

**A STUDY TO DETERMINE THE INFLUENCE OF ECONOMICS ON THE
JUNIOR LIVESTOCK SHOW PROGRAM IN TEXAS**

A Thesis

by

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Submitted to the Office of Graduate and Professional Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

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December 2015

Major Subject: Agricultural Leadership, Education, and Communications

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ABSTRACT

Texas 4-H livestock projects provide exhibitors with life skill development and enhanced expertise in livestock systems and animal science knowledge. Livestock projects range from small animal species such as rabbits and poultry, to larger species such as lambs, goats, hogs and cattle. Raising and showing livestock projects incurs expenses unique to each species depending on size and scope. The purpose of this study was to investigate the comparative economics of Texas 4-H livestock projects in an effort to more fully understand the economic impact the program has on local and state economies. Researchers also sought to measure perceptions of Texas A&M AgriLife Extension Agents to increase understanding of how the rising cost of inputs affects livestock project participation.

Objectives were achieved by distributing two separate Qualtrics surveys, one to livestock exhibitor families and one to County Extension Agents. Results garnered indicate that an estimated average of \$108,774,353.75 is generated by market livestock projects in Texas. These monies are going directly into local and state agricultural sectors, and it is imperative to communicate this impact with stakeholders and donors to increase awareness and support of the Texas livestock show industry. Recommendations were made to both Texas A&M AgriLife Extension and Texas major livestock shows to increase understanding and financial support of livestock projects.

DEDICATION

To my family, thank you for always providing all of the love, support and resources I needed to pursue my goals. Without your prayers and constant words of affirmation, my academic successes would not be possible. Most especially to my mom, thank you for being my biggest supporter and always pushing me to do my best with faith and humility above all else. No matter where this life takes me, I know you will be my mainstay, supporting and loving me just as you have unconditionally to this point. To my dad, for making it possible for us to attend countless livestock shows across the state, which has driven my passion for this work and all that I will continue to do. I will forever be thankful for the opportunity to gain a sound foundation to foster my passion for the livestock and agriculture industries. To my brothers, for driving my competitive spirit to try to live up to my title as “Cody and Robby’s little sister”.

To my best friend and biggest fan, Nolan, you’ve been there through every stress out, major test, and for this project. You have held my hand and my head up for the past four years and two degrees; for that, I will always be thankful. I look forward to the rest of life’s milestones we will experience together.

To my friends that are more like family, I thank God for you every single day. Thanks for the endless laughs and endless support that have truly pulled me through the stressful times.

Finally, I lift my thanks to the Rock that is higher than I. Thank you, Lord, for the blessings mentioned above and for the opportunity of education.

ACKNOWLEDGEMENTS

There are many people who deserve to be acknowledged for their help and guidance throughout this process.

I would first like to acknowledge my graduate committee:

Dr. Jeff Ripley, thank you for serving as a true mentor throughout this research and beyond. Your guiding hand and encouraging words were just what I needed to see this project through. You believed that I could, so I did. You have been a vital aspect of not only my graduate work, but also my chosen career path with Extension. I am fortunate to have someone like you on my side and I am grateful for all of the support you have provided.

Dr. Chris Skaggs and Dr. John Rayfield, thank you for taking a genuine interest in my work and in me. This project would not have been possible without your help and constructive criticism. You have helped me to develop as a researcher and a professional, and I am honored to have worked with you. Texas A&M University and its students are better because of dedicated educators like you.

Dr. Chris Boleman and Dr. Billy Zanolini, I first want to thank you for your patience and grace in working with me to see this project to completion. I am excited to now be able to immerse myself in my role with Texas Youth Livestock and Agriculture. Also, thank you both for your selfless help with this research. Your leadership and commitment to the program inspire me daily, and I am blessed to be able to work with you both. I look forward to many more collaborative opportunities in the future.

Thank you to the Texas A&M AgriLife Extension Agents included in this research for your thoughtful input and timely responses. Without your contribution, this would not have been possible. Thanks also to the livestock exhibitor families who participated in this study for your time and for bringing your children up in this way of life. We thank you for molding the future leaders of our agency and our country.

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CHAPTER I

INTRODUCTION

In the early 1900s, our country was a much different place than what we know today. Representing the majority of the labor force, farmers and ranchers sustained the mostly rural and agrarian United States. To accommodate the growing need for farming-based research and education, the Morrill Act of 1862 was passed. With limited acceptance by farmers at first, agents soon turned to youth to test the new agricultural innovations. This sparked the need for the university to form a closer relationship to the public. Thus, an agency would be formed to serve as a channel between the two. The Smith-Lever Act of 1914 shaped such an agency that would be known as the Cooperative Extension Service. Just a few years later, in 1916, the Cooperative Extension System implemented the 4-H program (National 4-H Headquarters, 2009).

The 4-H Youth Development Program has an extensive and recognized reputation of assisting youth to become adept in areas of life skills and character education. The program uniquely does so by engaging 4-H'ers in science, leadership, and citizenship education. Resonating in the vocational agricultural customs of the early 1900s, the 4-H program was designed with the intended purpose of conveying research-driven information from land-grant universities to local communities (Worker, 2012).

Although there are much less agriculture production farms than there were when the program originated, the need for youth to grow in areas of agricultural leadership, education and enhanced life skills stands unaffected. While the 4-H program is certainly

evolving in number and scope of program areas, livestock projects remain the most recognized by publics in Texas and the United States, alike (Texas 4-H, 2012).

Raising livestock is one of the most unique and rewarding projects the 4-H program has to offer. Texas is the number one state in total livestock shows, prize money rewarded to youth, premium auction sales, youth participation, volunteer support, and scholarships provided (Texas 4-H, 2012). According to Boyd, Herring, and Briers (1992), the development of life skills through experiential learning is the cornerstone of the 4-H program. Livestock projects allow 4-H'ers to gain an invaluable knowledge base on livestock production systems, animal nutrition, and the responsibility necessary to raise an animal from weaning to finishing (Texas 4-H, 2012). However, with these opportunities, also comes incurred costs and inputs.

According to Harder and Hodges (2011), the 4-H program faces difficult challenges in demonstrating return-on-investment, because the impact of teaching life skills to youth is not readily quantifiable. However, in an effort to increase awareness and support of Texas 4-H and the livestock show industry, it is imperative to understand the economic impact livestock projects have on local and state economies (Harder & Hodges, 2011). Gauging the interest areas, associated costs, and comparative economics of raising livestock for 4-H projects will give positive insight to local and statewide stakeholders, auction committees, and county Extension agents.

Purpose

The purpose of this quantitative study was to investigate the comparative economics of Texas 4-H livestock projects in an effort to better understand the economic

impact the program has on local and state industries. The study aimed to quantify specie differences in terms of purchase price of the animal, feed costs, and other associated fees. We also measured the perceptions of Texas A&M AgriLife Extension Agents to gain an understanding of how the rising cost of inputs affect participation in livestock projects.

A greater understanding of how much money is generated through these projects provides supporting constituents a clearer picture of the funds required to raise livestock projects, and ultimately address how this money positively impacts local economies. While the principle significance of agricultural education has been and will remain the achievement of knowledge and skill and the development of leadership and character qualities, the positive economic impact of these programs on local and state economies contributes an additional valuation of their worth (Hanagriff, Rayfield, Briers, & Murphy, 2014).

Objectives

The aim of the study was to gain quantifiable knowledge of the economical differences among species (cattle, sheep, goats, swine, rabbits, chickens, and turkeys) in Texas 4-H livestock projects, as well as gain a greater understanding of the influence that cost has on raising and showing livestock projects has on participation. Specifically, the objectives of the study were to:

1. Determine the average cost of raising and showing Texas 4-H livestock projects by identifying the average purchase price of each species, the cost of feed and

supplies for the number of months the project is being raised, and the amounts spent on fees, veterinarian bills, and other associated costs.

2. Estimate the dollars spent on livestock projects and money generated in local economies.
3. Describe county-level livestock entries and how these compare to number of sale lots per species across differing demographic regions, as well as number of major livestock show entries per species.
4. Determine the perceptions of Texas A&M AgriLife Extension Agents on the impact that cost has on participation in livestock projects and how the financial support from major and county shows correlates with the rising cost of exhibiting livestock projects.

Definition of Terms

4-H - A youth organization within the Cooperative Extension Service, with the mission of "engaging youth to reach their fullest potential while advancing the field of youth development".

Associated costs of raising livestock – costs of all supplemental purchases that aid in the overall care and maintenance of the animal. For example: feed, supplies, health and maintenance, facilities, entry fees, etc.

Comparative economics – Comparing the initial and associated costs of raising each of the seven main species of livestock (steers, lambs, goats, swine, turkeys, chickens, rabbits) shown at major livestock shows in Texas.

County Extension Agent – Agents employed by Texas A&M AgriLife Extension Service who work in Texas counties to deliver research-based educational information to citizens.

County livestock show – A competitive event where 4-H and FFA members exhibit livestock projects within their respective county.

Livestock show project – competing in county and statewide livestock shows in Texas with animals the exhibitor has purchased, raised, and then fed out until time of exhibition.

Major/state livestock shows - Competitive events where 4-H and FFA members exhibit their livestock from throughout Texas. Examples include: Houston Livestock Show and Rodeo, San Antonio Stock Show and Rodeo, Fort Worth Stock Show and Rodeo, Rodeo Austin, The State Fair of Texas and San Angelo Livestock Show.

Limitations

Possible extraneous variables that affected or limited the results of this study included:

- a) Extremely large investments (emergency veterinary bills, new facilities, etc.) that could skew economic impact.
- b) Extreme weather changes that would prevent livestock from performing at their optimal level.
- c) Death losses that would cause a change in the final economic results.
- d) Introduction of a new virus to the industry that would cause a dramatic decline in production.

- e) Convenience sampling may decrease representative generalizability to population.
- f) Possibility of uninformed number of respondents across species.
- g) Possibility of families exhibiting and responding for more than one species.
- h) No specification on number of potential participants in existing data survey.
- i) Lack of knowledge on breakdown within species (ex: cattle – steers, heifers, commercial steers, and commercial heifers).
- j) Average costs to feed each species are based on set amount of pounds per day and not adjusted for growth.
- k) Agent perception question dealing with rate of inflation does not indicate faster or slower as compared to project participation.

