AN ASSESSMENT OF THE TEXAS 4-H AND FFA YOUTH LIVESTOCK PROGRAM: SCOPE, PERCEPTIONS, AND RETURN-ON-INVESTMENT

A Dissertation

by

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ABSTRACT

Texas enjoys the largest youth livestock program in the nation with the most projects, exhibitors, and support—both from both monetary and programmatic standpoints. The purpose of this study was to measure and explain the scope, relevance, and overall impact of the Texas 4-H and FFA youth livestock program. I employed three quantitative surveys in this study to gauge perceptions of County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families regarding constructs of the youth livestock program. I sought to quantify total average costs per species, gain a greater understanding of educational and life skill development outcomes, and better understand perceived return-on-investment financially and intrinsically.

Texas County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families indicated the livestock project either *somewhat* or *definitely* fosters an environment for increasing educational outcomes and life skill development traits in the areas of: responsibility, sportsmanship, work ethic, respect, ethical decision making, animal science knowledge, knowledge about the food supply, safe animal handling and welfare knowledge, and knowledge about producing a safe food animal product. All three respondent groups agreed life skills and educational outcomes learned through the livestock project are relevant in real-world application. In total, 97.90% of all respondents agreed participation in the livestock project is worth the investment when all

intrinsic and extrinsic returns were considered.

DEDICATION

One thing is for sure, I cannot do it alone. This is exceptionally true for this dissertation. I dedicate this work to my family.

Nolan, you've been here through it all. Three degrees, a lot of fun, and even more patience are just the start of what makes us – us. Thank you for always supporting me, leading me, and believing in me. This is for us, our future, and our future family. I am thankful to do it all with you.

To my Cook and Goebel families, thank you for your encouragement and endless prayers over the past several years. Ma, you believed in, so I did. Thanks for talking me through it and praying me through it. To you and Pa, thank you for a foundation of belief and support that made this possible. You fostered my love and appreciation for the youth livestock project through ten years of countless miles and memories. This set into motion my passion and love for this thing we call 'stock show'.

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To my committee, thank you for your time and commitment to helping me succeed. Your belief in me and this project helped give this work the passion it deserved. You all are incredible scholars, role models, and friends. Plain and simple, the youth livestock show program in Texas is blessed by people who have the grit and heart that you all show for these young people. I am grateful to work alongside each of you.

Billy, there are not enough words I could write to adequately express the acknowledgement you deserve. Thank you for believing in me, mentoring me, and above all, being a great friend. I am blessed to learn from you every day.

To the County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families that provided the responses and data for this project – thank you endlessly. Despite a challenging Spring, you selflessly replied when we needed you. Because of each of you, we will continue a legacy of youth livestock show projects in this state we are blessed to participate. Your response when the going gets tough truly exemplifies the resilience and perseverance this project instills.

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Contributors

This work was supported by a dissertation committee consisting of Professor Dr. Scott Cummings [advisor], Dr. Jeff Ripley, and Dr. Gary Briers of the Department of Agricultural Leadership, Education and Communications, Professor Dr. Chris Skaggs of the Department of Animal Science, and Assistant Professor Dr. Billy Zanolini [special appointmet] with Texas A&M AgriLife Extension.

All other work conducted for the dissertation was completed by the student independently.

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CHAPTER I

INTRODUCTION

To increase agricultural-based research and education targeting key farming practices, Congress passed the Morrill Act of 1862 (7 U.S.C. 321 et seq.). Unfortunately, farmers and ranchers met this educational effort with resistance. These agriculturalists were hesitant to try the new research-based techniques from universities. This inspired the initiative to look to youth to test new agricultural innovations and practices. In turn, the land-grant universities formed a closer affiliation with the public sector, which initiated a need for an agency to serve as a liaison between the university system and communities (National 4-H Headquarters, 2019).

Since its beginnings in 1914 through the Smith-Lever Act (7 U.S.C. 343 et seq.), the Cooperative Extension Service (Extension) has become the largest adult and youth education organization in the United States. Today, the mission of Texas A&M AgriLife Extension Service (AgriLife Extension) is to provide high-quality, relevant education that encourages lasting and effective change through the application of science-based knowledge (Texas A&M AgriLife Extension, 2019). Established in 1916, Extension houses the primary area of youth development, known as 4-H. Resonating in the vocational agricultural customs of the early 1900s, the 4-H program relays research-driven information from land-grant universities to local communities (Worker, 2012).

The 4-H Youth Development Program is rich in its tradition of teaching life skills to youth throughout the United States. The program uniquely does so by engaging

4-H members in science, leadership, and citizenship education. Today, there are nearly six million 4-H'ers who participate across the United States—from urban neighborhoods to suburban schoolyards to rural farming communities (National 4-H Headquarters, 2019).

Despite the fact that agrarian lifestyles have diminished since early 4-H program implementation, the need for youth to learn and grow in areas of agricultural leadership, education, and life skill development remains. As the 4-H program continues to grow and become more diverse, it is imperative that program administrators explain the impact that project participation has on youth, families, and their communities (Boleman et al., 2003; Boleman et al., 2005).

Statement of the Problem

Program evaluation is a powerful tool for demonstrating the value of Extension education to stakeholders (Stup, 2003). Evaluative data can be shared with public sectors and other stakeholders as a means of garnering organizational support. Evaluating programs and educational impacts can be used to not only inform curriculum development and delivery, but also help increase support from program donors and supporters. Substantive Extension program evaluation that results in measurable outcomes and impacts reported to stakeholders is essential to Extension's financial and long-term organizational success (Hachfeld et al., 2013).

Cummings et al. (2019) explained that there is immense value in interpreting evaluation results and telling a compelling story to stakeholders. Interpretation to supporters and funders can help increase future support and garner new relationships

that are founded on similar goals. Cummings et al. (2019) also stated effective interpretation is fundamentally linked to evaluation and helps our funding partners asses programming efforts.

In 2009, Lamm and Harder challenged Extension to "prove 4-H's worth by demonstrating clear return-on-investment to stakeholders" (4-H in Modern America section). The 4-H program faces a more difficult challenge in demonstrating return-on-investment, or economic impact, than most Extension programs because the impact of teaching life skills to youth is less readily quantifiable than impacts from programs areas. However, a few components of 4-H lend themselves to measuring economic impact. The 4-H livestock program is one of these components (Harder & Hodges, 2011).

Purpose and Objectives

The purpose of the quantitative study described herein was to measure and explain the scope, relevance, and overall impact of the Texas 4-H and FFA youth livestock program. I employed three quantitative survey instruments to gauge perceptions of County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families regarding several constructs of youth livestock projects.

Research Questions

The following research questions helped guide the purpose and direction of the study.

