidelines for ever aspect of animal care in beef cattle production."

0.26   "Today on our show, we're going to focus on Beef Quality Assurance and imparticular, low stress cattle handling. To begin, let's hear what folks in the cattle industry have to say about BQA
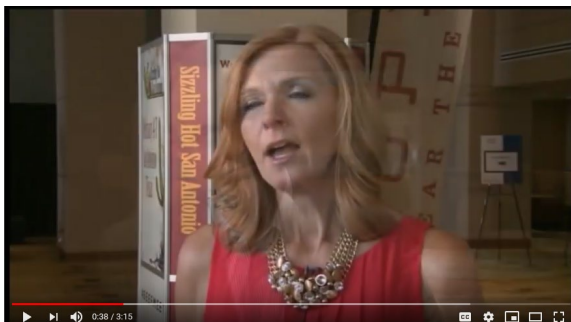
0.38   "Beef Quality Assurance is so important for our industry. It's something that consumers just think we're doing every day and we are, but it is so important for our producers to

continue to educate
themselves..”

0.52

“and continue to try and do
things better and better. And
so, the, the strides that we
make...”

0.58

“in the BQA program have
been phenomenal but, we can’t
stop there. So. we need to
continue to educate…”

1.06

“and make ourselves better for
the consumer so that they can
have a great product like they
always have.”

1:13

“BQA is a very important
program and we have been
doing it in our family and on
our ranch, uh, not long after
the beginning of the BQA
program. I go through and I

have family meetings and get all of our people even those members that are not on the ranch…"

"we have them go through the BQA training. So, when they come out and help us when we are working cattle, uh, when we are processing…

1:27

"cattle, uh, and they understand what we are doing they understand the industry and they understand how to help me on the ranch do the job right. And the people that buy our cattle years ago..."

1:32

"started asking are you BQA trained and I know they had gone through the process. So, this…"

1:44

1:49

"way we can tell the consumer that we're handling the cattle right, we're giving vaccines right and responsibly,…"

1:56

" uh, our antibiotics with a veterinarian and using them responsibly and working cattle responsibly."

2:03

"My family has been certified in the Beef Quality Assurance program for years um and even the kids because they have to do that in 4-H in Nebraska to be able to show. So, they get their certification there. My husband and I get our certification every two years to keep current and so you know I value it in a number of ways. One, as a beef council member

and as the producer in general…"

"I want every person to have a great eating experience every time they are served beef or

2:26   every time they prepare beef for themselves. And part of that is making sure that the quality is there…"

"that we handle the animals

2:35   properly. The other thing is to assure them that we…"

"are in fact doing what we say we do. And the record keeping

2:41   side of Beef Quality Assurance is every bit as important as the on farm practices."

2:48 "We know that animal comfort, animal wellbeing is a strong issue for our consuming public and BQA is addressing these, that uh, that our producers are in a position of making sure we got animals that have met their…"

3:02 "uh, that their comfort needs are met, relative to, uh, housing if they need it or shelter or protection, feed, good source of clean water…"

3:11 "and uh, and those things are addressed. Uh in our uh, daily practices."

You have a choice between 2 steaks. The first steak is USDA inspected and $7.58 per pound. The second steak also USDA inspected and costs $7.58 per pound. The second steak also Beef Quality Assurance Certified. Which one will you buy?

Note: Prices are based off of the US Department of Labor Statistics national average price for a 8oz ribeye steak.

13. Which steak will you buy? *
○ USDA inspected at $7.58 per pound
○ USDA inspected and Beef Quality Assurance Certified also at $7.58 per pound

14. Would you be willing to buy Steak #2 (Beef Quality Assurance Certified for $7.20 (5% discount) per pound? *
○ Yes
○ No

15. Would you be willing to buy Steak #2 (Beef Quality Assurance Certified) for $6.82 (10% discount) per pound? *
○ Yes
○ No

16. Would you be willing to buy Steak #2 (Beef Quality Assurance Certified) for $6.06 (20% discount) per pound? *
○ Yes
○ No

17. Would you pay $7.96 (5% premium) per pound for Steak #2 (Beef Quality Assurance Certified)? *
○ Yes
○ No

18. Would you pay $8.34 (10% premium) per pound for Steak #2 (Beef Quality Assurance Certified)? *
○ Yes
○ No

19. Would you pay $9.10 (20% premium) per pound for Steak #3 (Beef Quality Assurance Certified)? *
○ Yes
○ No

◉ Preview

You have a different choice between two steaks. The Steak #3 is USDA inspected that is Certified Angus Beef at $7.58 per pound. Steak #4 is also USDA inspected and is also Certified Angus Beef costing $7.58 per pound. The second steak also Beef Quality Assurance Certified.