Significance

There is a growing need for understanding the economic impact associated with livestock projects in an effort to increase awareness and support of Texas 4-H Youth Development and the Texas livestock show industry. If we are able to present facts to stakeholders and buyers at livestock shows concerning how much money is generated by the livestock industry, we can increase awareness and potentially raise auction dollars. Usually, buyers are local business leaders who want to support youth for their efforts in these projects. If we demonstrate that the money spent on livestock projects is also benefitting their local businesses (feed stores, hardware stores, etc.) and the local economy (restaurants, hotels, etc.), then their interest will hopefully increase. The results

from this study are beneficial to help County Extension Agents convey costs associated with raising and showing livestock to potential 4-H member families.

CHAPTER II

REVIEW OF LITERATURE

In order to fully understand the scope of this project, it is important to have an understanding of Cooperative Extension, program development, and 4-H. After these items have been discussed, a review of literature pertaining to livestock show projects and livestock project economics will be discussed.

Cooperative Extension and Program Development

As mentioned in earlier sections of this thesis, the passage of the Smith-Lever Act enabled the land grant institution to develop a non-formal educational system that would take information to the public (National 4-H Headquarters, 2009). According to Rasmussen (1989), the mission of the Cooperative Extension Service is to help people improve their lives through an educational process which uses scientific knowledge focused on public issues and needs.

In order to accomplish this mission, a program must be developed to ensure specific objectives are being met. Program development is a process that involves stakeholders within the community aiding Extension personnel in the development of educational strategies and outcomes relevant to the public. The four main program areas that Extension focuses on are agriculture and natural resources, community development, family and consumer sciences, and youth development. The youth development aspect is called 4-H (Boleman, Cummings, & Pope, 2005). Texas A&M

AgriLife Extension provides its own model of the program development process in four phases: plan, design, implement and measure.

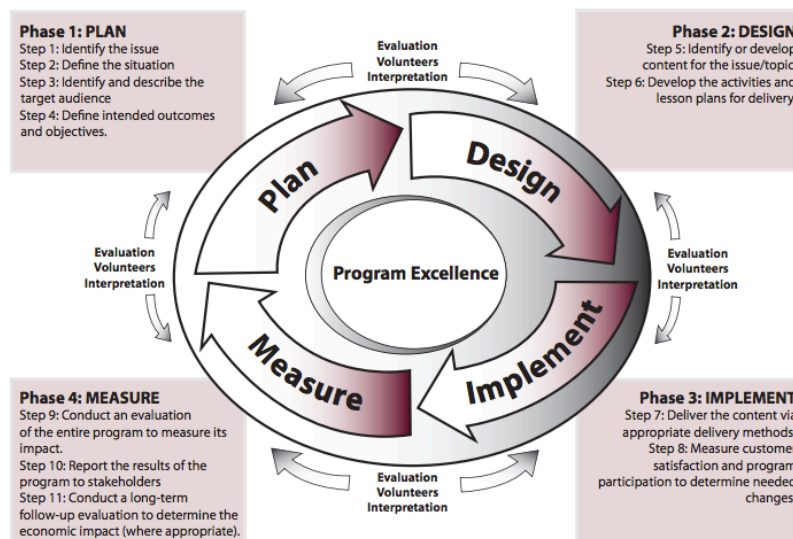
The first step in the program development model is to identify the issue. These issues can be identified from sources such as leadership advisory boards, base programs, county committees, elected officials, or state and federal mandates (Ripley, Cummings, Lockett, Pope, Wright, Payne, Kieth, & Murphrey, 2011). The educator will then define the situation based on scope, severity, social, economic and environmental factors. From here, the target audience should be identified and defined to most suitably design the program (Ripley et al., 2011).

Secondly, the educator will design the program to ensure it meets the intended outcomes. This begins by identifying existing content to use, adapting previous curricula, or developing new material to use for the program (Ripley et al., 2011). If developing new content, the educator should create appropriate activities for the intended results and target audience (Ripley et al., 2011).

The next step in the program planning process is the actual receiving of the information by the audience, or implementation. The key to success for this step is matching the method to the target audience (Ripley et al., 2011). Methods of presenting information to groups include: workshops, seminars, tours, short courses, and lectures. If presenting information via mass media, methods include: newsletters, blogs, social media, television and radio. One-on-one or individual methods of education include: home/farm visits or consultations. It is suggested that a combination of these methods be used to reach all learning styles in the audience (Ripley et al., 2011).

The final step in program planning is measuring the results of the program in terms of outcomes and impact. Evaluation methods can include: surveys, questionnaires, tests, direct observation, focus groups or interviews (Ripley et al., 2011). After data has been collected and analyzed, the results should be interpreted and reported to appropriate stakeholders. These can include: participants, program committees/planning groups, leadership advisory board members, coworkers, county and state officials, and Extension administrators (Ripley et al., 2011). In Extension, interpretation is vital to funding, so the distribution of results is crucial for future programming efforts. When reporting, educators should convey the relevance, response, and results of the program (Ripley et al., 2011). Figure 1 below further explains the Texas A&M AgriLife Extension Service Program Development Model.

Figure 1. *Texas A&M AgriLife Extension Service Program Development Model. Reprinted from Ripley et al. (2011).*



Ripley, Cummings, Lockett, Pope, Wright, Payne, Kieth, & Murphrey, 2011

Livestock Show Projects

Experiential learning has been a vital part of agricultural education since the passage of the Smith–Hughes Act in 1917 (Hanagriff, Murphy, Roberts, & Briers, 2009). This act, in turn, required students to have a supervised farm project to gain hands-on experience. According to Curtis and Mahon (2010), experiential learning encourages students to apply course concepts to actual problems in the area, thus increasing their skills and value to future employers. These types of experiences are now referred to as Supervised Agricultural Experiences in agriculture education, today (Hanagriff et al., 2009). According to Hanagriff et al. (2009), SAE’s can evolve from any type of agricultural-related project that focuses on entrepreneurship. Livestock projects are one example of an SAE that can be completed. According to Davis, Kieth, and Frazee (2001), social relations, character, competition, learning new environments, and helping finance higher education are some benefits of competitive exhibition.

There is limited documented knowledge on the introduction of livestock exhibition; however, most research recognizes Elkanah Watson as the “father of U.S. agricultural fairs” (Texas 4-H, 2012). Watson hosted the first sheep fair in 1807 in Massachusetts to prove that wool from American sheep was as high quality as English wool, which most people of that time were using to produce fabrics. His annual exhibition grew to include 386 sheep, 109 oxen, nine cows, seven foals, three heifers, two calves, and one boar by the year 1810 (International Association of Fairs & Expositions, 2015). While Watson contributed greatly to the introduction and spread of livestock shows on the eastern seaboard, these were not youth shows. The Minnesota

State Livestock Breeder's Association hosted the first youth show in Minnesota in 1917 (Reck, 1951).

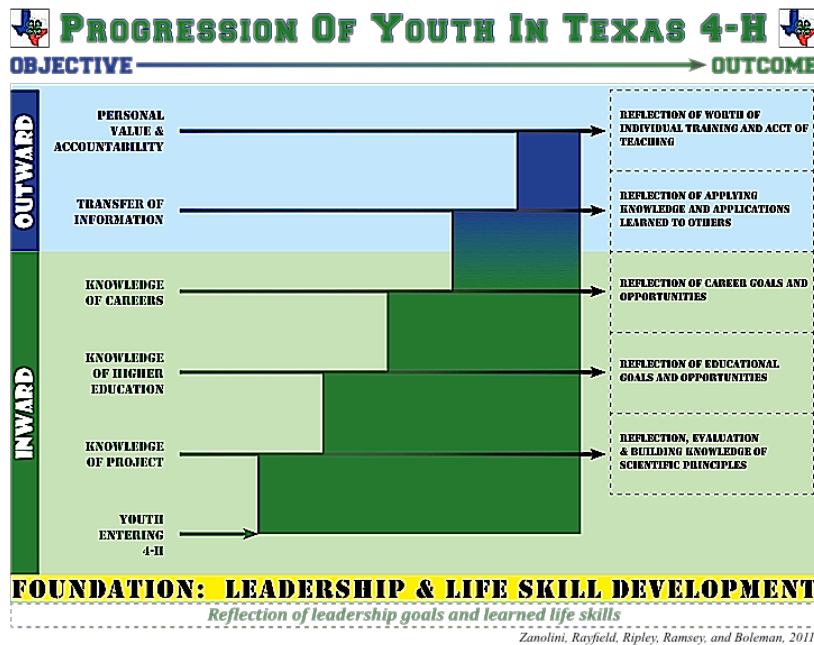
Since their introduction, livestock fairs have grown to over 3,000 fairs across the country annually and have become a symbol of the 4-H program. In 2000, Texas 4-H and FFA members accounted for over 75,000 county livestock show entries for cattle, swine, meat goats, and sheep across the state (Coufal, 2007).

These fairs allow for raising and exhibiting of livestock by 4-H and FFA members, which has proven to develop and enhance life skills in youth (Texas 4-H, 2012). According to Texas 4-H and Youth Development (2011), the mission of the organization is to: "Prepare youth to meet the challenges of childhood, adolescence and adulthood, through a coordinated, long-term, progressive series of educational experiences that enhance life skills and develop social, emotional, physical and cognitive competencies."

The 4-H livestock project is a perfect reflection of the organization's mission of developing life skills. As outlined by Boleman, Cummings, and Briers (2005), these skills include responsibility, goal setting, self-discipline, self-motivation, livestock industry knowledge, self-esteem, and decision-making.

According to Zanolini, Rayfield, and Ripley (2013), young people involved in 4-H have higher educational achievement and motivation for future education. The same students also indicated that the 4-H program has prepared them in career development in terms of meeting people who will help them in their future careers and gaining valuable skills for the workforce. Figure 2 the Progression of Youth in Texas 4-H.

Figure 2. *Progression of Youth in Texas 4-H.* Reprinted with permission from Zanolini et al. (2011).