1. What is the current size and scope of Texas 4-H and FFA youth livestock projects?
2. What are current trends of Texas 4-H and FFA youth livestock projects?
3. Do livestock project resource inputs align with intrinsic and extrinsic returns-on-investment of the youth livestock project?
4. Does the monetary support from local, county and state livestock shows match economic inputs of the project area?
5. Do intended educational components of the project match actual experiences?
6. Do goals within certain areas of the program match outcomes with respect to real-world application?
7. Is the Texas 4-H and FFA livestock project 'worth it'?

I sought to quantify current livestock project total numbers of head per species, assign economic values to these projects per head raised, gain a greater understanding of educational and life skill development outcomes, and better understand perceived return-on-investment both from a monetary standpoint and in terms of educational outcomes. Objectives of the study were as follows:

1. Describe the current size and scope of Texas 4-H and FFA livestock projects to investigate trends from previous studies.
2. Determine the average cost of raising and exhibiting Texas 4-H and FFA livestock projects by identifying the average purchase price of animals of each species, the cost of feed, hay and supplies, and the dollar amounts spent on fees, veterinarian bills, and other associated costs.

3. Estimate total number of county livestock show entries, sale lots, dollars raised at local auctions, and local scholarships awarded.
4. Gauge perceptions of County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families regarding educational and life skill development outcomes of the Texas 4-H and FFA livestock projects raised for exhibition.
5. Capture perceptions of County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families regarding return-on-investment and alignment of project inputs with intrinsic and extrinsic rewards.

Significance of the Study

This study will help educators, agency administrators, and supporters quantify the economic, educational, and social impacts associated with youth livestock projects. Ultimately, I sought to increase awareness and support of 4-H and FFA livestock projects and the Texas livestock show industry. By presenting research-driven data to stakeholders and donors concerning economic statistics regarding livestock projects, program administrators can continue to build relationships and support for youth livestock exhibitors.

The results from my study will support livestock exhibitors, their families, County Extension Agents, Agricultural Science Teachers, Texas A&M AgriLife Extension, the Texas FFA Association, local and county show boards, major livestock shows, donors, and other stakeholders.

Limitations

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

a) Extremely large investments (emergency veterinary bills, new facilities, etc.) that could skew economic data.
b) Sampling strategies may decrease representative generalizability to population.
c) Possibility of dissimilar number of respondents across species.
d) Possibility of families exhibiting and responding for more than one species.
e) Average costs to feed each species are based on set number of pounds per day and not adjusted for growth.
f) Response rate from the livestock exhibitor family group may be misleading. It is impossible to know which of the emails went to duplicate family members as families could use unique emails for different exhibitors.
g) Additional factors to consider with the livestock exhibitor family respondent group is graduations, exhibitors no longer showing for various reasons, and duplicate emails among the various lists.

Definition of Terms

4-H: A youth organization in the Cooperative Extension Service guided by the mission of "engaging youth to reach their fullest potential while advancing the field of youth development" (Texas A&M AgriLife Extension Service, 2019, Texas 4-H & Youth Development page, para. 1).

Agricultural Science Teacher (AST): Educators employed by local independent school districts who work in schools to deliver agricultural-based education to youth.

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

Breeding doe: Female goat livestock project raised with the intent to breed. Required to be registered in a breed association.

Breeding gilt: Female swine livestock project raised with the intent to breed.

Breeding heifer: Female cattle livestock project raised with the intent to breed. Required to be registered in a breed association.

Breeding sheep: Female sheep livestock project raised with the intent to breed. Required to be registered in a breed association.

Comparative economics: Comparing the purchase price and associated costs of raising each species of livestock shown at livestock shows in Texas.

County Extension Agent (CEA): Educators employed by Texas A&M AgriLife Extension Service who work in Texas counties to deliver research-based educational information to youth and adults.

County livestock show: A competitive event where 4-H and FFA members exhibit livestock projects in their respective counties.

FFA: A youth organization offered through public schools with the mission of, "making a positive difference in the lives of students by developing their potential for

premier leadership, personal growth and career success through agricultural education" (Texas FFA, 2020, FFA Mission Section).

Livestock show project: Raising livestock and competing in county and statewide livestock shows with animals the exhibitor has purchased, raised, trained, and fed until time of exhibition.

Local livestock show: A competitive event where 4-H and FFA members exhibit livestock projects in their respective cities/school districts.

Major/state livestock shows: Competitive events where Texas 4-H and FFA members may exhibit their livestock against others statewide. Examples include the 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.

Market barrow: Castrated male swine livestock project raised for market or terminal purposes.

Market goat: Castrated male goat livestock project raised for market or terminal purposes.

Market lamb: Castrated male sheep livestock project raised for market or terminal purposes.

Market steer: Castrated male cattle livestock project raised for market or terminal purposes.

Wether dam: Female sheep livestock project raised primarily for the production of wether lambs (sheep).

Wether doe: Female goat livestock project raised primarily for the production of wether kids (goats).

CHAPTER II

REVIEW OF LITERATURE

Youth Development

Youth are influenced by their environment. The opportunity for developmental activities gives them a way to be successful by allowing them to positively contribute to their families, out-of-school activities, neighborhoods, and communities (Lerner, 2008). Lerner (2008) suggested the Five C's as a path to positive youth development: competence, confidence, connection, character, and caring. These attributes can lead to the development of the sixth C, which is contribution (Lerner, 2008).

Lerner (2008) also identified three ways to promote the Five C's of positive youth development in adolescents. Youth should be given the opportunity to have consistent and positive interactions with adults, be involved in structured activities that nurture the development of life skills and be given the opportunity to obtain leadership roles in their communities. Ultimately, these opportunities help foster a sense of stewardship and volunteerism that can lead to contribution by these young people in the future (Lerner, 2008).

This type of experiential learning described by Lerner is a fundamental aspect of youth development, especially as implemented through 4-H and FFA. Experiential learning has been a vital component of agricultural education since the passage of the Smith–Hughes Act in 1917 (Hanagriff et al., 2009). This act 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 concepts to actual problems in the area, thus increasing soft skills and value to future employers.

These types of experiences are now referred to as Supervised Agricultural Experiences (SAE) in agricultural education. According to Hanagriff et al. (2009), SAEs can be any type of agricultural-related project that focuses on entrepreneurship. Livestock projects are one example of an SAE.

One of the key instruments of life skill development is participation in youth-serving organizations, including 4-H and FFA (Anderson et al., 2015). These authors concluded that the composite Youth Leadership Life Skills Development Scale (YLLSDS) scores of livestock exhibitors at the 2010 North Carolina State Fair were relatively high, indicating to the researchers that livestock exhibition may increase the leadership life skill development in the participants (Anderson et al., 2015). According to Davis et al. (2001), social relations, character, competition, learning new environments, and helping finance higher education are some benefits of competitive exhibition.