Note: Prices are based off of the US Department of Labor Statistics national average for a 8oz ribeye steak.

Which will you buy?
*
○ USDA inspected at $7.58 per pound and Certified Angus Beef (Steak #3)
○ USDA inspected, Beef Quality Assurance Certified, and Certified Angus Beef also at $7.58 per pound (Steak #4)

Would you pay $7.96 per pound (5% premium) for Steak #4 (Certified Angus Beef and is Beef Quality Assurance Certified)?
*
○ Yes
○ No

Would you pay $8.34 per pound (10% premium) for Steak #4 (Certified Angus Beef and is Beef Quality Assurance Certified)?
*
○ Yes
○ No

Would you pay $9.10 per pound (20% premium) for Steak #4 (Certified Angus Beef and is Beef Quality Assurance Certified)?
*
○ Yes
○ No

20. Would you be willing to by Steak #4 (Certified Angus Beef and is Beef Quality Assurance Certified) for $7.20 per pound (5% discount)? *
○ Yes
○ No

21. Would you be willing to by Steak #4 (Certified Angus Beef and is Beef Quality Assurance Certified) for $6.82 per pound (10% discount? *
○ Yes
○ No

22. Would you be willing to by Steak #4 (Beef Quality Assurance Certified) for $6.06 per pound (20%) discount? *
○ Yes
○ No

Add New: Question | Text/Media | 🔒 Action

📄 Add Page   🔒 Insert Library Item   🔒 Skip/Disqualify Logic   ⇕ Merge Pages

Page 7: Add Page Title ◉ Preview

23. If a Beef Quality Assurance certification label was placed on beef that was raised at a Beef Quality Assurance certified facility would your trust in the beef industry increase? *
○ Yes
○ No

87

APPENDIX

REGRESSION TABLES

Linear Regression Demographic Analysis for Cattle Care.

Note:R^2 = .029

Variable	B	SE(B)	β	t	Sig. (p)
What is your gender?	2.718	1.565	0.089	1.737	0.083
What is your age	0.927	0.614	0.081	1.509	0.132
What is your race?	-1.091	0.532	-0.110	-2.050	0.041
In what state do you reside in?	-0.019	0.056	-0.018	-0.349	0.727
Do you live in an urban area of 50,000 or more residents?	1.898	1.744	0.058	1.089	0.277
What is your highest qualification?	-0.204	0.526	-0.020	-0.388	0.698
Under which income group does your household fall?	0.763	0.460	0.087	1.659	0.098
Are you the primary purchaser in the household?	0.320	2.720	0.006	0.118	0.906

Linear Regression Demographic Analysis for Feed Ingredients.

Variable	B	SE(B)	β	t	Sig. (p)
What is your gender?	3.292	1.237	0.136	2.662	0.008
What is your age	0.893	0.486	0.098	1.837	0.067
What is your race?	-0.491	0.421	-0.062	-1.167	0.244
In what state do you reside in?	-0.019	0.044	-0.023	-0.440	0.660
Do you live in an urban area of 50,000 or more residents?	0.078	1.379	0.003	0.057	0.955
What is your highest qualification?	-0.101	0.416	-0.013	-0.244	0.807
Under which income group does your household fall?	0.669	0.364	0.096	1.839	0.067
Are you the primary purchaser in the household?	-1.023	2.151	-0.025	-0.475	0.635

Note: $R^2 = .040$

Linear Regression Demographic Analysis for Medicated Feed

Variable	B	SE(B)	β	t	Sig. (p)
What is your gender?	3.826	1.491	0.129	2.565	0.011
What is your age	1.301	0.561	0.117	2.319	0.021
What is your race?	---	---	-.020[c]	-0.382	0.703
In what state do you reside in?	---	----	-.011[c]	-0.224	0.823
Do you live in an urban area of 50,000 or more residents?	---	---	-.005[c]	-0.096	0.924
What is your highest qualification?	---	---	-.002[c]	-0.039	0.969
Under which income group does your household fall?	---	---	.079[c]	1.570	0.117
Are you the primary purchaser in the household?	---	---	-.020[c]	-0.388	0.699

Note:$R^2 = .031$

Linear Regression Demographic Analysis for Processing and Treatment

Variable	B	SE(B)	β	t	Sig. (p)
What is your gender?	2.909	1.276	0.116	2.281	0.023
What is your age	---	---	.080[b]	1.576	0.116
What is your race?	---	---	-.048[b]	-0.948	0.343
In what state do you reside in?	---	----	-.001[b]	-0.014	0.989
Do you live in an urban area of 50,000 or more residents?	---	---	-.018[b]	-0.347	0.729
What is your highest qualification?	---	---	-.018[b]	-0.348	0.728
Under which income group does your household fall?	---	---	.073[b]	1.436	0.152
Are you the primary purchaser in the household?	---	---	.000[b]	-0.006	0.996