A study conducted by Rusk, Summerlot-Early, Machtmes, Talbert & Balschweid (2003) sought to outline the skills learned through raising and exhibiting livestock projects and how they are benefitting youth in school, at home and on the job. In terms of responsibility, 44% of respondents indicated they use the responsibility gained from raising 4-H livestock projects to complete homework and school projects on time. Additionally, 62% indicated that caring for livestock projects and thinking through consequences improved decision-making and problem-solving skills. Participants in the study also recorded that they use the information they learn from their livestock projects about animal physiology in their science classes at school (Rusk et al., 2003).

Along with these life skills, 4-H and FFA livestock projects also allow students to make connections between abstract concepts learned in core subject classrooms and

real-world situations (Wooten, Rayfield & Moore, 2013). STEM integration through junior livestock projects allow for these rich connections to take place in areas such as livestock evaluation and presentation, animal health and nutrition, herd management and record keeping (Wooten et al., 2013).

Livestock projects are unique in that they allow for prolonged growth over time. Most livestock projects last from six to nine months, with cattle projects lasting even longer. This time allows for diversity of learning environments and situations. According to the Quality Counts program, the livestock project starts with selection of the animal. This requires decision-making and collaboration between participants, parents, breeders, agents and agricultural science teachers. From here, livestock exhibitors must provide adequate facilities for the project they select. This can involve actually building the structure(s) or housing the project at a county or school facility (Chilek, Boleman, Sterle, Smith, Phillips, Kieth & Coufal, 2003).

Daily care of the livestock project requires time management, responsibility, and integrity. Feeding and nutrition plays a vital role in the execution of a successful livestock project. Knowledge of livestock nutrition and rationing is a skill that livestock exhibitors gain through the project. Additionally, participants must be aware of disease recognition and medication labels/use. This is crucial not only in terms of livestock care and well-being, but also in respect to livestock show rules and regulations regarding residue avoidance (Chilek et al., 2003).

Grooming and preparation for livestock shows is another aspect of the livestock project that takes a combination of skill and time inputs. Depending on the livestock

project, different grooming procedures must be done before exhibition. Additionally, exhibitors must work with their project for months in advance to ensure show day readiness. Livestock project and showmanship clinics serve as a means to build confidence in beginner level exhibitors and sharpen the skills of more experienced showmen (Texas 4-H, 2012).

The culmination of all previously mentioned efforts is the livestock show itself. On show day, exhibitors must ensure the project is in best condition to enter the ring. This includes cleaning and grooming the animal, adequate nutrition and hydration, and adaption to the show ring and environment. However, it is important to note, that arguably some of the most important lessons are learned in the actual show arena. Sportsmanship is a large component of the livestock show and the results of the exhibition are simply one judge's opinion on a certain day. Through this competitive process, exhibitors learn the difference between gamesmanship and sportsmanship (Chilek et al., 2003).

Texas 4-H and FFA livestock projects are ultimately a means of instilling standards of personal character, feeding and care of projects in youth participants. These projects are used as a tool to educate young people a variety of skills that will lead them to success (Chilek et al., 2003). Through a series of interviews of participants at the Houston Livestock Show and Rodeo, Davis, Kieth, Williams & Frazee (2001) concluded there were six major benefits of participating in livestock projects: social relations, character, family, competition, learning new cultures and environments, and helping finance youth's education.

In order to ensure these benefits are reaching youth and their families involved in livestock exhibition, many collaborators must be on board. From County Extension Agents, breeders, mentors, livestock show managers and auction buyers, a common theme exists: youth development and preparation for success (Coufal, 2007).

Livestock Show Economics

Aside from the livestock exhibitor, there are other stakeholders who value all that livestock projects have to offer. These stakeholders value information other than just acquired skills and behaviors. According to Harder and Hodges (2011), there are parts of the 4-H program that lend themselves to measuring economic impact. The livestock program is one of these components. However, there is little documentation of studies quantifying additional income generated to Texas and local economies based on participation in 4-H livestock projects.

In order to receive consistent support for local and state livestock shows, it is imperative to illustrate the financial value of the show to business leaders, politicians, and other stakeholders in the community (Fannin & LeBlanc, 2007). Harder and Hodges (2011) summarized the benefits of documenting livestock project economics as follows:

“Direct spending for FFA or 4-H youth livestock projects typically includes expenditures such as purchase of animals, feed, housing, veterinary expenses, and equipment. This direct spending causes more money to be spent by vendors. For example, a shop owner who sells feed to an FFA or 4-H member can then use the profits from the sale to pay an electric bill or an employee or invest in

additional inventory. These actions have a positive effect on the economy that is described as the total economic impact.”

As explained by Jones (1997), input-output models can serve as a beneficial tool in studying the economic relationship between agricultural sectors on existing economies. Costs incurred with raising and showing livestock does not stop at the initial purchase price of the animal. Participants must also purchase a variety of products to care for the project, which in turn, adds additional income to the state agricultural sector (Boleman et al., 2005).

A common means of measuring such economic impact is a type of input-output model called the Input-output Model for Planning (IMPLAN) Model. This model provides estimates of additional economic benefits from direct spending (Hanagriff et al., 2009). A model such as this proves beneficial when attempting to calculate economic value of hard-to-gauge areas such as livestock projects. According to Hanagriff et al. (2009), when the IMPLAN Model was applied to SAE direct spending of \$103 million, results indicated \$189 million in total economic value from project related spending. Additionally Hanagriff et al. (2014) showed the results of the IMPLAN Model on agricultural mechanics projects in Texas FFA. Findings indicated that agricultural mechanics projects contributed to \$5.5 million in total investment costs. In terms of the IMPLAN Model, this correlated to \$10 million in economic impact to the state’s economy. Economic assessment is critical, especially during difficult economic times when potential funding is diminished (Hanagriff et al., 2014).

Additionally, a study conducted by Stallmann (2001) aimed to determine the economic impact of a wind turbine farm in Pecos County, Texas. Utilizing a modified IMPLAN model, Stallmann was able to determine that building a wind turbine in this county would create 20 jobs, add tax revenues to the county, and add \$7.9 million per year to the county's current economy. Stallmann et al. (2001) quantified the economic impact of a cheese plant and dairies in the Texas Panhandle. The results of the study estimated that 4,810 new jobs would be created for the next 20 years as a result of these industries. In turn, this increase would raise local school enrollment, increase county taxes by \$109.5 million, and increase the net present value over 20 years for all jurisdictions by \$17.12 million (Stallmann et al., 2001).

By presenting these types of numbers to local and state stakeholders, livestock shows can not only raise awareness, but also potentially gain funding for livestock programs. Making local businessmen and women aware of how much return their own companies gain from livestock projects could open doors of opportunity for future support. Subsequently, due to the notable economic return, these impacts could potentially deter future budget cuts and encourage local stakeholders (Hanagriff et al., 2014). Expenditure values translate into local and state business income, which encourage jobs and economic growth (Hanagriff et al., 2009).

Smith (2010) sought the economic impact of the Houston Livestock Show and Rodeo based on Spring of 2010 performance. He found that the estimated total expenditures in Houston from people outside the Houston Metro was over \$981,000.

As evidenced by these findings, gaining comparative economic values of raising and showing livestock projects would be a beneficial milestone in cultivating new interest and support for the Texas 4-H livestock program. While involved stakeholders understand the value in developing life skills in youth through the exhibition of livestock projects, the addition of dollar figures can definitely aid in supporting the cause.

This study aimed to investigate these economic attributes in order to more fully understand the monetary impact the Texas 4-H livestock program has on agricultural industries in the state. To accomplish this objective, the researchers quantified species averages in regards to purchase prices, feed costs, supplies and other associated fees, as well as county-level auction information and County Extension Agent perceptions concerning participation and project costs.

CHAPTER III
METHODS/PROCEDURES

This study utilizes two sets of data to more holistically investigate the financial investments necessary to complete a 4-H livestock project, how these economics affect local and state economies, and to gauge the perceptions of Texas A&M AgriLife County Extension Agents. The two sets of data will be described separately as “existing data” and “study data” Table 1 is provided to outline the two instruments and their purpose.

Table 1. *Data Collection Methods*

Instrument	Information Collected	Participant Information	Number of Completed Surveys
Existing Data Qualtrics Survey	Average costs associated with raising and showing Texas 4-H livestock projects	Texas 4-H Livestock Exhibitor Families (parents)	472
Study Data Qualtrics Survey	Total county-level and major livestock show entry numbers per species, county-level livestock sale information, agent perceptions on county and state financial support	Agriculture and Natural Resources and 4-H Youth Development Texas A&M AgriLife Extension Agents	169

Existing Data

To determine the comparative economics of livestock show projects within the Texas 4-H program, a study of Texas 4-H livestock exhibitors has been conducted. This

study was descriptive in nature, in that it attempts “to describe a given state of affairs as fully and carefully as possible” utilized a survey as the method of data collection (Frankel & Wallen, 2009).

By conducting a purposive sample of the population, we were able to gather more holistic data in an effort ensure that livestock projects from all scopes and regions were assessed (Frankel & Wallen, 2009). The intended sample for these existing data consisted of a purposive sample of Texas 4-H livestock exhibitor families. Within Texas A&M AgriLife Extension, there are six Regional Program Leaders (RPL) for Agriculture and Natural Resources and 4-H Youth Development. These individuals were asked to administer the survey to County Extension Agents (CEAs) in their respective regions. From this point, 50 CEAs was asked to disperse the survey to at least 10 families within their county that are involved with at least one of the seven species of livestock.

The researchers developed a Qualtrics survey instrument to investigate the given research questions. Frankel and Wallen (2009), recommend that content validity be certified by a panel of experts. The subject matter specialists were members of the graduate committee that have expertise in Texas 4-H livestock project education. To ensure reliability and validity of results obtained, the researchers performed a pilot test on subjects similar to those in the sample and continued to revise the instrument until it was accurate for the study. To check for internal consistency, the researchers divided the instrument into halves and scored each (Frankel & Wallen, 2009).

Instrumentation

The survey utilized Likert-type scale, multiple choice questions, and numerical fill-in answers. The survey instrument was distributed to the participants to assess the exhibitors' actions regarding 1) The average purchase price of each species in the livestock project, 2) Average feed costs for each species over the number of months the project is being raised, 3) Amount spent on supplies, fees, veterinarian bills, and other associated costs for each species, 4) Any investments on capital purchases associated with the livestock project.