Youth livestock projects are a vessel for teaching young people a host of skills and knowledge outcomes. According to Smith et al. (2009), livestock projects provide youth with knowledge, leadership skills, and a deep sense of personal responsibility and accomplishment. These authors note that this level of engagement and skills is rarely achieved by other means. These projects help provide youth with experiential learning environments and experiences that help them to acquire new scientific and agricultural competencies (Smith et al., 2009).

Rusk et al. (2003) found that skills young people learn through the livestock project benefit youth in school, at home, and on the job. These youth livestock exhibitors emerge more dependable, confident, and qualified individuals through participating in this project area (Rusk et al., 2003). They also discovered that raising 4-H animal projects helps youth increase self-confidence and improve interpersonal skills. Participation in livestock judging and/or showmanship classes may also lead to an improvement in both people skills and public speaking ability (Rusk et al., 2003). To speak broadly, these authors suggested the improved problem solving, decision making skills, and enhanced people skills these young people learn, "make alumni of the 4-H livestock projects valuable citizens at work and in their communities" (Rusk et al., 2003, p. 10).

Since their introduction, livestock fairs have grown to over 3,000 fairs across the U.S. annually and have become a symbol of the 4-H program (Texas 4-H, 2012). 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 (2019), 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" (Texas 4-H & Youth Development page, para. 1).

The 4-H livestock project reflects the organization's mission by developing life skills. Furthermore, Boleman et al. (2005) outlined these skills as responsibility, goal

setting, self-discipline, self-motivation, livestock industry knowledge, self-esteem, and decision-making.

Economic Impact and Relevance for Youth Livestock Shows

Other than the youth livestock exhibitor, multiple stakeholders value livestock projects. These stakeholders value information other than just acquired skills and behaviors. Often 4-H programs also lend themselves to measuring economic impact (Harder & Hodges, 2011). The livestock program is one component that illustrates this economic value. However, there is limited documentation of studies quantifying participation in 4-H livestock projects.

Harder and Hodges (2011) summarized the benefits of detailing and communicating livestock project economic values 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 (How Does IMPLAN Work section, para. 1).

The need to convey economic impact in Extension is not limited to the livestock project. As described by Kirk et al. (2014), using economic figures and comparison, administrators can make comparisons between Extension initiatives and other public

investments, determine the returns-on-investment for Extension initiatives, and ultimately make policy and strategic planning decisions.

According to Hill and Goodwin (2015), 4-H provides positive benefits to youth, but little research has been conducted on the economic contribution of 4-H to state and local county development. These authors found that in Colorado, 4-H economic contributions include money directly generated through the 4-H program and then continues to impact through the ripple effect as money makes its way through the economy through subsequent spending, and local jobs supported by 4-H spending (Hill & Goodwin, 2015). The key finding of their study reported is that for every public dollar spent to support the 4-H program in Colorado, there is a six-fold contribution to the economy (Hill & Goodwin, 2015). Their study provides evidence that the Colorado 4-H program is leveraging public dollars and contributing to the overall economy in their state. “Public funding to support the 4-H program is a needed catalyst that allows this contribution to the state's economy to occur” (Hill & Goodwin, 2015, Findings section, para. 7).

Similar to many other youth-serving organizations, 4-H is challenged to provide outcome data that assists in acquiring support and funding from governmental agencies, foundations, and donors. The current push for evidence-based programs has increased the importance for 4-H to provide empirical evidence related to programs that produce favorable outcomes (Haas et al., 2015).

Review of Relevant Previous Studies

Cook et al. (2015) concluded that the cost of project participation is the second leading factor of species selection in the livestock project. In 2015, the researchers found the overall costs of raising each of the reported livestock species 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). Cook et al. (2015) recommended that future research be conducted to further split categories among species to gain a more holistic view of statewide totals.

Cook et al. (2015) also indicated that before starting a project, families needed to be aware of the cost commitment associated with each species to select appropriately. Depending on their area of expertise, agents and teachers can use these dollar amounts in such instances. These species averages can also be used to adjust county-level livestock show premiums to more appropriately match the cost of investment. In some instances, livestock show boards and administrators set livestock premiums years ago and for a number of reasons those premiums have remained constant despite economic changes. By presenting these dollar amounts to local livestock boards, supporters can make the need for increased premiums become more apparent (Cook et al., 2015).

Fannin and LeBlanc (2007) suggested that to receive consistent support from stakeholders in the community, livestock program administrators must illustrate the financial value of the show. Cook et al. (2015) indicated that presenting economic data could potentially help supporting constituents see how much investment is required to raise, feed, and prepare projects for major livestock shows. Additionally, some 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 based on research-backed economic data (Cook et al., 2015).

Cook et al. (2015) also recommended that a replicate study be conducted with the FFA program to compare averages and perceptions reported from Agricultural Science Teachers. As mentioned, Boleman et al. (2003, 2005) suggested that 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 local and state economies. Cook et al. (2015) recommended that these additional dollars spent should be more thoroughly investigated in upcoming studies. Cook et al. (2015) challenged that further research investigate lodging, travel, and meal expenses in associated costs of showing livestock projects.

As a whole, program administrators can use these numbers to gain further support of the Texas 4-H and FFA program and youth livestock projects. The mainstay of the 4-H program is to develop high-quality young people. By reporting research-driven economic data to stakeholders, proponents of the youth livestock program story can ensure that it will continue to grow (Cook et al., 2015).

In total, this study found that more than $108 million was generated in 2014 by state-validated livestock in Texas. Educating industry professionals on this dollar amount generated by junior livestock exhibitors per year could potentially increase programmatic and economic support (Cook et al., 2015). Likewise, Hanagriff et al.

(2014) found that significant financial impacts could potentially prevent budget cuts and encourage stakeholders to increase contributions.

These studies help solidify the need to justify and communicate the impact this program area has monetarily. Program accountability and improvement are two major functions of Extension evaluation (Jayaratne, 2016). According to Hachfeld et al. (2013):

> For Extension to remain a financially viable organization, educators have to be able to produce substantive, measurable program outcomes and impacts. Evaluative data can inform program development and delivery, and helps administrators report how funding is being allocated and the result of that allocation (Abstract section).

This evaluative data can be shared with the public and other stakeholders to garner organizational support. Several factors and groups also require increased accountability for Extension programs and educators such as decreased federal, state, and local funding, grant funders, and other supporting sponsors (Hachfeld et al., 2013).

Evaluating programs and educational impacts can be used to inform curriculum development and delivery, but also help increase support from program donors and supporters. Substantive Extension program evaluation that results in measurable outcomes and impacts reported to stakeholders is essential to Extension's financial and long-term organizational success (Hachfeld et al., 2013).

Evaluation is an important component of the PIE Program Change Model as discussed by Cummings et al. (2019) in terms of evaluating degree of change in

behavior, adoption and program impact; however, there is more to evaluation than just a demonstration of knowledge and adoption. These authors go on to explain the value of interpreting evaluation results and telling a compelling story to stakeholders (Cummings et al., 2019).