Note: $R^2 = .013$

Linear Regression Demographic Analysis for Injectable Animal Health Products

Note: $R^2 = .029$

Variable	B	SE(B)	β	t	Sig. (p)
What is your gender?	1.241	0.573	0.109	2.166	0.031
What is your age	---	---	-.028[c]	-0.533	0.594
What is your race?	-0.478	0.186	-0.130	-2.572	0.010
In what state do you reside in?	---	----	-.026[c]	-0.507	0.613
Do you live in an urban area of 50,000 or more residents?	---	---	-.067[c]	-1.290	0.198
What is your highest qualification?	---	---	.039[c]	0.762	0.447
Under which income group does your household fall?	---	---	.059[c]	1.157	0.248
Are you the primary purchaser in the household?	---	---	-.070[c]	-1.392	0.165

Binary Logistical Regression

Binary Logistical Regression Demographic Analysis for Scenario I, Which Steak will you buy?

Variables in the Equation

Variable	B	SE(B)	Sig. (p)
What is your age	0.680	0.130	0.000
What is your race?	0.065	0.099	0.514
In what state do you reside in?	0.008	0.011	0.463
What is your highest qualification?	0.110	0.111	0.321
Under which income group does your household fall?	0.028	0.097	0.772

Note: R^2 = .097

Binary Logistical Regression Demographic Analysis for Scenario II, Which Steak will you buy?

Variables in the Equation

Variable	B	SE(B)	Sig. (p)
What is your age	0.589	0.114	0.000
What is your race?	0.088	0.089	0.324
In what state do you reside in?	-0.001	0.010	0.915
What is your highest qualification?	-0.062	0.094	0.511
Under which income group does your household fall?	0.042	0.086	0.628

Note: R^2 = .011

Binary Logistical Regression Demographic Analysis for Scenario II, 5% Premium. Variables in

the Equation

Variable	B	SE(B)	Sig. (p)
What is your age	-0.003	0.121	0.979
What is your race?	0.046	0.105	0.658
In what state do you reside in?	0.003	0.011	0.812
What is your highest qualification?	-0.102	0.106	0.336
Under which income group does your household fall?	-0.167	0.092	0.069

Note: $R^2 = .017$

Binary Logistical Regression Demographic Analysis for Scenario I, 5% Premium. Variables in

the Equation

Variable	B	SE(B)	Sig. (p)
What is your age	-0.057	0.124	0.645
What is your race?	0.060	0.110	0.583
In what state do you reside in?	-0.002	0.012	0.876
What is your highest qualification?	-0.191	0.114	0.093
Under which income group does your household fall?	-0.191	0.097	0.049

Note: $R^2 = .026$

Binary Logistical Regression Demographic Analysis for Scenario I, 10% Premium. Variables in

the Equation

Variable	B	SE(B)	Sig. (p)
What is your age	0.042	0.110	0.701
What is your race?	0.087	0.095	0.361
In what state do you reside in?	-0.003	0.010	0.732
What is your highest qualification?	-0.133	0.092	0.149
Under which income group does your household fall?	-0.049	0.079	0.538

Note: R^2 = .013

Binary Logistical Regression Demographic Analysis for Scenario II, 10% Premium. Variables in

the Equation

Variable	B	SE(B)	Sig. (p)
What is your age	0.039	0.108	0.721
What is your race?	0.090	0.093	0.335
In what state do you reside in?	-0.008	0.009	0.390
What is your highest qualification?	-0.081	0.089	0.364
Under which income group does your household fall?	-0.020	0.078	0.795

Note: R^2 = .010

Binary Logistical Regression Demographic Analysis for Scenario I, 20% Premium. Variables in

the Equation

Variable	B	SE(B)	Sig. (p)
What is your age	0.101	0.132	0.447
What is your race?	-0.057	0.108	0.597
In what state do you reside in?	-0.011	0.011	0.304
What is your highest qualification?	-0.023	0.106	0.828
Under which income group does your household fall?	0.049	0.092	0.590

Note: $R^2 = .030$

Binary Logistical Regression Demographic Analysis for Scenario II, 20% Premium. Variables in

the Equation

Variable	B	SE(B)	Sig. (p)
What is your age	0.249	0.121	0.040
What is your race?	0.007	0.099	0.941
In what state do you reside in?	-0.009	0.010	0.384
What is your highest qualification?	0.073	0.094	0.434
Under which income group does your household fall?	-0.055	0.085	0.515

Note: $R^2 = .010$

Binary Logistical Regression Demographic Analysis for Increased Trust in the Beef Industry.

Variables in the Equation.