The independent variables in the study were species of livestock shown by exhibitor, initial purchase of the animal, feed, supplies, veterinarian care and health supplies, and other associated costs with the livestock project. These variables were categorical and were scored with nominal data. The dependent variables in the study were the amount of monies generated through the livestock projects in each of these areas and in local and state economies. These variables yielded quantitative data and the researchers treated these data as ratio in type, utilizing percentiles and standard scoring methods. The relationships between the variables were described utilizing a comparison of averages.

The electronic survey was distributed and handled in a manner that diminished all risks of altered confidentiality. As suggested by Frankel and Wallen (2009), participants electronically agreed to consent before completing the survey and did not enter names or any other identifying information. The researcher discarded all raw data. Deception was of no issue for this survey study as participants were presented with an

electronic statement regarding the study and all it entails. The responses are simply a reflection of the participants' inputs to respective livestock projects.

Study Data

In an effort to measure the perceptions of the impact that cost has on participation in livestock projects, a study of Texas A&M AgriLife Extension Agents was conducted. This study was descriptive in nature (Frankel & Wallen, 2009). The researchers utilized a Qualtrics survey as the method of data collection.

The intended sample for the study data consisted of a purposive sample of Texas A&M AgriLife Extension Agents that have focus areas of either Agriculture and Natural Resources or 4-H and Youth Development. By utilizing this purposive sample of the population, we were able to gather more holistic data in an effort ensure that agents completing the survey are ones on the frontlines of assessing 4-H livestock projects (Frankel & Wallen, 2009). According to Frankel and Wallen (2009), purposive sampling is necessary when previous knowledge of the population and the specific purpose of the research is known.

The sample was obtained by administering the electronic survey to all county extension offices in Texas. In terms of external and ecological validity, the researchers generalized to a target population of all CEAs – AgNR and CEAs – 4HYD, as well as all Texas FFA advisors.

Instrumentation

The researchers developed a Qualtrics survey instrument to investigate the given research questions. Frankel and Wallen (2009), recommend that a panel of experts

certify content validity. The subject matter specialists are members of the graduate committee that have a strong foundation in Texas 4-H livestock projects. To ensure reliability and validity of results obtained, we performed a pilot test on subjects similar to those in the sample and continued to revise the instrument until it was accurate for the study. To check for internal consistency, we divided the instrument into halves and scored each (Frankel & Wallen, 2009).

The survey utilized Likert-type scale, multiple choice questions, and numerical fill-in answers. The survey instrument was distributed to the participants to assess the agents perceptions concerning 1) the impact that cost has on participation in livestock projects, 2) the demographics of exhibitors of varying species and how location and other demographic information influences livestock specie selection, and 3) the financial support from major and county/local shows and how this correlates with the rising cost of livestock projects.

The independent variables in the study were the size of the county in which the agent served (rural, suburban, and urban), the number of county-level livestock show entries and sale lots, and the type of auction conducted at the primary county-level livestock show. These variables were categorical and were scored with nominal data. The dependent variables in the study were the totals agents provided for these questions and their perceptions recorded. These variables yielded quantitative data and the researchers treated these data as ratio in type, utilizing percentiles and standard scoring methods. The relationships between the variables were described utilizing a comparison of averages.

The electronic survey was distributed and handled in a manner that diminished all risks of altered confidentiality. As suggested by Frankel and Wallen (2009), participants electronically agreed to consent before completing the survey and did not enter names or any other identifying information. The researcher discarded all raw data. Deception was of no issue for this survey study as participants were presented with an electronic statement regarding the study and all it entails. The responses are simply a reflection of the participants' perceptions of 4-H livestock show projects.

We sent the Qualtrics survey link to all Texas Agriculture and Natural Resources and 4-H and Youth Development County Extension Agents via the Extension Email Listserv. Two weeks later, we sent a follow-up email to all CEAs – AgNR and CEAs – 4HYD as a reminder to complete the survey. After one month from the initial distribution, the survey was closed. Data analysis was conducted thereafter and the researchers drew conclusions from the results. To handle nonresponse error, we used procedures outlined by Lindner, Murphy, and Briers (2001). This includes contacting nonrespondents to compare their data to respondents. Differences between respondents and nonrespondents were examined using an independent samples t-test and no differences were found between early and late responders.

CHAPTER IV

FINDINGS AND DISCUSSION

Existing Data

The purpose of the existing data was to investigate the comparative economics of Texas 4-H livestock projects, across the seven specie areas, in an effort to more fully understand the impact the livestock program has on local and state economies.

Descriptive statistics were used to summarize data. The dependent variables of dollars spent were compared across levels of the independent variables of project species.

Demographics of Participants

The population that was sampled included families involved with each of the seven species of livestock as identified by their respective County Extension Agents. Agents were asked to send to a minimum of ten families; however, agents could have sent to more, making it impossible for the researchers to calculate a response rate. From the forty-nine responding counties, there were 472 participants that completed the survey. While this is the number of completed surveys, number of responses per question may fluctuate given that families can exhibit more than species. Participants were parents of youth involved in Texas 4-H livestock projects. This was the only demographic information collected from the respondents.

Objective One: Average Cost of Raising and Showing Texas 4-H Livestock Projects. The first objective of the study was to indicate the average cost of raising and exhibiting each of the seven species shown in Texas livestock projects. Participants

answered questions based on exhibition in the 2013-2014 livestock show season.

Respondents indicated that 171 (34%) exhibited cattle, 155 (31%) exhibited swine, 164 (33%) goats, 105 (21%) lambs, 91 (18%) rabbits, 53 (11%) broilers/chickens, and 24 (5%) exhibited turkeys. Table 2 represents the number of respondents that indicated participation in each species.

Table 2. *Species of Livestock Exhibited in the 2013-2014 Show Season (N=501)*

Species	Number of Head Validated
Cattle	171
Swine	155
Goats	164
Sheep	105
Rabbits	91
Chickens	53
Turkeys	24

Note. N is greater than 472 responses due to the fact that families can exhibit more than one species.

Selecting which species to show is ultimately the first step in beginning the livestock project. Several factors play a role in shaping this decision. Choosing a species that is cohesive with living environment, experience, and interests of the exhibitor is vital in terms of success of the project. Thirty-three percent of respondents indicated that cost was the factor that led to the selection of the species chosen to exhibit. Family history rooted in a certain livestock area proved to be the most prevalent factor affecting the selection of species with a total of 59% of respondents. Table 3 outlines the factors that respondents indicated drove their decision to participate in the selected species of livestock.

Table 3. *Indicated Factors Leading to Selection of Species Participation (N=500)*

Answer	Number of Responses
Family tradition/history	297
Cost	166
Availability of Support/Assistance	155
Location (Space)	151

Note. N is greater than 472 as participants could indicate more than one factor.

Opportunities to exhibit 4-H livestock projects range from county and local levels to statewide major livestock shows. While county shows provide experience and hands-on practice, major shows allow for opportunity of financial gain and large-scale recognition of efforts. Sixty-one percent of these respondents indicated that they were exhibiting their projects at both county and major livestock shows, with 39% participating in county/local or jackpot shows only.

The following section will outline a series of tables for each species indicating the dollar range spent for a variety of cost factors. For each species, respondents were asked to indicate the initial purchase price of the livestock project, the cost of supplies (including fitting, grooming, etc.), cost of veterinarian care and health supplies, fees and associated costs (including entry fees, trim chute fees at shows, shavings, etc.), and dollars spent on feed supplements and additives. Each of the recorded dollar amounts refers to raising and exhibiting one head of the respective species, except for in the cases of chickens (25 hd.) and turkeys (50 hd.).

Tables 4-8 reflect the responses for cattle projects. As indicated by the table below, the majority of responses indicated exhibitors spent in the \$1,000 - \$5,000 range for purchasing their cattle. In terms of dollars spent on supplies, 69.5% of respondents

indicated they spent over \$300. Table 6 indicates that the majority of cattle exhibitors are spending around \$100 - \$300 on veterinarian care and health supplies, while entry fees, trim chute fees, shavings and other associated livestock show costs (Table 7) account for over \$200. Forty-eight percent of cattle exhibitors responded that they spent over \$200 on feed additives and supplements for cattle projects during the 2013-2014 livestock show season.

Table 4. *Cattle Project Purchase Price Frequencies and Percentages (N=150)*

Species	\$0	\$1- \$499	\$500- \$999	\$1,000- \$1,999	\$2,000- \$2,999	\$3,000- \$4,999	\$5,000- \$9,999	\$10,000 or greater
Cattle	6 (4%)	2 (1.3%)	11 (7.3%)	42 (28%)	30 (20%)	35 (23%)	20 (13%)	4 (2.6%)

Table 5. *Cattle Project Cost of Supplies Frequencies and Percentages (N=151)*

Species	\$0	\$1- \$49	\$50- \$99	\$100- \$149	\$150- \$199	\$200- \$249	\$250- \$299	\$300 or greater
Cattle	0 (0%)	0 (0%)	2 (1.3%)	8 (5%)	8 (5%)	15 (9.9%)	13 (8.6%)	105 (69.5%)

Table 6. *Cattle Project Cost of Veterinary Care & Health Supplies Frequencies and Percentages (N=151)*

Species	\$0	\$1- \$24	\$25- \$49	\$50-\$99	\$100- \$199	\$200- \$299	\$300- \$399	\$400 or greater
Cattle	1 (.6%)	0 (0%)	10 (6.6%)	19 (12.6%)	43 (28%)	39 (26%)	21 (14%)	18 (11.9%)

Table 7. Cattle Project Fees and Associated Costs Frequencies and Percentages (N=151)

Species	\$0	\$1-\$24	\$25-\$49	\$50-\$74	\$75-\$99	\$100-\$149	\$150-\$199	\$200 or greater
Cattle	1 (6%)	5 (3%)	12 (8%)	6 (4%)	17 (11%)	26 (17%)	18 (12%)	66 (44%)

Table 8. Cattle Project Cost of Feed Supplements and Additives Frequencies and Percentages (N=149)

Species	\$0	\$1-\$24	\$25-\$49	\$50-\$74	\$75-\$99	\$100-\$149	\$150-\$199	\$200 or greater
Cattle	10 (7%)	0 (0%)	6 (4%)	10 (7%)	7 (5%)	25 (17%)	20 (13%)	71 (48%)

Tables 9-13 represent responses for the swine project. Table 9 reveals that the majority of swine exhibitors spent \$250 - \$500 on purchasing their project. Table 10 indicates that 60% of swine exhibitors spent over \$200 on supplies. Veterinarian care and health supplies yielded a fairly even split of respondents across the six data points. Table 12, again, shows a relatively even distribution across the eight data points for associated fees and costs. Thirty-one percent of swine exhibitors indicated the spent over \$200 in feed additives and supplements.