At the local level, County Extension Agents and Agricultural Science Teachers can utilize the species averages of total costs, combined with local validation totals to generate a county-specific economic impact report. Developing informational documents describing how much money county livestock exhibitors generate every year has proven to be a vital tool for agents seeking local support (Cook et al., 2015). 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 leaders at county livestock show auctions. If they are made aware of local economic stimuli in livestock projects, donor support could be increased. Livestock shows involving a statewide audience can utilize the Texas validation totals to convey the large-scale economic contributions generated from their shows (Cook et al., 2015).

Previous research studies found that swine have the largest number of entries and sale lots in shows/fairs, followed by goats, sheep, rabbits, cattle, chickens and turkeys. However, calculating percentage of each species shown revealed that a higher percentage of cattle were sold than any other species and swine had the lowest percent

sold (Cook et al., 2015). Major livestock show entries closely mirrored those reported for county-level livestock shows. Cook et al. (2015) suggested that current information regarding sale lots and show totals could allow for adjustment in county and state livestock show auctions to better align with species averages. The researchers also recommended future studies gathering information on local and major livestock show scholarship monies and including this in return-on-investment averages (Cook et al., 2015).

As evidenced by these findings, refining and building upon 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 and FFA youth livestock program. Additionally, replicating and building on existing research could reveal more information regarding this project area and support for youth livestock exhibitors. While involved stakeholders understand the value in developing life skills in youth through the exhibition of livestock projects, the addition of dollar figures can be beneficial in supporting this cause (Cook et al., 2015).

This study aimed to investigate these quantifiable attributes in order to more fully understand the monetary impact the Texas 4-H and FFA livestock program has on agricultural industries in the state. To achieve this objective, I utilized three survey instruments to gather information regarding livestock project numbers and trends, average dollar amounts spent per species, auction and scholarship contributions generated, and perceptions regarding return-on-investment from County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families.

CHAPTER III

METHODS/PROCEDURES

I used three sets of data to holistically investigate financial investments made by youth livestock exhibitors and their families, help determine the financial contributions generated locally and statewide, estimate county and statewide totals and trends of the livestock project area, and gauge perceptions of County Extension Agents, Agricultural Science Teachers, and youth livestock exhibitor families.

All email communication regarding the surveys was sent from Dr. Billy Zanolini, Assistant Professor and Extension Specialist, and Dr. Jeff Ripley, Associate Director – County Operations, Texas A&M AgriLife Extension Service. Dillman et al. (2009) wrote people are more likely to comply with a request if it comes from an authoritative source that has been legitimized by larger society to make such requests and expect compliance.

Data Collection Methods

I administered a Qualtrics© survey to Texas A&M AgriLife Extension Agents through the County Extension Agent email contact list. I extensively communicated via email that only one agent per county should respond to the survey in an effort to not duplicate responses. I confirmed only one survey was recorded for each county.

I received responses from 234 County Extension Agents (CEAs) out of 250 counties (four smaller counties of the 254 Texas counties are combined with an adjacent county for Extension staffing.) These responses represented a 93.6% response rate. I

initially sent the survey April 30, 2020, with reminder emails in two-week intervals through May 26, 2020. Additional follow-up communication was necessary for remaining counties that had active personnel without a response recorded. Vacancies impacted responses for the remaining unrecorded counties. I modeled email notifications and reminders after the Tailored Design Method (Dillman et al., 2009).

I intended the County Extension Agent survey to gather information related to number of head of livestock entered and sold at county livestock show auctions, determine average sale price per head per species of livestock sold, and collect perceptions of County Extension Agents related to economic aspects of the livestock project area. This instrument also captured responses related to educational components and life skill development aspects of the Texas 4-H and FFA livestock project as well as determined perceptions regarding return-on-investment.

I sent the second survey to Agricultural Science Teachers (ASTs) via the Agricultural Science Teacher's Association of Texas (ATAT) contact lists (2,621 contacts). I received responses from 309 ASTs, yielding an 11.79% response rate. However, it is important to note that not all contacts in the listserv are teachers with livestock responsibilities. This list includes all Agricultural Science Teachers who may be in positions related to vocational training, horticulture and plant sciences, welding and shop, etc. I sent this survey to Agricultural Science Teachers on April 21, 2020, with reminder emails in two-week intervals through May 18, 2020. I modeled email notifications and reminders after the Tailored Design Method (Dillman et al., 2009).

The survey sent to Agricultural Science Teachers collected information related to this group's perceptions of educational components and life skill development aspects of the Texas 4-H and FFA livestock project, as well as solicited informational feedback regarding return-on-investment for this project area.

I administered the third survey to livestock exhibitor families whose children exhibit county or state validated livestock projects. I reached this audience via county livestock validation lists, state livestock validation lists, major livestock show entry systems, and the Quality Counts program contact list. These lists are inclusive of exhibitors who show at county and state levels. The Quality Counts program is required of all exhibitors who show at Texas major livestock shows and also includes some county-level participants. This survey was initially sent April 30, 2020, with reminder emails sent in two-week intervals through May 19, 2020. I modeled email notifications and reminders after the Tailored Design Method (Dillman et al., 2009).

I received responses from 6,984 livestock exhibitor families. A total of 25,510 emails were opened, but it is important to note that I asked for family responses, not per individual exhibitor. It is impossible to know which of the emails went to duplicate family members as families could use unique emails for different exhibitors. Another factor to consider with this group is graduations, exhibitors not showing any longer for any other reason, and duplicate emails among the various lists.

The intent of this survey was to collect information specific to this group such as average purchase price of livestock species, average costs associated with feed, hay, supplements, fees, veterinarian costs, travel and lodging, etc. This instrument also

captured responses related to educational components and life skill development aspects of the Texas 4-H and FFA livestock project, as well as determined perceptions regarding return-on-investment in terms of monetary gains and intrinsic traits. I illustrated the survey administration strategy for the three aforementioned instruments in Table 1.

Table 1

Data Collection Methods

Participants	Method for Obtaining Email Addresses	Method for Sampling
CEA	CEA listserv, AgriLife Agency Database	Per county census - 250
AST	Agricultural Science Teacher (ATAT) listserv	Random sampling
Livestock Exhibitor Families	Quality Counts Database Major Show Entries State Livestock Validation County Validation Lists	Random sampling

The following list is a timeline of data collection for each respondent group survey:

- County Extension Agent Survey
    - April 30, 2020
    - May 7, 2020
    - May 14, 2020
    - May 26, 2020

- Agricultural Science Teacher Survey
    - April 21, 2020
    - May 5, 2020
    - May 12, 2020
    - May 18, 2020
- Livestock Exhibitor Family Survey
    - April 30, 2020
    - May 7, 2020
    - May 14, 2020
    - May 19, 2020

Instrumentation

The three surveys sent to the three respondent groups are unique to each set of participants based on the intent of the instrument in fulfilling the goals of the study. However, these instruments also have similarities to compare responses of the three distinct groups. Additionally, some aspects of the survey instruments are a modified replication of two previous studies conducted (Cook et al., 2015; Texas 4-H, 2015).