Variable	B	SE(B)	Sig. (p)
What is your age	-0.086	0.152	0.572
What is your race?	-0.013	0.134	0.922
In what state do you reside in?	0.013	0.014	0.362
What is your highest qualification?	-0.315	0.166	0.058
Under which income group does your household fall?	0.117	0.117	0.317

Note: $R^2 = .016$

Binary Logistical Regression Analysis for Scenario I, "Which Steak will you buy?" based on

Perception Questions. Variables in the Equation.

Variable	B	SE(B)	Sig. (p)
Follow a proper health plan for their cattle	-0.408	0.315	0.196
Avoiding bruising, injury, and stress during cattle handling and transporting	0.409	0.282	0.147
Inspect their pens that are used to hold cattle from potentially harmful areas	0.139	0.148	0.346
Provide clean feed and water	-0.020	0.152	0.897
Properly manage their cattle's feed.	-0.497	0.173	0.004
Provide a safe environment for their cattle	-0.095	0.126	0.451
Evaluate and enforce disease protection plans	0.156	0.135	0.248
Store records to have readily available for future inspection, for at least a minimum of two years, as required by law	-0.355	0.164	0.031
Keep records of pesticides used on pastures that are grazed by cattle	0.220	0.109	0.043
Quality control program to protect feeds from mold or chemicals	0.256	0.116	0.027
Have the ingredients in their cattle feeds tested for quality and	0.172	0.115	0.133

contamination before feeding to their animals			
Follow Food and Drug Administration's protein source regulations when choosing feed ingredients for their cattle	-0.087	0.124	0.482
Use scientifically proven techniques and strategies when selecting feed ingredients	-0.006	0.113	0.960
Only Food and Drug Administration-approved medications to be used in cattle feeds?	-0.041	0.148	0.781
Use the Food and Drug Administration's "Good Manufacturing Practices"	0.013	0.136	0.923
Follow "Judicious Antibiotic Use Guidelines"	0.248	0.122	0.042
Follow the Food and Drug Administration's approved medication labels when caring for their cattle? (1 being not at all	0.128	0.134	0.341
Avoid chemical residues in food from cattle, by strictly adhering to Food and Drug Administration's assigned medication withdrawal dates	0.067	0.099	0.499

Keep records of feed rations and medicated feed	0.123	0.143	0.387
Food and Drug Administration/United States Department of Agriculture/ Environmental Protection Agency guidelines	-0.106	0.143	0.460
Keep extra-label use to a minimum	-0.029	0.100	0.772
Each animal have their own identification when processing and treating them individually	0.005	0.123	0.966
All harvest animals are checked by personnel to ensure that animals have met the withdrawal times	0.176	0.114	0.123
Treatment records are being transferred throughout it's life.	-0.120	0.109	0.273
Thinking about Injectable Animal Health Products, always follow the label requirements	0.061	0.120	0.610
No more than 10 cc of medication are administered into the muscle region	-0.241	0.101	0.017

Note:

$R^2 = .168$

Binary Logistical Regression Analysis for Scenario II, "Which Steak will you buy?" based on

Perception Questions. Variables in the Equation.

Variable	B	SE(B)	Sig. (p)
Follow a proper health plan for their cattle	-0.494	0.294	0.093
Avoiding bruising, injury, and stress during cattle handling and transporting	0.432	0.255	0.090
Inspect their pens that are used to hold cattle from potentially harmful areas	-0.014	0.131	0.917
Provide clean feed and water	0.061	0.138	0.658
Properly manage their cattle's feed.	-0.302	0.147	0.040
Provide a safe environment for their cattle	0.043	0.116	0.711
Evaluate and enforce disease protection plans	0.169	0.129	0.191
Store records to have readily available for future inspection, for at least a minimum of two years, as required by law	0.066	0.144	0.649
Keep records of pesticides used on pastures that are grazed by cattle	0.180	0.102	0.077
Quality control program to protect feeds from mold or chemicals	0.161	0.111	0.149

Have the ingredients in their cattle feeds tested for quality and contamination before feeding to their animals	0.217	0.110	0.048
Follow Food and Drug Administration's protein source regulations when choosing feed ingredients for their cattle	-0.020	0.122	0.873
Use scientifically proven techniques and strategies when selecting feed ingredients	-0.033	0.105	0.757
Only Food and Drug Administration- approved medications to be used in cattle feeds?	-0.063	0.134	0.636
Use the Food and Drug Administration's "Good Manufacturing Practices"	-0.350	0.137	0.011
Follow "Judicious Antibiotic Use Guidelines"	0.000	0.121	0.999
Follow the Food and Drug Administration's approved medication labels when caring for their cattle? (1 being not at all	-0.007	0.144	0.962