Table 9. Swine Project Purchase Price Frequencies and Percentages (N=133)

Species	\$0	\$1-\$149	\$150-\$249	\$250-\$500	\$501-\$999	\$1,000-\$1,999	\$2,000-\$2,999	\$3,000 or greater
Swine	2 (1.5%)	0 (0%)	5 (4%)	85 (64%)	35 (26%)	5 (3.7%)	1 (0%)	0 (0%)

Table 10. Swine Project Cost of Supplies Frequencies and Percentages (N=133)

Species	\$0	\$1-\$24	\$25-\$49	\$50-\$99	\$100-\$199	\$200 or greater
Swine	0 (0%)	0 (0%)	7 (5%)	22 (17%)	23 (17%)	81 (60%)

Table 11. Swine Project Cost of Veterinary Care & Health Supplies Frequencies and Percentages (N=132)

Species	\$0	\$1-\$24	\$25-\$49	\$50-\$99	\$100-\$199	\$200 or greater
Swine	4 (3%)	23 (17%)	25 (19%)	33 (25%)	26 (20%)	21 (16%)

Table 12. Swine Project Fees & Associated Costs Frequencies and Percentages (N=133)

Species	\$0	\$1-\$24	\$25-\$49	\$50-\$74	\$75-\$99	\$100-\$149	\$150-\$199	\$200 or greater
Swine	1 (.7%)	17 (13%)	37 (28%)	17 (13%)	17 (13%)	20 (15%)	10 (7.5%)	14 (11%)

Table 13. Swine Project Cost of Feed Supplements and Additives Frequencies and Percentages (N=133)

Species	\$0	\$1-\$24	\$25-\$49	\$50-\$74	\$75-\$99	\$100-\$149	\$150-\$199	\$200 or greater
Swine	5 (4%)	8 (6%)	19 (14%)	14 (11%)	16 (12%)	20 (15%)	8 (6%)	41 (31%)

Lamb and goat data is recorded together because the same data points were collected for both species and they yielded similar results. Tables 14-18 represent responses for raising and exhibiting lamb and goat projects.

As Table 14 reveals, the majority of lamb and goat exhibitors indicated a purchase price between \$300 and \$2,000 for their projects. Cost of supplies (Table 15),

for both lamb and goat projects, had the highest response rate for the \$300 or greater cost range. The majority of respondents indicated they spent between \$50 - \$200 on veterinarian supplies and health care during the 2013-2014 livestock show season. Twenty-three percent of lamb exhibitors and 20% of goat exhibitors indicated they spent \$23 - \$49 on fees and associated costs. Feed supplements and additives cost ranges yielded a fairly even split of respondents across the eight data points for both lamb and goat exhibitors.

Table 14. *Lamb/Goat Project Purchase Price Frequencies and Percentages (N=93,141)*

Species	\$0	\$1-\$149	\$150-\$299	\$300-\$499	\$500-\$749	\$750-\$999	\$1,000-\$1,999	\$2,000 or greater
Lamb	0 (0%)	0 (0%)	4 (4%)	18 (19%)	22 (24%)	16 (17%)	26 (28%)	7 (8%)
Goat	9 (6.4%)	5 (3.5%)	16 (11%)	23 (16%)	27 (19%)	21 (15%)	32 (23%)	8 (5.7%)

Table 15. *Lamb/Goat Cost of Supplies Frequencies and Percentages (N=91,140)*

Species	\$0	\$1-\$49	\$50-\$99	\$100-\$149	\$150-\$199	\$200-\$249	\$250-\$299	\$300 or greater
Lamb	0 (0%)	5 (5.5%)	14 (15.38%)	17 (18.68%)	5 (5.5%)	10 (10.98%)	7 (7.7%)	33 (36%)
Goat	2 (1.4%)	11 (7.9%)	25 (17.8%)	17 (12%)	24 (17%)	14 (10%)	13 (9.3%)	34 (24%)

Table 16. *Lamb/Goat Project Cost of Veterinary Care & Health Supplies Frequencies and Percentages (N=93,140)*

Species	\$0	\$1-\$24	\$25-\$49	\$50-\$99	\$100-\$199	\$200-\$299	\$300-\$399	\$400 or greater
Lamb	2 (2%)	13 (14%)	23 (25%)	21 (23%)	23 (25%)	8 (8.6%)	1 (1%)	2 (2%)
Goat	2 (1.4%)	20 (14.3%)	35 (25%)	47 (33.5%)	21 (15%)	11 (7.9%)	2 (1.4%)	2 (1.4%)

Table 17. *Lamb/Goat Project Fees & Associated Costs Frequencies and Percentages (N=93,140)*

Species	\$0	\$1-\$24	\$25-\$49	\$50-\$74	\$75-\$99	\$100-\$149	\$150-\$199	\$200 or greater
Lamb	2 (2%)	6 (6.5%)	21 (23%)	14 (15%)	10 (10.8%)	13 (14%)	7 (7.5%)	20 (21.5%)
Goat	2 (1.4%)	13 (9.3%)	28 (20%)	26 (18.6%)	20 (14.3%)	17 (12%)	10 (7.1%)	24 (17%)

Table 18. *Lamb/Goat Project Cost of Feed Supplements and Additives Frequencies and Percentages (N=93,139)*

Species	\$0	\$1-\$24	\$25-\$49	\$50-\$74	\$75-\$99	\$100-\$149	\$150-\$199	\$200 or greater
Lamb	4 (4%)	15 (16%)	14 (15%)	11 (11.8%)	7 (7.5%)	15 (16%)	6 (6.5%)	21 (22.6%)
Goat	7 (5%)	18 (13%)	25 (18%)	13 (9.3%)	17 (12%)	16 (11.5%)	12 (8.6%)	31 (22.3%)

Tables 19-23 represent responses for raising and exhibiting rabbit projects. Forty percent of rabbit exhibitors responded that they purchased their rabbit project for \$35-\$49. According to Table 20, the majority of respondents indicated they paid over \$25 in

supply costs. Sixty percent of rabbit project respondents indicated that no funds were necessary for veterinarian care and health supplies for their rabbit project. Associated costs and fees (Table 22), were highest among the \$1-\$49 range and the \$25-\$49 range. Respondents indicated that the meat pen rabbit project is the most prevalent (82.5%), followed by breeding (11.25%) and fryer (6.25%).

Table 19. *Rabbit Project Purchase Price Frequencies and Percentages (N=80)*

Species	\$0	\$1-\$9	\$10-\$14	\$15-\$24	\$25-\$34	\$35-\$49	\$50-\$99	\$100 or greater
Rabbit	4 (5%)	0 (0%)	3 (3.75%)	4 (5%)	14 (17.5%)	32 (40%)	16 (20%)	7 (8.75%)

Table 20. *Rabbit Project Cost of Supplies Frequencies and Percentages (N=80)*

Species	\$0	\$1-\$9	\$10-\$14	\$15-\$24	\$25 or greater
Rabbit	4 (5%)	2 (2.5%)	10 (12.5%)	7 (8.75%)	57 (71.25%)

Table 21. *Rabbit Project Cost of Veterinary Care & Health Supplies Frequencies and Percentages (N=80)*

Species	\$0	\$1-\$9	\$10-\$14	\$15-\$24	\$25 or greater
Rabbit	48 (60%)	8 (10%)	5 (6.25%)	8 (10%)	9 (11.25%)

Table 22. *Rabbit Project Fees & Associated Costs Frequencies and Percentages (N=80)*

Species	\$0	\$1-\$24	\$25-\$49	\$50-\$74	\$75-\$99	\$100 or greater
Rabbit	5 (6.25%)	29 (36.25%)	23 (28.75%)	8 (10%)	6 (7.5%)	9 (11.25%)

Table 23. Type of Rabbit Project (N=80)

Meat Pen	Fryer	Breeding
66 (82.5%)	5 (6.25%)	9 (11.25%)

Chicken and turkey data is recorded together as “poultry” because the same data points were collected for both species and they yielded similar results. Values for chickens are represented by raising and exhibiting 25 head and turkey dollar amounts represent raising and exhibiting 50 head, as these are the order numbers for these projects.

Tables 24-26 represent responses for raising and exhibiting poultry projects. Table 24 reveals that 56.5% of chicken participants and 47.4% of turkey participants indicated they spent \$200 or greater in supply costs for their projects. The majority of respondents indicated they spent \$0-\$24 on veterinarian care and health supplies. In terms of fees and associated costs, the majority of both chicken and turkey respondents reported they paid \$25-\$75.

Table 24. Poultry Project Cost of Supplies Frequencies and Percentages (N=46, 19)

Species	\$0	\$1-\$24	\$25-\$49	\$50-\$74	\$75-\$99	\$100-\$199	\$200 or greater
Chickens	2 (4.3%)	4 (8.7%)	6 (13.04%)	1 (2.2%)	3 (6.5%)	4 (8.7%)	26 (56.5%)
Turkeys	2 (10.5%)	0 (0%)	3 (15.8%)	3 (15.8%)	0 (0%)	2 (10.5%)	9 (47.4%)

Table 25. Poultry Project Cost of Veterinary Care & Health Supplies Frequencies and Percentages (N=46, 20)

Species	\$0	\$1-\$24	\$25-\$49	\$50-\$74	\$75-\$99	\$100-\$199	\$200 or greater
Chickens	18 (39.13%)	18 (39.13%)	3 (6.5%)	3 (6.5%)	2 (4.35%)	2 (4.35%)	0 (0%)
Turkeys	8 (40%)	5 (25%)	5 (25%)	2 (10%)	0 (0%)	0 (0%)	0 (0%)

Table 26. Poultry Project Fees & Associated Costs Frequencies and Percentages (N=45, 20)

Species	\$0	\$1-\$24	\$25-\$49	\$50-\$74	\$75-\$99	\$100-\$199	\$200 or greater
Chickens	5 (11.11%)	4 (8.88%)	15 (33.33%)	10 (22.22%)	3 (6.66%)	7 (15.55%)	1 (2.22%)
Turkeys	1 (5%)	2 (10%)	6 (30%)	3 (15%)	3 (15%)	4 (20%)	1 (5%)

From these recorded frequencies, the researchers calculated the midpoints for each of the cost ranges. These midpoints were multiplied by the frequency, and the sum of quotients was calculated. This sum was then divided by the number of respondents for each of the respective questions. In the case of poultry projects, purchase price is initially set by Ideal Poultry and then the Texas A&M University Poultry Department adds to that cost for processing and wing banding the birds. These prices are set at \$1.25 per bird for chicken (broiler) projects and \$3.50 per bird for turkey projects. For all other species, numbers recorded are inclusive of breeding and market categories within species. For example, cattle includes: market steers, breeding heifers, commercial heifers and commercial steer entries. Participants recorded that cattle require the highest dollar

amount on average, followed by sheep and goats, swine, chickens and turkeys, with rabbits being the least investment. Table 27 is provided to reveal average purchase price per livestock project species.