I outlined aspects of the survey instruments that are modified replication constructs from the previous studies in Table 2.

Table 2

Intent of Instrument – Modified Replication Aspects of Study

Construct	Modified Replication Aspects
Quantifying Livestock Projects (CEA)	Number of head per each livestock project species
Quantifying Livestock Projects (CEA)	Number of livestock exhibitors
Quantifying Livestock Projects (CEA)	Local auction type and dollar amount generated and other economic-related questions
Quantifying Livestock Projects (Livestock Exhibitor Families)	Economic values per head per species

I described those constructs that are new to this study in Table 3 (e.g., additional components to quantify project numbers, educational and life skill development constructs, and perception of alignment of input and gain).

Table 3

Intent of Instrument – New Aspects of Study

Construct	Modified Replication Aspects
Quantifying Livestock Projects (CEA)	Including breeding animal projects
Quantifying Livestock Projects (CEA)	Number per species in auction lots
Quantifying Livestock Projects (CEA)	Per species auction dollar totals
Quantifying Livestock Projects (Livestock Exhibitor Families)	Travel-related expenses including lodging and meal expenses
Educational Components	Gauging perceptions of CEAs, ASTs, and livestock exhibitor families regarding educational outcomes and life skill development
Return on Investment	Gauging perceptions of CEAs, ASTs, and livestock exhibitor families regarding return-on-investment

Frankel and Wallen (2009) recommended that a panel of experts certify content validity. The subject matter specialists were members of the graduate committee with have a strong foundation in Texas 4-H and FFA livestock projects. Subject matter specialists were also contacted for expertise related to species involved in the study validity to ensure the tests measured the concepts intended. I used Cronbach's alpha to test for internal reliability.

I developed the surveys with other Texas A&M AgriLife Extension Specialists to capture data that built upon the previous studies aforementioned (Cook et al., 2015; Texas 4-H, 2015) and to gain new insight of the youth livestock project in Texas. I developed the questions and piloted the instruments with members of the graduate

committee, as well as Texas A&M AgriLife County Extension Agents and Texas Agricultural Science Teachers. I designed the questions to capture information that would be mutually beneficial to Texas A&M AgriLife Extension and Texas FFA.

I used Likert-type scale, multiple choice questions, and numerical fill-in answers in the survey instruments. I identified the independent variables as respondent affiliation, the number of county-level livestock show entries and sale lots, the type of auction conducted at the primary county-level livestock show, and species of livestock exhibited. I used nominal data to score these categorical and numerical variables. I identified the dependent variables in the study as the total dollar amounts provided for these questions and respective perceptions recorded. These variables yielded quantitative data, and I used standard scoring methods.

The electronic instruments were distributed via email communication. As suggested by Frankel and Wallen (2009), participants electronically consented before completing the survey and did not enter names or any other identifying information. Raw data was recoded for use in analyzation. Deception is of no issue for these surveys as I presented participants with an electronic statement regarding the study. The responses are a reflection of the participants' perceptions of 4-H and FFA livestock show projects. I analyzed the data after administration, and I drew conclusions from the results.

Data Analysis

I analyzed the data using the IBM SPSS Statistics for Macintosh (SPSS), version 27 (IBM Corp., Armonk, N.Y., USA). I used descriptive statistics to describe

demographic characteristics of the three groups of respondents, as well as the livestock species data. I described the relationships between the variables using a comparison of averages, frequencies, percentages, non-parametric and parametric tests.

Upon closing the three surveys, I exported the raw data report to Microsoft Excel to begin refining results and removing blank responses. After making sure all survey reports were free of duplicates and incomplete responses, I imported the data sets into SPSS. I recoded variables and data points for analysis. I recoded all dollar amount ranges into midpoint values for further analysis. I also recoded all text-based multiple choice answers into numerical values for comparison.

I initially determined measures of central tendency (mean, median, and mode) as appropriate and frequencies for demographic and livestock species data. I also completed all Chi-square analyses and orthogonal contrast comparisons. I conducted additional computation to obtain summated averages (to include purchase price, cost of feed and hay, and other expenses as reported) for each species for the cost associated with raising livestock projects, as well as auction and scholarship totals.

I used descriptive and inferential statistics to examine the data. Frankel and Wallen (2009) described the major advantage of descriptive statistics as the fact that they allow researchers to describe the information contained in various ways with just a few indices. The benefit of applying inferential statistics is the ability to make inferences about a population based on data obtained from a sample (Frankel & Wallen, 2009).

CHAPTER IV

FINDINGS AND DISCUSSION

In the study described herein, I attempted to explain the scope and impact of the Texas 4-H and FFA youth livestock program. I sought information related to total head per species, costs associated with each species, and county sale information related to these projects—all supplied by families of livestock exhibitors and Texas A&M AgriLife County Extension Agents. Additionally, I was interested in perceptions from the three respondent groups (County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families) regarding educational outcomes, life skill development, and return-on-investment in relation to this project area.

I asked respondents to report data based on their most recent livestock show season or the most recent county livestock show. It is important to note that I conducted this study during the COVID-19 pandemic. This is relevant to results as several major and local livestock shows were cancelled immediately before or during the data collection phase of the study. While exhibitors and educators were encouraged to not base responses on current events (including economic losses directly related to the pandemic and cancellations), consumers of the results of this study should be aware that these events were taking place concurrently with conducting the study.

I present the results of this study using five objectives:

1. Describe the current size and scope of Texas 4-H and FFA livestock projects to investigate trends from previous studies.

2. Determine the average cost of raising and exhibiting Texas 4-H and FFA livestock projects by identifying the average purchase price of each species, the cost of feed, hay and supplies, and the dollar amounts spent on fees, veterinarian bills, and other associated costs.
3. Estimate total number of county livestock show entries, sale lots, dollars raised at local auctions, and local scholarships awarded.
4. Gauge perceptions of County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families regarding educational and life skill development outcomes of the Texas 4-H and FFA livestock projects raised for exhibition.
5. Capture perceptions of County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families regarding return-on-investment and alignment of project inputs with intrinsic and extrinsic rewards.

Objective One: Describe the Current Size and Scope of Texas Youth Livestock Projects to Investigate Trends from Previous Studies.

This objective built upon existing research that I conducted in 2014–2015 (Cook et al., 2015). The question set for this objective was a modified replication of my thesis research (Cook et al., 2015). I replicated this objective to discover trends in numbers related to livestock show projects. This was helpful in terms of delineating a story of scope and relevance of this project area and potentially show areas of growth or decline in numbers.