Avoid chemical residues in food from cattle, by strictly adhering to Food and Drug Administration's assigned medication withdrawal dates	0.221	0.094	0.019
Keep records of feed rations and medicated feed	0.024	0.126	0.847
Food and Drug Administration/United States Department of Agriculture/ Environmental Protection Agency guidelines	0.127	0.116	0.273
Keep extra-label use to a minimum	-0.057	0.093	0.539
Each animal have their own identification when processing and treating them individually	0.106	0.096	0.269
All harvest animals are checked by personnel to ensure that animals have met the withdrawal times	-0.211	0.128	0.099
Treatment records are being transferred throughout it's life.	-0.318	0.122	0.009
Thinking about Injectable Animal Health Products, always follow the label requirements	0.297	0.119	0.013

No more than 10 cc of medication are administered into the muscle region	-0.122	0.069	0.075

Note: R² = .175

Binary Logistical Regression Analysis for Scenario I, 5% based on Perception Questions.

Variables in the Equation.

Variable	B	SE(B)	Sig. (p)
Follow a proper health plan for their cattle	0.330	0.312	0.290
Avoiding bruising, injury, and stress during cattle handling and transporting	-0.325	0.282	0.249
Inspect their pens that are used to hold cattle from potentially harmful areas	-0.144	0.148	0.331
Provide clean feed and water	0.151	0.177	0.394
Properly manage their cattle's feed.	0.087	0.151	0.566
Provide a safe environment for their cattle	-0.088	0.162	0.586
Evaluate and enforce disease protection plans	-0.177	0.177	0.317
Store records to have readily available for future inspection, for at least a minimum of two years, as required by law	0.206	0.169	0.224
Keep records of pesticides used on pastures that are grazed by cattle	-0.311	0.137	0.024
Quality control program to protect feeds from mold or chemicals	0.165	0.155	0.289

Have the ingredients in their cattle feeds tested for quality and contamination before feeding to their animals	0.057	0.121	0.635
Follow Food and Drug Administration's protein source regulations when choosing feed ingredients for their cattle	-0.148	0.124	0.230
Use scientifically proven techniques and strategies when selecting feed ingredients	-0.032	0.094	0.736
Only Food and Drug Administration-approved medications to be used in cattle feeds?	0.120	0.141	0.395
Use the Food and Drug Administration's "Good Manufacturing Practices"	-0.155	0.117	0.188
Follow "Judicious Antibiotic Use Guidelines"	-0.243	0.118	0.039
Follow the Food and Drug Administration's approved medication labels when caring for their cattle? (1 being not at all	-0.129	0.164	0.432
Avoid chemical residues in food from cattle, by strictly adhering to Food	-0.062	0.111	0.575

and Drug Administration's assigned medication withdrawal dates				
Keep records of feed rations and medicated feed	0.167	0.151	0.268	
Food and Drug Administration/United States Department of Agriculture/ Environmental Protection Agency guidelines	0.296	0.159	0.063	
Keep extra-label use to a minimum	0.037	0.087	0.675	*Note:*
Each animal have their own identification when processing and treating them individually	0.030	0.105	0.773	$R^2 =$ .117
All harvest animals are checked by personnel to ensure that animals have met the withdrawal times	-0.053	0.126	0.672	
Treatment records are being transferred throughout it's life.	0.149	0.110	0.175	
Thinking about Injectable Animal Health Products, always follow the label requirements	-0.084	0.115	0.466	
No more than 10 cc of medication are administered into the muscle region	-0.051	0.054	0.349	

Binary Logistical Regression Analysis for Scenario II, 5% based on Perception Questions.

Variables in the Equation.

Variable	B	SE(B)	Sig. (p)
Follow a proper health plan for their cattle	0.377	0.294	0.198
Avoiding bruising, injury, and stress during cattle handling and transporting	-0.403	0.270	0.135
Inspect their pens that are used to hold cattle from potentially harmful areas	-0.023	0.156	0.880
Provide clean feed and water	0.229	0.179	0.201
Properly manage their cattle's feed.	-0.037	0.150	0.804
Provide a safe environment for their cattle	-0.036	0.139	0.796
Evaluate and enforce disease protection plans	-0.219	0.151	0.147
Store records to have readily available for future inspection, for at least a minimum of two years, as required by law	0.064	0.149	0.669
Keep records of pesticides used on pastures that are grazed by cattle	-0.191	0.131	0.144
Quality control program to protect feeds from mold or chemicals	0.144	0.166	0.387

Have the ingredients in their cattle feeds tested for quality and contamination before feeding to their animals	0.018	0.123	0.885
Follow Food and Drug Administration's protein source regulations when choosing feed ingredients for their cattle	0.144	0.134	0.282
Use scientifically proven techniques and strategies when selecting feed ingredients	0.012	0.100	0.907
Only Food and Drug Administration- approved medications to be used in cattle feeds?	-0.075	0.117	0.521
Use the Food and Drug Administration's "Good Manufacturing Practices"	-0.166	0.126	0.189
Follow "Judicious Antibiotic Use Guidelines"	-0.180	0.110	0.103
Follow the Food and Drug Administration's approved medication labels when caring for their cattle? (1 being not at all	0.045	0.165	0.785