Table 27. *Livestock Project Species Average Purchase Price as Indicated by Respondents*

Species	Avg. Cost	N
Cattle	\$3288.50	150
Swine	\$524.74	133
Sheep	\$947.10	93
Goats	\$822.46	141
Rabbits	\$49.50	80
Chickens	\$62.50	N/A
Turkeys	\$87.50	N/A

Note. Mean scores reflect a dollar amount. Chicken averages are based on 50 head (at \$1.25 per bird). Turkey averages are based on 25 head (at \$3.50 per bird).

Next, we aimed to identify average feed costs for each species based on the number of months the project is being raised. Personal communication was conducted with industry professionals to determine species averages for pounds fed per day. These averages were multiplied by 30 days to calculate pounds fed per month per head.

Survey participants were asked to estimate the number of months they kept their project on feed. On average, respondents indicated that they had swine projects on feed for 5.19 months, cattle projects for 10.06 months, lamb projects for 8.02 months, goat projects for 7.62 months, rabbit projects for 4.87 months, chicken projects for 1.36 months, and turkey projects for 4.93 months.

Participants were also asked to estimate the cost per 50-pound bag of feed they purchased for their projects. Swine feed average was recorded at \$23.74, followed by

turkeys (\$21.00), chickens (\$19.55), goats (\$19.19), sheep (\$18.00), rabbits (\$17.65), and cattle (\$14.00).

With these data, researchers were able to calculate the total average feed costs associated with raising one head of livestock over the average length of time each project species is raised. Table 28 reveals average feed costs for each species.

Table 28. Livestock Project Species Average Feed Cost as Indicated by Respondents

Species	Avg. Pounds Per Day	Avg. Number of Months on Feed	Avg. Cost per Bag of Feed	Total Avg. Feed Cost	N
Cattle	22.00	10.06	\$14.44	\$1,917.52	148
Swine	7.00	5.19	\$23.79	\$518.57	132
Sheep	4.00	8.02	\$18.01	\$346.66	94
Goats	3.00	7.62	\$19.10	\$261.98	138
Rabbits	.63	4.87	\$17.65	\$32.23	80
Chickens	.44	1.36	\$19.55	\$352.00	46
Turkeys	.85	4.93	\$20.73	\$1,295.25	20

Note. Mean scores reflect a dollar amount. Chicken averages are based on 50 head.
Turkey averages are based on 25 head.

Table 29 depicts responses of participants when asked on average how much exhibitors spent on supplies per head (including feeding, grooming and fitting, etc.).

Table 29. Livestock Project Species Average Supplies Cost as Indicated by Respondents

Species	Avg. Cost	N
Cattle	\$271.64	151
Swine	\$160.84	133
Sheep	\$201.59	91
Goats	\$179.87	140
Rabbits	\$22.26	80
Chickens	\$180.87	46
Turkeys	\$140.94	19

Note. Mean scores reflect a dollar amount. Chicken averages are based on 50 head.
Turkey averages are based on 25 head.

Table 30 reveals average amounts of dollars spent per species on veterinarian care and health costs during the 2013-2014 livestock show season.

Table 30. *Livestock Project Species Average Veterinary Care & Health Supplies Cost as Indicated by Respondents*

Species	Avg. Cost	N
Cattle	\$215.13	151
Swine	\$89.08	132
Sheep	\$98.52	93
Goats	\$88.78	140
Rabbits	\$6.01	80
Chickens	\$21.63	46
Turkeys	\$18.57	20

Note. Mean scores reflect a dollar amount. Chicken averages are based on 50 head.
Turkey averages are based on 25 head.

The researchers' next goal was to quantify costs of veterinarian bills, entry fees, passes, and other associated costs with raising livestock projects in each species. Table 31 outlines species averages for dollars spent on bills, fees and other costs.

Table 31. *Livestock Project Species Average Bills and Fees Cost as Indicated by Respondents*

Species	Avg. Cost	N
Cattle	\$147.53	151
Swine	\$84.07	133
Sheep	\$106.68	93
Goats	\$94.64	140
Rabbits	\$41.75	80
Chickens	\$73.85	45
Turkeys	\$78.50	20

Note. Mean scores reflect a dollar amount. Chicken averages are based on 50 head.
Turkey averages are based on 25 head.

By gathering data on each of these objectives, we were able to calculate the overall average cost of raising one head of each species for cattle, swine, sheep and goats, and rabbits. As most exhibitors do not usually raise one head of chickens or turkeys, we based chicken project averages on 50 head and turkey project averages on 25 head. Table 32 depicts the average cost of each species of Texas 4-H livestock projects.

Table 32. *Average Cost of Raising Each Species of Livestock Projects as Indicated by Respondents (N=472)*

Species	Avg. Cost
Cattle	\$5,840.32
Swine	\$1,377.30
Sheep	\$1,700.55
Goats	\$1,447.73
Rabbits	\$151.75
Chickens	\$690.85
Turkeys	\$1,620.76

Note. Mean scores reflect a dollar amount. Chicken averages are based on 50 head. Turkey averages are based on 25 head.

These data help gain a greater understanding of how many dollars per species are going into local economies in terms of feed and supply purchases. By quantifying average project costs, these data will aid in conveying estimated financial commitment necessary to complete livestock projects. In turn, County Extension Agents can utilize the dollar figures in helping new 4-H member families decide which project is best suited for their budget and time allocations.

Objective Two: Livestock Project Economic Impact on Local and State

Economies. In an effort to quantify species differences, we had to begin by knowing the number of head validated in 2013. Swine validation numbers were by far the highest,

with 24,600 being validated. Falling significantly lower than this, goats totaled 8,282 head validated followed by lambs with 7,843 validated. Steers rounded out the total numbers with 7,521 head validated in 2013. Table 33 illustrates number of head per species validated in the 2013-2014 livestock show season.

Table 33. *2013-2014 Texas Livestock Validation Per Species*

Species	Number of Head Validated
Steers	7,521
Swine	24,600
Sheep	7,843
Goats	8,282

Note. Validation numbers only reflect market animals in each species.

These averages, when combined with state validation totals, provide an estimate of the total amount of dollars spent on each species throughout the state. As a whole, the livestock industry is generating approximately \$108,734, 353.75 annually. It is important to keep in mind that this number only reflects totals for market animals within each species. Species averages for statewide dollars spent on 4-H livestock projects are included in Table 34.

Table 34. *Estimated Average Statewide Dollars Spent by Species (2013-2014)*

Species	Avg. Total Dollars Spent
Steers	\$44,705,801.73
Swine	\$36,881,304.00
Sheep	\$14,226,417.00
Goats	\$12,920,831.02
Grand Total	\$108,774,353.75

Note. Dollar figures reflect only market animals.

Finally, survey participants were also asked if their family had made any investment in a capital purchase, such as a trailer, barn, concrete, etc., during the 2013-2014 livestock show season. Forty-four percent of respondents indicated that they had made a capital purchase. Of these, the average cost of the capital purchases was \$9,882.96. These data are important in terms of conveying costs incurred within local businesses and economies.

Study Data

The purpose of the recently gathered survey data was to gauge the perceptions of Texas A&M AgriLife Extension Agents in an effort to gain an understanding of how the rising costs of inputs and financial support from county and major livestock shows affect participation in livestock projects.

Demographics of Participants

The population of the study included County Extension Agents with Agriculture and Natural Resources or 4-H and Youth Development responsibilities. The survey was sent to a total of 356 agents. However, by sending to all Agriculture and Natural Resources agents, this includes Extension areas not relevant to the study such as horticulture. Additionally, only completed survey per county is necessary as the survey asks for information based on the county livestock show. There are a total of 251 county Extension offices in Texas and 169 agents completed the survey. Using the number of county Extension offices in Texas, the survey yielded a 67% response rate. Demographic information gathered in the survey included estimated population of the county in which they serve and number of FFA chapters in their county.

According to Texas 4-H (2015) rural populations are described as 10,000 and under, suburban areas are described as being towns and cities between 10,001 and 50,000, and urban cities are described as populations over 50,000. Twenty-seven percent of respondents indicated that the county in which they serve is categorized as rural, 37% identified their county as being suburban, and 36% stated the county in which they are an agent is urban.

Objective Three: County-Level Livestock Entries and Sale Lots and Major Show Entries. Agents were asked to record the total number of county livestock show entries for each of the respective species in the county in which they serve. Within specie categories, numbers can reflect market animals, breeding animals, or commercial livestock entries. From these data, researchers were able to calculate the average number of entries per county in each of the seven species. The highest average entry numbers was for swine (164.49), followed by goats (83.33) and sheep (60.80), rabbits (58.5), cattle (49.65), chickens (40.58), and turkeys (10.5).

The total number of sale lots per each species in the recorded county show was also asked on the instrument. These numbers remained proportionate to entry averages as shown in Table 35. From these data, researchers were able to calculate the average percent of each species sold in either a premium sale or livestock auction. The species with highest percentage sold was cattle (47%), though they were the fifth highest in average entries. Only 32.3% of swine were sold, though they have the largest number of entries. Table 35 reveals the total and average number of entries and sale lots for each species, as well as the average percentage sold.