The livestock exhibitor family findings came from 6,984 respondents. As an important note, each family was asked to respond only once per family, not per

exhibitor. I recorded county of participation for this respondent group. Additionally, respondents were asked to provide the population size of the city or town in which they live (see Table 4).

Table 4

Population of Place/City/Town of Residence of Livestock Exhibitor Families (N = 6,984)

Population of Residence	*f*	*%*
Farm/Rural Area/Population (less than 2,500)	2,092	30.00
Town (less than 10,000)	1,664	23.80
Suburban city (10,000–50,000)	1,457	20.90
Urban City (more than 50,000)	1,771	25.40
Total	**6,984**	**100.00**

I asked respondents to select all species they raised and/or exhibited during the 2019–2020 livestock show season. Market barrows marked the highest-reported species (*f* = 1,853, 16.22%), with turkeys being the least participated species (*f* = 174, 1.52%; see Table 5).

Table 5

Species Exhibited During 2019–2020 Livestock Show Season (N = 6,984)

Species	*f*	%
Market Barrows	1,853	16.22
Breeding Heifers	1,590	13.92
Steers	1,567	13.72
Market Lambs	1,400	12.26
Market Goats	1,392	12.19
Breeding Gilts	1,227	10.74
Rabbits	808	7.07
Broilers/Chickens	529	4.63
Breeding Sheep	252	2.21
Wether Does (Goats)	224	1.96
Breeding Does	223	1.95
Wether Dams (Sheep)	184	1.61
Turkeys	174	1.52
Total	**11,423**	**100.00**

Note. The total is greater than the number of respondents because respondents could select more than one species.

Selecting the species to show is the initial step in starting a livestock project. However, several key factors may play into this decision. Therefore, I asked respondents which factors were integral in their decision-making process. Respondents noted family tradition and history as the most influential factor in choosing the species the exhibitors would show (*f* = 3,477, 24.47%). Reasons indicated for "Other" included responses such as recommendation by CEA/AST, time commitment, and personal interests (see Table 6).

Table 6

Factors of Species Selection (N = 6,984)

Factor	*f*	%
Family tradition/history	3,477	24.47
Availability of support/assistance	2,092	14.72
Cost	2,006	14.12
Friends participating in project	1,712	12.05
Location (space)	1,576	11.09
Facilities	1,514	10.65
Popularity in my area	1,083	7.62
Other	751	5.28
Total	**14,211**	**100.00**

Note. The total is greater than the number of respondents because respondents could select more than one factor.

Texas livestock exhibitors have the opportunity to exhibit their projects at a range of competition levels. These shows can span from local or county shows, to jackpot shows that are invitational, to major livestock shows that offer statewide exhibition/competition (see Table 7).

Table 7

Level of Participation (N = 6,984)

Type of Livestock Show	*f*	%
County Livestock Show	5,196	29.97
Major Livestock Shows	4,644	26.78
Local Livestock Shows	3,894	22.46
Jackpot Shows	3,606	20.80
Total	**17,340**	**100.00**

Objective 1 helped set the stage for the study by providing a baseline understanding of the size and scope of Texas livestock projects. I will use this information in forthcoming chapters to compare data to previous studies (e.g., Cook et al., 2015) to help inform trends and decisions as we continue to improve the overall Texas 4-H and FFA livestock project experience.

Objective Two: Determine the Average Cost of Raising and Showing Texas 4-H and FFA Livestock Projects by Identifying the Average Purchase Price of Each Species, the Cost of Feed, Hay and Supplies, and the Dollar Amounts Spent on Fees, Veterinarian Bills, and Other Associated Costs.

The tables throughout the remainder of this objective section will outline species averages for a variety of cost factors. For each species, respondents indicated the number of head raised, cost per bag of feed for those livestock, pounds of grain fed per day per head of livestock, amount spent on hay per year, time on feed in months, purchase price of the livestock, cost of supplies associated with raising each species, veterinarian costs, associated fees (e.g., entries fees, chute fees), and supplements for each respective livestock species.

For each species, I recorded the mean, standard deviation, median, interquartile range, and minimum and maximum responses in each table. For market steers, breeding heifers, market lambs, market goats, breeding sheep, breeding does, wether dams (sheep) and wether does (goats), I used the following formula to calculate cost of feed per head over the time on feed:

(months x 30 days)(pounds per day per head)*(cost per bag of feed/50 pounds) = Cost of Feed Per Head by Time on Feed*

I used an amended formula to calculate the cost of feed per head of broilers and turkeys:

*(cost per bag of feed*total bags of feed) = Cost of Feed Per Head by Time on Feed (chickens/turkeys)*

I used a formula to account for ounces fed to calculate cost of feed per head of rabbits:

((cost per bag of feed/50 pounds)/16 ounces)(ounces per day))*(months on feed*30 days) = Cost of Feed Per Head by Time on Feed (rabbits)*

The total number of exhibitors per each species is lower in the following tables as compared to those reported in Table 5, potentially for a number of reasons. The total number reported for each species could be lower because: 1) respondents indicated they raised or showed a certain species, but then did not have economic data to report because the livestock were sold or died, 2) respondents indicated they raised or showed a certain species, but when presented with the economic questions did not have accurate data to report resulting in skipping this section, or 3) respondents simply did not wish to answer the economic-related questions because of fatigue or other reasons. The species tables are listed in the order in which they appeared in the survey instruments.

I reported data collected from market steer exhibitors in Table 8. Based on reported statistics for this species, the average (mean) total dollar amount to raise and exhibit a market steer was $7,730.18. Market steers are the most expensive youth

livestock project in Texas to raise and exhibit. Eighty-one participants indicated they showed commercial steers and these results are also reported in Table 8.

The following formula was utilized to calculate the species total average. Mean scores were used in the calculation. The same formula can be applied for all species.

(months x 30 days)(pounds per day per head)*(cost per bag of feed/50 pounds) + (amt. hay per year/average # head per species) + purchase price + cost of supplies + veterinarian costs + fees + cost of supplements = total species average cost*

The formula is calculated below for market steers as an example.