Avoid chemical residues in food from cattle, by strictly adhering to Food and Drug Administration's assigned medication withdrawal dates	-0.173	0.119	0.147
Keep records of feed rations and medicated feed	0.056	0.134	0.674
Food and Drug Administration/United States Department of Agriculture/ Environmental Protection Agency guidelines	0.014	0.122	0.907
Keep extra-label use to a minimum	0.069	0.092	0.456
Each animal have their own identification when processing and treating them individually	0.162	0.119	0.171
All harvest animals are checked by personnel to ensure that animals have met the withdrawal times	0.024	0.134	0.860
Treatment records are being transferred throughout it's life.	0.049	0.104	0.640
Thinking about Injectable Animal Health Products, always follow the label requirements	-0.122	0.115	0.291

| No more than 10 cc of medication are administered into the muscle region | -0.011 | 0.053 | 0.842 |

Note: R^2 = .110

Binary Logistical Regression Analysis for Scenario I, 10% based on Perception Questions.

Variables in the Equation.

Variable	B	SE(B)	Sig. (p)
Follow a proper health plan for their cattle	-0.370	0.284	0.193
Avoiding bruising, injury, and stress during cattle handling and transporting	0.403	0.263	0.125
Inspect their pens that are used to hold cattle from potentially harmful areas	-0.195	0.136	0.151
Provide clean feed and water	-0.288	0.188	0.125
Properly manage their cattle's feed.	-0.107	0.147	0.467
Provide a safe environment for their cattle	-0.021	0.145	0.885
Evaluate and enforce disease protection plans	0.047	0.174	0.786
Store records to have readily available for future inspection, for at least a minimum of two years, as required by law	0.182	0.125	0.146
Keep records of pesticides used on pastures that are grazed by cattle	0.141	0.144	0.329

Quality control program to protect feeds from mold or chemicals	-0.172	0.135	0.204
Have the ingredients in their cattle feeds tested for quality and contamination before feeding to their animals	-0.090	0.131	0.490
Follow Food and Drug Administration's protein source regulations when choosing feed ingredients for their cattle	-0.194	0.114	0.088
Use scientifically proven techniques and strategies when selecting feed ingredients	0.049	0.094	0.599
Only Food and Drug Administration- approved medications to be used in cattle feeds?	0.215	0.138	0.118
Use the Food and Drug Administration's "Good Manufacturing Practices"	0.163	0.147	0.267
Follow "Judicious Antibiotic Use Guidelines"	0.086	0.134	0.518
Follow the Food and Drug Administration's approved	0.113	0.172	0.511

medication labels when caring for their cattle? (1 being not at all			
Avoid chemical residues in food from cattle, by strictly adhering to Food and Drug Administration's assigned medication withdrawal dates	-0.066	0.119	0.580
Keep records of feed rations and medicated feed	-0.024	0.130	0.851
Food and Drug Administration/United States Department of Agriculture/ Environmental Protection Agency guidelines	0.330	0.147	0.025
Keep extra-label use to a minimum	0.008	0.068	0.902
Each animal have their own identification when processing and treating them individually	-0.123	0.087	0.157
All harvest animals are checked by personnel to ensure that animals have met the withdrawal times	0.223	0.128	0.081

Treatment records are being transferred throughout it's life.	-0.138	0.078	0.076
Thinking about Injectable Animal Health Products, always follow the label requirements	-0.004	0.119	0.972
No more than 10 cc of medication are administered into the muscle region	-0.039	0.046	0.391

Note: R^2= .106

Binary Logistical Regression Analysis for Scenario II, 10% based on Perception Questions.

Variables in the Equation.

Variable	B	SE(B)	Sig. (p)
Follow a proper health plan for their cattle	0.115	0.275	0.676
Avoiding bruising, injury, and stress during cattle handling and transporting	-0.091	0.249	0.716
Inspect their pens that are used to hold cattle from potentially harmful areas	-0.158	0.139	0.254
Provide clean feed and water	-0.330	0.212	0.120
Properly manage their cattle's feed.	-0.047	0.157	0.765
Provide a safe environment for their cattle	-0.032	0.151	0.830
Evaluate and enforce disease protection plans	0.119	0.166	0.473
Store records to have readily available for future inspection, for at least a minimum of two years, as required by law	-0.016	0.128	0.900
Keep records of pesticides used on pastures that are grazed by cattle	0.246	0.154	0.109