Table 35. County-Level Livestock Entries and Sale Lots

Species	Entries			Sale Lots			Avg. Percent Sold
	Total (N)	Average/County	SD	Total (N)	Average/County	SD	
Cattle	4874	48.26	49.65	2246	22.69	21.24	47.0%
Swine	16613	164.49	124.73	7306	72.34	53.13	32.3%
Sheep	6141	60.80	53.68	2835	28.07	23.72	46.2%
Goats	8416	83.33	68.65	3656	36.56	32.12	43.9%
Rabbits	5909	58.50	79.57	2289	22.89	28.02	39.1%
Chickens	3422	34.22	40.58	1467	14.52	16.44	42.4%
Turkeys	1050	10.50	22.43	450	4.46	8.40	42.5%

Note. Species numbers are inclusive of market, breeding, and commercial livestock entries.

Agents were also asked to indicate the total number of major show entries per species in the county they serve. Swine were again the largest number recorded (61.5), followed by cattle (39.71), sheep (32.64) and goats (29.09), chickens (8.21), turkeys (5.34), and rabbits (4.18). From these data, we can see that while sheep and goat entries are higher than cattle at the county level, the same does not hold true for major show entries. Additionally, rabbit entry numbers were drastically higher at the county level as compared with major show entries.

Table 36 defines the total number of major livestock show entries per species as well as the average number of major show entries per county.

Table 36. Major Livestock Show Entries

Species	Total (N)	Average/ County	SD
Cattle	4011	39.71	41.26
Swine	6212	61.50	93.98
Sheep	3297	32.64	40.61
Goats	2938	29.09	37.67
Rabbits	422	4.18	8.73
Chickens	829	8.21	16.90
Turkeys	539	5.34	16.10

Note. Species numbers are inclusive of market, breeding, and commercial livestock entries.

Understanding how many entries per species agents reported allowed the researchers to draw further conclusions from recorded perceptions that were also measured in the survey instrument.

Objective Four: Agent Perceptions of Cost Impact on Participation and Financial Support from County and Major Livestock Shows. The fourth objective aimed to capture county-level auction information and County Extension Agent perceptions in relation to financial support at county and major livestock shows. With the relatively high level of investment required to participate in livestock projects, researchers sought to investigate the affects of cost on project participation and financial returns on county and major exhibition.

Participants were asked to indicate what type of auction is conducted at the primary county-level livestock show in the county in which they serve. Over 65% of respondents indicated their county conducted a premium sale (exhibitors receive premium money, but retain ownership of livestock). Of these, 89.4% are from rural counties. Forty-two of the 193 (21.8%) respondents indicated their county holds a terminal livestock auction (exhibitor physically sells the livestock project). Out of this

category, 33.3% are from urban counties. The remaining 13% responded “other” indicating the county in which they serve hosts an auction different from the two categories previously listed. Most described these to either be combination of terminal/premium or “buyers choice”. Table 37 reveals frequencies and percentages for type of auction conducted at the county level, with county size breakdowns.

Table 37. Type of Auction Conducted at Primary County-Level Livestock Show

	Rural	Suburban	Urban	Total
Premium Sale	42 (89.4%)	49 (61.3%)	35 (53.0%)	126 (65.3%)
Terminal Sale	2 (4.3%)	18 (22.5%)	22 (33.3%)	42 (21.8%)
Other	3 (6.4%)	13 (16.3%)	9 (13.6%)	25 (13.0%)
Total	47	80	66	193

Agent perceptions were also captured on the cost of raising and showing livestock and the affect this has on project participation. Over 93% of respondents indicated that the rising cost of inputs does have an affect on livestock project participation. Table 38 outlines responses for this question.

Table 38. Agent Perception - Cost of Raising and Showing Livestock Projects Affect on Project Participation

	Rural	Suburban	Urban	Total
Disagree	2 (4.3%)	2 (3.2%)	6 (11.8%)	10 (6.2%)
Agree	45 (95.7%)	61 (96.8%)	45 (88.2%)	151 (93.8%)
Total	47	63	51	161

When asked if the cost of livestock project participation has grown at the same rate as inflation, 66.9% of respondents indicated that they disagree. However, while the data indicates the two are unequal, researchers are unsure if the perception is that the

cost of livestock participation has grown faster or slower than inflation. Table 39 reveals frequencies and percentages for these responses by county size.

Table 39. *Agent Perception - Cost of Livestock Show Project Participation Has Grown at the Same Rate as Inflation*

	Rural	Suburban	Urban	Total
Disagree	33 (71.7%)	39 (61.9%)	35 (68.6%)	107 (66.9%)
Agree	13 (28.3%)	24 (38.1%)	16 (31.4%)	53 (33.1%)
Total	46	63	51	160

The next question aimed to gauge agent perceptions on financial support from county-level livestock auctions. This question yielded relatively evenly distributed responses with 54.7% indicating they agree with the statement and 45.3% indicating they disagree that county livestock shows provide adequate returns as they compare to the cost of raising livestock projects. Table 40 reveals frequencies and percentages for these responses.

Table 40. *Agent Perception - County Livestock Shows Provide Adequate Premiums/Auction Prices as They Compare to Cost of Raising Livestock Projects*

	Rural	Suburban	Urban	Total
Disagree	20 (42.6%)	25 (39.7%)	28 (54.9%)	73 (45.3%)
Agree	27 (57.4%)	38 (60.3%)	23 (45.1%)	88 (54.7%)
Total	47	63	51	161

The same question was asked in regard to premiums and auction prices at major livestock shows, but results were more negative with 64.6% of respondents indicating

they disagree with the statement and only 35.4% in agreement. Results were relatively evenly distributed between all county size categories. Table 41 below shows the results for this question.

Table 41. *Agent Perception - Major Livestock Shows Provide Adequate Premiums/Auction Prices as They Compare to Cost of Raising Livestock Projects*

	Rural	Suburban	Urban	Total
Disagree	35 (74.5%)	43 (68.3%)	26 (51.0%)	104 (64.6%)
Agree	12 (25.5%)	20 (31.7%)	25 (49.0%)	57 (35.4%)
Total	47	63	51	161

When asked if they thought major livestock show premiums/sale prices have increased at a higher rate than those at county livestock shows, 62.3% of agents disagreed and 33.7% agreed with the statement. Of these, more rural and suburban county agents disagreed, while more urban agents agreed with the statement. Table 42 reveals frequencies and percentages for these responses.

Table 42. *Agent Perception - Major Livestock Show Premiums and Sale Prices Have Increased at a Higher Rate Than Those at County Livestock Shows*

	Rural	Suburban	Urban	Total
Disagree	32 (68.1%)	47 (74.6%)	20 (40.8%)	99 (62.3%)
Agree	15 (31.9%)	16 (25.4%)	29 (59.2%)	60 (37.7%)
Total	47	63	49	159

Conversely, researchers asked if county show premiums/sale prices have increased at a higher rate than those at major livestock shows. This question yielded a

more even split with 51% of respondents agreeing with the statement and 48.4% disagreeing. Of these, 70.2% of urban county agents disagreed, with more rural and suburban agents in agreement with the statement. Results for Table 43 are shown below.

Table 43. *Agent Perception - County Livestock Show Premiums and Sale Prices Have Increased at a Higher Rate Than Those at Major Livestock Shows*

	Rural	Suburban	Urban	Total
Disagree	23 (48.9%)	20 (31.7%)	33 (70.2%)	76 (48.4%)
Agree	24 (51.1%)	43 (68.3%)	14 (29.8%)	81 (51.6%)
Total	47	63	47	157

Agents were also asked to indicate if the financial support of their county and local livestock shows remains fairly constant from year to year. Results indicate 83.8% of respondents agree that financial support is relatively constant over the years, while only 16.3% disagreed. The majority in all county size categories agreed. Table 44 reveals the results for this question.

Table 44. *Agent Perception - The Financial Support of My County and Local Livestock Shows Remains Fairly Constant From Year to Year*

	Rural	Suburban	Urban	Total
Disagree	7 (14.9%)	8 (12.7%)	11 (22.0%)	26 (16.3%)
Agree	40 (85.1%)	55 (87.3%)	39 (78.0%)	134 (83.8%)
Total	47	63	50	160

County Extension Agent perceptions were also gauged for the idea that the economy, in terms of crop yields, oil prices, etc. (depending on location), has a major

effect on the premiums paid to youth at the county level. Responses lean heavily to agreement with 72.5% indicating they agree and only 27.5% indicating that they disagree with the statement. As Table 45 reveals, more rural and suburban agents were in agreement as compared to urban agents.

Table 45. *Agent Perception - The Economy (Crop Yields, Oil Prices, etc.) Has a Major Effect on the Premiums Paid to Youth in My County Show*

	Rural	Suburban	Urban	Total
Disagree	10 (21.3%)	16 (25.4%)	18 (36.0%)	44 (27.5%)
Agree	37 (78.7%)	47 (74.6%)	32 (64.0%)	116 (72.5%)
Total	47	63	50	160

Finally, agents were asked to indicate if they agree or disagree with the statement that new 4-H members are more likely to select a non-animal or small animal project due to the lower cost of investment required. A total of 82.6% of respondents agreed to the statement and the majority of responses from all three county size categorizes indicated they agreed as well. Table 46 shows the frequencies and percentages for this question.

Table 46. *Agent Perception - New 4-H Members in My County Are More Likely to Select a Non-Animal or Small Animal Project Due to the Lower Cost of Investment Required*

	Rural	Suburban	Urban	Total
Disagree	11 (23.4%)	11 (17.5%)	6 (11.8%)	28 (17.4%)
Agree	36 (76.6%)	52 (82.5%)	45 (88.2%)	133 (82.6%)
Total	47	63	51	161

The combination of these two studies has yielded major findings that will benefit several stakeholders in the livestock show industry. Most notably, researchers quantified species averages for raising each of the seven species of livestock shown in Texas 4-H. As calculated from survey responses, the average cost of raising one head of cattle, swine, sheep, goats and rabbits are respectively as follows: \$5,840.32, \$1,377.30, \$1,700.55, \$1,447.73, and \$151.75. Based on raising 50 head of chickens, the average cost of the project is \$690.85. Based on raising 25 head of turkeys, the average cost of the project is \$1,620.76.