(10.64 x 30)(17.43)*(13.54/50) + (1,212.00/2.95) + 4,213.75 + 548.14 + 289.55 + 367.57 + 393.68 = $7,730.18*

Table 8

Market Steers (N = 1,267)

Question	*M*	*SD*	*Mdn*	*IQR*	*Min.*	*Max.*
Number of Steers	2.95	2.19	2.00	3.00	1.00	13.00
Cost Per Bag of Feed	13.54	2.76	13.00	2.00	5.00	20.00
Pounds Grain Per Day Per Head	17.43	6.37	20.00	5.00	5.00	25.00
Amt. Spent on Hay Per Year	1,212.00	3,860.69	500.00	750.00	0.00	80,000.00
Time on Feed (Months)	10.64	2.20	11.00	0.00	1.00	14.00
Purchase Price	4,213.75	3,095.26	3,499.50	3,000.00	249.50	15,000.00
Cost of Supplies	548.14	250.81	750.00	400.50	12.50	750.00
Veterinarian Costs	289.55	218.02	249.50	200	12.50	750.00
Fees	367.57	251.91	249.50	600.50	12.50	750.00
Cost of Supplements	393.68	255.87	349.50	600.50	12.50	750.00

Breeding heifer projects closely followed their market steer counterparts with 1,213 respondents indicating they participate in this project area. This number is comprised by registered halter heifers (*n* = 1,142), penned commercial heifers (*n* = 117), and haltered commercial heifers (*n* = 186). Accounting for all of the costs reported, a summation of the means for each dollar amount, as well as a formulated feed cost, the average total cost for raising a heifer project is $7,445.63 (see Table 9).

Table 9

Breeding Heifers (N = 1,213)

Question	*M*	*SD*	*Mdn*	*IQR*	*Min.*	*Max.*
Number of Heifers	2.80	2.10	2.00	3.00	1.00	14.00
Cost Per Bag of Feed	13.35	2.98	15.00	5.00	5.00	20.00
Pounds Grain Per Day Per Head	15.12	6.25	15.00	10.00	5.00	25.00
Amt. Spent on Hay Per Year	940.50	2,091.56	500.00	650.00	0.00	44,119.00
Time on Feed (Months)	11.51	2.91	11.00	6.00	3.50	14.00
Purchase Price	4,246.86	3,365.03	3,499.50	3,000.00	249.50	15,000.00
Cost of Supplies	463.61	268.41	449.50	500.50	12.50	750.00
Veterinarian Costs	282.69	218.82	249.50	200.00	12.50	750.00
Fees	401.21	261.85	349.50	600.50	12.50	750.00
Cost of Supplements	321.38	250.54	249.50	300.00	12.50	750.00

Market barrows were the highest recorded species for livestock exhibitors in this study (N = 1,515). Compared to cattle, this species required significantly less time on feed (*M* = 5.65 months) and much lower purchase prices (*M* = 808.13). Additionally,

this monogastric species does not require the forage intake as did ruminants reported above; thus, eliminating the cost of hay (see Table 10). The average total cost for raising one market barrow was $2,156.16.

Table 10

Market Barrows (N = 1,515)

Question	*M*	*SD*	*Mdn*	*IQR*	*Min.*	*Max.*
Number of Barrows	4.16	4.03	3.00	4.00	1.00	25.00
Cost Per Bag of Feed	24.40	5.27	25.00	5.00	5.00	35.00
Pounds Grain Per Day Per Head	4.72	1.84	5.00	3.00	1.00	10.00
Time on Feed (Months)	5.65	1.46	5.50	0.00	1.50	11.00
Purchase Price	808.13	659.53	624.50	475.00	75.00	5,000.00
Cost of Supplies	360.14	263.22	249.5	600.50	12.50	750.00
Veterinarian Costs	181.33	167.58	149.50	175.00	12.50	750.00
Fees	186.70	182.49	149.50	175.00	12.50	750.00
Cost of Supplements	229.44	202.91	149.50	175.00	12.50	750.00

Breeding gilts closely mirror the costs associated with raising market barrows. This group of livestock was reported by N = 980 livestock exhibitor families. Additionally, when compared to barrows, exhibitors reported they typically show less gilts (M = 2.75 head; see Table 11). The total cost for raising and exhibiting a breeding gilt project was $1,987.92.

Table 11

Breeding Gilts (N = 980)

Question	*M*	*SD*	*Mdn*	*IQR*	*Min.*	*Max.*
Number of Gilts	2.75	2.75	2.00	2.00	1.00	25.00
Cost Per Bag of Feed	23.88	5.36	25.00	5.00	5.00	35.00
Pounds Grain Per Day Per Head	5.08	1.89	5.00	2.00	1.00	10.00
Time on Feed (Months)	5.97	1.64	5.50	2.50	1.50	14.00
Purchase Price	697.57	615.95	624.50	475.00	75.00	5,000.00
Cost of Supplies	320.81	260.08	249.50	300.00	12.50	750.00
Veterinarian Costs	147.98	147.41	74.50	112.50	12.50	750.00
Fees	171.43	176.96	149.50	175.00	12.50	750.00
Cost of Supplements	215.60	201.19	149.50	175.00	12.50	750.00

Market lamb (N = 1,132) costs are depicted in Table 12. Exhibitor families reported raising an average of 4.33 (*SD* = 4.47) head of market lambs. These respondents also averaged purchase price of this project at $1,193.98. The average total cost for raising one market lamb was calculated at $2,460.67.

Table 12

Market Lambs (N = 1,132)

Question	*M*	*SD*	*Mdn*	*IQR*	*Min.*	*Max.*
Number of Market Lambs	4.33	4.47	3.00	4.00	1.00	32.00
Cost Per Bag of Feed	17.65	2.91	20.00	5.00	5.00	20.00
Pounds Grain Per Day Per Head	2.82	1.38	3.00	1.50	0.50	10.00
Amt. Spent on Hay Per Year	272.79	1,004.86	100	157.5	0.00	20,000.00
Time on Feed (Months)	8.11	2.32	8.00	5.50	1.50	14.00
Purchase Price	1,193.98	902.38	749.50	1,000.00	150.00	7,000.00
Cost of Supplies	345.92	254.36	249.50	300.00	12.50	750.00
Veterinarian Costs	148.37	155.00	74.50	112.50	12.50	750.00
Fees	230.72	215.67	149.50	175.00	12.50	750.00
Cost of Supplements	236.48	215.89	149.50	275.00	12.50	750.00

Respondents reported the data for market goats as similar to market lambs (N = 1,131). A full list of reported statistics for this livestock group is shown in Table 13. The total average cost of raising a market goat was $2,375.64.

Table 13

Market Goats (N = 1,131)

Question	*M*	*SD*	*Mdn*	*IQR*	*Min.*	*Max.*
Number of Market Goats	3.23	4.16	2.00	3.00	1.00	47.00
Cost Per Bag of Feed	18.11	2.58	20.00	3.00	10.00	20.00
Pounds Grain Per Day Per Head	2.42	1.23	2.00	1.00	0.50	10.00
Amt. Spent on Hay Per Year	237.50	1,591.30	50.00	80.00	0.00	45,000.00
Time on Feed (Months)	7.61	2.25	8.00	2.50	1.50	14.00
Purchase Price	1,249.70	1,153.29	749.50	1,000.00	150.00	7,000.00
Cost of Supplies	301.92	247.05	249.50	375.00	12.50	750.00
Veterinarian Costs	139.10	146.42	74.50	112.50	12.50	750.00
Fees	198.14	191.44	149.50	175.00	12.50	750.00
Cost of Supplements	213.14	204.91	149.50	175.00	12.50	750.00

Rabbits are one of the shorter and more cost-effective species livestock exhibitors can raise and show. This species was fed on average for 5.71 months (*SD* = 5.27). Additionally, this small species required less feed and had lower associated costs (see Table 14). Rabbits cost on average $208.24 per head with all costs totalled.