Quality control program to protect feeds from mold or chemicals	-0.085	0.135	0.530
Have the ingredients in their cattle feeds tested for quality and contamination before feeding to their animals	-0.100	0.156	0.523
Follow Food and Drug Administration's protein source regulations when choosing feed ingredients for their cattle	-0.130	0.120	0.279
Use scientifically proven techniques and strategies when selecting feed ingredients	0.043	0.094	0.651
Only Food and Drug Administration- approved medications to be used in cattle feeds?	-0.039	0.126	0.754
Use the Food and Drug Administration's "Good Manufacturing Practices"	-0.085	0.129	0.509
Follow "Judicious Antibiotic Use Guidelines"	0.373	0.191	0.051

Follow the Food and Drug Administration's approved medication labels when caring for their cattle? (1 being not at all	-0.082	0.152	0.589
Avoid chemical residues in food from cattle, by strictly adhering to Food and Drug Administration's assigned medication withdrawal dates	-0.222	0.151	0.141
Keep records of feed rations and medicated feed	0.102	0.148	0.490
Food and Drug Administration/United States Department of Agriculture/ Environmental Protection Agency guidelines	0.428	0.171	0.012
Keep extra-label use to a minimum	-0.073	0.065	0.257
Each animal have their own identification when processing and treating them individually	-0.039	0.084	0.642
All harvest animals are checked by personnel to	0.271	0.164	0.099

ensure that animals have met the withdrawal times			
Treatment records are being transferred throughout it's life.	-0.050	0.077	0.522
Thinking about Injectable Animal Health Products, always follow the label requirements	-0.053	0.121	0.662
No more than 10 cc of medication are administered into the muscle region	-0.022	0.045	0.630

Note:

$R^2 = .121$

Binary Logistical Regression Analysis for Scenario I, 20% based on Perception Questions.

Variables in the Equation.

Variable	B	SE(B)	Sig. (p)
Follow a proper health plan for their cattle	0.189	0.273	0.489
Avoiding bruising, injury, and stress during cattle handling and transporting	-0.233	0.251	0.354
Inspect their pens that are used to hold cattle from potentially harmful areas	-0.143	0.164	0.383
Provide clean feed and water	0.476	0.213	0.025
Properly manage their cattle's feed.	0.256	0.176	0.145
Provide a safe environment for their cattle	-0.224	0.185	0.227
Evaluate and enforce disease protection plans	-0.071	0.184	0.698
Store records to have readily available for future inspection, for at least a minimum of two years, as required by law	0.012	0.140	0.930
Keep records of pesticides used on pastures that are grazed by cattle	-0.157	0.139	0.260
Quality control program to protect feeds from mold or chemicals	-0.087	0.166	0.603

Have the ingredients in their cattle feeds tested for quality and contamination before feeding to their animals	0.031	0.159	0.843
Follow Food and Drug Administration's protein source regulations when choosing feed ingredients for their cattle	-0.277	0.154	0.072
Use scientifically proven techniques and strategies when selecting feed ingredients	-0.079	0.089	0.378
Only Food and Drug Administration- approved medications to be used in cattle feeds?	0.300	0.142	0.035
Use the Food and Drug Administration's "Good Manufacturing Practices"	0.162	0.132	0.220
Follow "Judicious Antibiotic Use Guidelines"	0.031	0.165	0.852
Follow the Food and Drug Administration's approved medication labels when caring for their cattle? (1 being not at all	-0.018	0.168	0.915

Avoid chemical residues in food from cattle, by strictly adhering to Food and Drug Administration's assigned medication withdrawal dates	-0.072	0.122	0.551
Keep records of feed rations and medicated feed	-0.049	0.160	0.759
Food and Drug Administration/United States Department of Agriculture/ Environmental Protection Agency guidelines	0.262	0.160	0.103
Keep extra-label use to a minimum	-0.034	0.072	0.636
Each animal have their own identification when processing and treating them individually	-0.088	0.117	0.450
All harvest animals are checked by personnel to ensure that animals have met the withdrawal times	0.037	0.128	0.773
Treatment records are being transferred throughout it's life.	-0.024	0.103	0.815
Thinking about Injectable Animal Health Products, always follow the label requirements	-0.163	0.141	0.248

No more than 10 cc of medication are administered into the muscle region	-0.101	0.048	0.035

Note: $R^2 = .155$

Binary Logistical Regression Analysis for Scenario II, 20% based on Perception Questions.

Variables in the Equation.