From these estimated averages, researchers were able combine dollar amounts with validation totals to estimate the average statewide dollars spent by species in the 2013-2014 livestock show season. Estimated averages are based on market animals for each species as steers, swine, lambs, and goats. The sum of these species averages gives us an estimated grand total of \$108,774,353.75 spent of market livestock projects during the 2013-2014 livestock show season.

The second survey allowed researchers to gain a greater understanding of county-level and major livestock show participation as it relates to county size, as well as capture agent perceptions on the financial support at both livestock show levels. Over 93% of agents indicated that the cost of inputs does impact livestock project participation, and over 82% recorded that new 4-H members are more likely to select a small animal or non-animal project due to the lower cost of investment.

Additionally, agents perceive their county-level livestock show to be providing more adequate premiums/auction prices as compared to major livestock shows. Along

the same lines, agents indicated that they feel as if county livestock show premiums and sale prices have increased at a higher rate than those at major livestock shows.

County Extension Agents are on the frontlines of assisting 4-H'ers with livestock projects. By gauging their perceptions of financial support topics, the researchers have gained a better understanding of issues facing 4-H livestock project participation and stakeholder support.

CHAPTER V

CONCLUSIONS, RECOMMENDATIONS, AND IMPLICATIONS

Objective One: Average Cost of Raising and Showing Texas 4-H Livestock Projects

Conclusions

The existing survey data allowed researchers the opportunity to calculate detailed estimates pertaining to each of the seven species of livestock shown in Texas 4-H. Participants of the survey indicated that the cost of project participation is the second leading factor of species selection. The survey also measured purchase price, cost of supplies, veterinarian and health care costs, fees and associated costs of raising the project, and the cost of feed supplements and additives. Though the instrument presented price ranges for each category, researchers calculated midpoints and frequencies for all of the data points to determine estimated averages. The overall costs of raising each of the livestock species are as follows: \$5,840.32 (cattle), \$1,377.30 (swine), \$1,700.55 (sheep), \$1447.73 (goats), \$151.75 (rabbits), \$690.85 (chickens), and \$1,620.76 (turkeys). These findings gave researchers a more detailed cost estimate of raising each species of livestock, which proved helpful in calculating more holistic statewide totals.

Recommendations

It is recommended that future research be conducted to further split categories among species. For example, within the cattle species, define estimates pertaining to steers, heifers, commercial steers and commercial heifers. Breeding categories could be added for other species as well. Future studies might also adjust feed rationing over time.

For example, fewer pounds per day in beginning months of the project and finishing rations closer to the time of show.

Texas A&M AgriLife Extension. At the county level, these estimated species averages could potentially aid County Extension Agents in terms of having dollar amounts on hand to share with inexperienced 4-H members and families. Before starting a project, families need to be aware of the cost commitment associated with each species in an effort to select appropriately. Depending on their area of expertise, agents could utilize these dollar amounts in such instances.

These species averages could also be used to adjust county-level livestock show premiums to more appropriately match the cost of investment. In some instances, livestock premiums were set years ago and for a number of reasons have remained constant despite economic changes. By presenting these dollar amounts to local livestock boards, the need for increased premiums could become more apparent.

Major Livestock Shows. The same holds true for major livestock show premiums and auction prices. Fannin and LeBlanc (2007) suggested that in order to receive consistent support from stakeholders in the community, we must illustrate the financial value of the show. This research could potentially help supporting constituents see how much investment is required to raise, feed, and prepare projects for major livestock shows. Additionally, major livestock shows have capped or pre-set premium prices. In the future, these could be adjusted to more accurately compensate junior livestock show exhibitors.

Objective Two: Livestock Project Economic Impact on Local and State Economies

Conclusions

The estimated species average cost of raising and showing livestock projects from the existing data survey were used in conjunction with 2013 statewide validation totals to help researchers gain a better sense of how many dollars are generated in local and state agricultural economic sectors. For this study, researchers used only market livestock species validation totals. Estimated averages of statewide total dollars spent per species are as follows: \$44,705,801.73 (steers), \$36,881,304.00 (barrows), \$14,226,417.00 (lambs), and \$12,920,831.02 (goats). The summation of these species totals comes to \$108,774,353.75. These impressive numbers are inclusive of purchasing livestock from local and statewide producers, purchasing feed, hay, and additives from feed stores and grain mills, and purchasing supplies from a variety of businesses. These totals will allow livestock show representatives and CEAs/ASTs to more accurately convey the impact livestock projects have on local and state economies.

Survey participants also indicated that 44% of families had made a capital purchases during the 2013-2014 livestock show season. This purchase could include trailers, barns and building material, concrete, etc. Of those recorded, the average cost of capital purchases was \$9,882.96. As outlined by Hanagriff et al. (2009), spending values translate into local and state business revenue, which support jobs and economic development.

Recommendations

It is recommended that future research be conducted to include IMPLAN modeling to more holistically study the economic relationship between agricultural sectors and existing economy from direct spending (Jones, 1997). According to Boleman et al (2005), aside from the initial purchase price of livestock, exhibitors must also purchase a variety of products to care for and house the animal, which creates additional income to state economies. These additional dollars spent should be more thoroughly investigated in upcoming studies. Further research should also be conducted to include lodging, travel, and meal expenses in associated costs of showing livestock projects.

It is also recommended that a replicate study be conducted with the FFA program to compare averages and perceptions reported from Agricultural Science Teachers.

Texas A&M AgriLife Extension. As a whole, the agency can utilize these numbers to gain further support of the Texas 4-H program and junior livestock projects. The mainstay of the 4-H program has been and always will be developing high-quality young people; however, by reporting research-driven economic data to stakeholders, our story will continue to grow. Educating industry professionals on the over \$108 million generated by junior livestock exhibitors per year could potentially increase support from both a programmatic and economic standpoint. This is supported by a study conducted by Hanagriff et al. (2014) that found that significant financial impacts could potentially prevent budget cuts and encourage stakeholders.

At the local level, County Extension Agents can utilize the species averages combined with local validation totals to generate a county-specific economic impact

report. Developing a one-pager describing how many dollars county livestock exhibitors generate every year could be a vital tool for agents seeking local support. This aligns with Harder and Hodges (2011), who stated that there are facets of the 4-H program that require measuring economic impact to gain support. Livestock show boards, county commissioners courts, and school boards are all potential audiences of such resources. Local businessmen and women are frontrunners at county livestock show auctions. If they are made aware of local economic stimuli in livestock projects, donor support could be increased.

Major Livestock Shows. Livestock shows, involving a statewide audience, can utilize the Texas validation totals to convey the large-scale economic contributions generated from their shows. Houston Livestock Show and Rodeo has already published economic impact reports based off of the Spring 2010 show (Smith, 2010). If other major livestock shows follow suit, the livestock show industry will be able to provide an all-inclusive picture of the amount of dollars generated.

Objective Three: County-Level Livestock Entries and Sale Lots and Major Show Entries

Conclusions

The more recent survey data yielded estimated county-level livestock show entries and sale lots, as well as major show livestock entries. Researchers found that swine have the largest number of entries and sale lots, followed by goats, sheep, rabbits, cattle, chickens and turkeys. However, when calculating percentage of each species shown, a higher percentage of cattle were sold than any other species and swine had the

lowest percent sold. Major livestock show entries closely mirrored those reported for county-level livestock shows, respectively.

Recommendations

Researchers recommend that future studies allow participants to indicate categories within species such as breeding and market to get a better read of how county entries correspond to major livestock show entries.

Texas A&M AgriLife Extension. Entry versus sale lot data can be used by County Extension Agents and livestock show boards to more accurately distribute sale lots and premiums among species. The data indicates that swine have the lowest percent of head sold even though they have the highest number of entries, while cattle have the highest percentage sold. Depending on specific county situations, boards may choose to adjust this number accordingly.

Major Livestock Shows. Major livestock show managers could potentially use this data to enhance species that need improvement in marketing or education if there is an inconsistency between county and state entry numbers. For example, as expressed by the dramatic decrease in county to state entries for small animal species, these exhibitors might not be fully aware of major livestock show opportunities.

Objective Four: Agent Perceptions of Cost Impact on Participation and Financial Support from County and Major Livestock Shows

Conclusions

The high-level cost of investment required by livestock projects prompted researchers to investigate agents' perceptions on the rising cost of inputs incurred with

project participation. Participants were also asked to record perceptions dealing with county and major exhibition. Responses were divided into respective demographic categories for urban, suburban and rural county populations.

The majority of respondents indicated that their primary county-level livestock show holds a premium auction in which exhibitors retain ownership of livestock, 89.4% of which were from rural counties. An overwhelming 93.8% of agents indicated that the cost of inputs does have an effect on livestock project participation, and over 82% recorded that new 4-H members are more likely to select a small animal or non-animal project due to the lower cost of investment.

Most notably, agents recorded that they believe their county-level livestock show is doing a better job of providing more adequate premiums/auction prices as compared to major livestock shows. Similarly, agents perceive that county livestock show premiums and sale prices have increased at a higher rate than those at major livestock shows.

Recommendations

Future research should consider adding buyer/donor information questions to gain a greater understanding of the demographics of those contributing to local livestock shows. The researchers also recommend future studies gathering information on local and major livestock show scholarship monies and including this in return-on-investment averages. It should also be conveyed to participants to include additional premium checks and add-ons when reporting support from major livestock shows.

Texas A&M AgriLife Extension. At the county-level, agents think local livestock shows are providing reasonable premiums and auction prices. When conveyed to new 4-

H members and families, this could raise interest and participation in livestock projects. Additionally, for the majority of counties offering premium livestock auctions, this could increase participation based on the fact that participants can purchase fewer animals and show at both local and major livestock shows.

Major Livestock Shows. Major livestock show leadership and management should discuss ways to increase understanding at the county-level on premiums and auction dollars provided to livestock exhibitors. With over 64% of County Extension Agents perceiving their own county livestock shows provide more adequate premiums and auction dollars than Texas major livestock shows, more economic support should be considered to increase participation. However, on the same token, participants should take into account additional premiums and add-ons, scholarships awarded, and scramble opportunities provided by major livestock shows.

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