Variable	B	SE(B)	Sig. (p)
Follow a proper health plan for their cattle	0.189	0.273	0.489
Avoiding bruising, injury, and stress during cattle handling and transporting	-0.233	0.251	0.354
Inspect their pens that are used to hold cattle from potentially harmful areas	-0.143	0.164	0.383
Provide clean feed and water	0.476	0.213	0.025
Properly manage their cattle's feed.	0.256	0.176	0.145
Provide a safe environment for their cattle	-0.224	0.185	0.227
Evaluate and enforce disease protection plans	-0.071	0.184	0.698
Store records to have readily available for future inspection, for at least a minimum of two years, as required by law	0.012	0.140	0.930

Keep records of pesticides used on pastures that are grazed by cattle	-0.157	0.139	0.260
Quality control program to protect feeds from mold or chemicals	-0.087	0.166	0.603
Have the ingredients in their cattle feeds tested for quality and contamination before feeding to their animals	0.031	0.159	0.843
Follow Food and Drug Administration's protein source regulations when choosing feed ingredients for their cattle	-0.277	0.154	0.072
Use scientifically proven techniques and strategies when selecting feed ingredients	-0.079	0.089	0.378
Only Food and Drug Administration- approved medications to be used in cattle feeds?	0.300	0.142	0.035

Use the Food and Drug Administration's "Good Manufacturing Practices"	0.162	0.132	0.220
Follow "Judicious Antibiotic Use Guidelines"	0.031	0.165	0.852
Follow the Food and Drug Administration's approved medication labels when caring for their cattle? (1 being not at all	-0.018	0.168	0.915
Avoid chemical residues in food from cattle, by strictly adhering to Food and Drug Administration's assigned medication withdrawal dates	-0.072	0.122	0.551
Keep records of feed rations and medicated feed	-0.049	0.160	0.759
Food and Drug Administration/United States Department of Agriculture/ Environmental Protection Agency guidelines	0.262	0.160	0.103

Keep extra-label use to a minimum	-0.034	0.072	0.636
Each animal have their own identification when processing and treating them individually	-0.088	0.117	0.450
All harvest animals are checked by personnel to ensure that animals have met the withdrawal times	0.037	0.128	0.773
Treatment records are being transferred throughout it's life.	-0.024	0.103	0.815
Thinking about Injectable Animal Health Products, always follow the label requirements	-0.163	0.141	0.248
No more than 10 cc of medication are administered into the muscle region	-0.101	0.048	0.035

Note: $R^2 = .160$

Binary Logistical Regression Analysis for Increased Trust in the Beef Industry based on

Perception Questions. Variables in the Equation.

Variable	B	SE(B)	Sig. (p)
Follow a proper health plan for their cattle	0.814	0.463	0.079
Avoiding bruising, injury, and stress during cattle handling and transporting	-0.675	0.393	0.086
Inspect their pens that are used to hold cattle from potentially harmful areas	-0.091	0.177	0.606
Provide clean feed and water	-0.227	0.186	0.222
Properly manage their cattle's feed.	0.525	0.212	0.013
Provide a safe environment for their cattle	-0.228	0.162	0.160
Evaluate and enforce disease protection plans	-0.092	0.183	0.617
Store records to have readily available for future inspection, for at least a minimum of two	-0.175	0.197	0.374

years, as required by law			
Keep records of pesticides used on pastures that are grazed by cattle	-0.138	0.128	0.281
Quality control program to protect feeds from mold or chemicals	-0.040	0.149	0.791
Have the ingredients in their cattle feeds tested for quality and contamination before feeding to their animals	-0.019	0.154	0.903
Follow Food and Drug Administration's protein source regulations when choosing feed ingredients for their cattle	0.329	0.173	0.058
Use scientifically proven techniques and strategies when	-0.225	0.110	0.040

selecting feed ingredients			
Only Food and Drug Administration- approved medications to be used in cattle feeds?	-0.389	0.128	0.002
Use the Food and Drug Administration's "Good Manufacturing Practices"	-0.154	0.163	0.346
Follow "Judicious Antibiotic Use Guidelines"	0.157	0.157	0.317
Follow the Food and Drug Administration's approved medication labels when caring for their cattle? (1 being not at all	-0.172	0.181	0.344
Avoid chemical residues in food from cattle, by strictly adhering to Food and Drug Administration's	-0.291	0.117	0.013

assigned medication withdrawal dates			
Keep records of feed rations and medicated feed	0.164	0.185	0.373
Food and Drug Administration/United States Department of Agriculture/ Environmental Protection Agency guidelines	0.087	0.175	0.620
Keep extra-label use to a minimum	0.158	0.138	0.253
Each animal have their own identification when processing and treating them individually	0.125	0.153	0.412
All harvest animals are checked by personnel to ensure that animals have met the withdrawal times	0.389	0.205	0.058

Treatment records are being transferred throughout it's life.	0.290	0.163	0.074
Thinking about Injectable Animal Health Products, always follow the label requirements	-0.221	0.137	0.108
No more than 10 cc of medication are administered into the muscle region	0.059	0.090	0.510

Note: R^2= .119