Table 14

Rabbits (N = 570)

Question	*M*	*SD*	*Mdn*	*IQR*	*Min.*	*Max.*
Number of Rabbits	6.52	5.14	5.00	6.00	1.00	24.00
Cost Per Bag of Feed	13.51	2.34	15.00	2.00	5.00	15.00
Ounces Per Day Per Head	4.92	2.08	4.00	2.00	1.00	9.00
Time on Feed (Months)	5.71	5.27	3.50	12.50	1.50	14.00
Purchase Price	82.50	73.51	74.50	32.50	5.00	350.00
Cost of Supplies	43.92	26.11	37.00	55.00	5.00	74.50
Veterinarian Costs	26.10	23.93	19.50	25.00	5.00	74.50
Fees	41.49	23.97	37.00	49.50	12.50	87.00

Broilers and chickens (N = 358) were the least expensive species Texas livestock exhibitor families reported. This particular species is only fed for an average of 2.63 months (*SD* = 1.95). It is important to note that this species is not raised on a per head basis. All poultry purchased and raised in Texas are required to be purchased from the Texas A&M University Department of Poultry Science. Broilers/chickens are purchased in minimum groups of 25 chicks.

Twenty-five chicks cost $43.20 to purchase. The average reported number of broilers raised was 59.15 (*SD* = 42.04; see Table 15). The total cost of raising a group of 25 birds was $198.78 per group of 25 chickens.

Table 15

Broilers/Chickens (N = 358)

Question	*M*	*SD*	*Mdn*	*IQR*	*Min.*	*Max.*
Number of Broilers	59.15	42.04	50.00	50.00	5.00	175.00
Cost Per Bag of Feed	16.18	3.17	15.00	5.00	5.00	20.00
Total Bags of Feed	19.77	9.96	15.00	5.00	10.00	50.00
Time on Feed (Months)	2.63	1.95	1.50	2.00	1.50	8.00
Cost of Supplies	208.29	138.50	149.50	288.00	12.50	350.00
Veterinarian Costs	46.86	69.70	12.50	49.50	12.50	350.00
Fees	91.53	100.76	62.00	50.00	12.50	350.00

Note. Purchase price is set at $43.50 per 25 chicks for wing-banded chicks (TAMU).

Turkeys (N = 132) are similar to broilers in that all turkey projects in Texas must be purchased from the Texas A&M University Department of Poultry Science. These birds are also sold in minimum groups of 25 poults. Twenty-five turkeys are sold for $106.25 (see Table 16). This purchase price added to the other costs listed in Table 16 totalled $1,081.05 per group of 25 birds.

Table 16

Turkeys (N = 132)

Question	*M*	*SD*	*Mdn*	*IQR*	*Min.*	*Max.*
Number of Turkeys	42.01	31.24	27.50	60.00	5.00	125.00
Cost Per Bag of Feed	17.68	2.73	20.00	5.00	10.00	20.00
Total Bags of Feed	69.03	51.13	50.00	25.00	25.00	300.00
Time on Feed (Months)	4.50	1.33	3.50	2.00	1.50	8.00
Cost of Supplies	226.02	139.43	350.00	275.50	12.50	350.00
Veterinarian Costs	44.64	44.59	37.00	49.50	12.50	350.00
Fees	146.56	125.64	87.00	237.88	12.50	350.00

Note. Purchase price is set at $106.25 per 25 poults (TAMU).

Breeding sheep (N = 171) are ewes that can be shown for any amount of years in Texas. The average length of time on feed reported was 9.97 months (*SD* = 3.66). These sheep projects have similar associated costs as compared to the other sheep categories reported in this study (see Table 17). The total cost of raising one head of breeding sheep is $2,375.46.

Table 17

Breeding Sheep (N = 171)

Question	*M*	*SD*	*Mdn*	*IQR*	*Min.*	*Max.*
Number of Breeding Sheep	3.84	3.64	2.00	4.00	1.00	17.00
Cost Per Bag of Feed	16.33	3.20	17.00	5.00	5.00	20.00
Pounds Grain Per Day Per Head	3.09	1.41	3.00	2.00	1.00	10.00
Amt. Spent on Hay Per Year	398.76	1,046.89	100.00	250.00	0.00	10,000.00
Time on Feed (Months)	9.97	3.66	8.00	6.00	3.50	14.00
Purchase Price	1,205.47	1,190.56	749.50	500.00	150.00	7,000.00
Cost of Supplies	227.72	218.52	149.50	175.00	12.50	750.00
Veterinarian Costs	142.58	172.00	74.50	112.50	12.50	750.00
Fees	218.33	202.58	149.50	175.00	12.50	750.00
Cost of Supplements	175.67	202.40	74.50	112.50	12.50	750.00

Wether dams (N = 127) are commercial and crossbred ewes that can only be shown for one year in Texas (see Table 18). The average purchase price of $1,141.98

(*SD* = 1,130.25) is similar to the other breeding sheep and goat categories reported. The total cost of raising one wether dam (sheep) was $2,571.93.

Table 18

Wether Dams (N = 127)

Question	*M*	*SD*	*Mdn*	*IQR*	*Min.*	*Max.*
Number of Wether Dams	2.11	1.66	2.00	1.00	1.00	10.00
Cost Per Bag of Feed	16.56	3.29	17.00	5.00	10.00	20.00
Pounds Grain Per Day Per Head	2.91	1.24	3.00	1.50	1.00	8.00
Amt. Spent on Hay Per Year	131.12	183.80	50.00	125.50	0.00	1,000.00
Time on Feed (Months)	8.54	3.15	8.00	0.00	3.50	14.00
Purchase Price	1,141.98	1,130.25	749.50	1,350.00	150.00	7,000.00
Cost of Supplies	178.46	177.10	149.50	175.00	12.50	750.00
Veterinarian Costs	132.13	158.88	74.50	112.50	12.50	750.00
Fees	179.56	155.68	149.50	121.50	12.50	750.00
Cost of Supplements	180.74	184.19	149.50	175.00	12.50	750.00

Breeding does (N = 146) are breeding goats and were closely reported as compared to breeding sheep (see Table 19). The total cost for raising one head of breeding does is $2,145.75.

Table 19

Breeding Does (N = 146)

Question	*M*	*SD*	*Mdn*	*IQR*	*Min.*	*Max.*
Number of Breeding Does	3.32	3.84	2.00	3.00	1.00	21.00
Cost Per Bag of Feed	15.84	3.39	15.00	7.00	10.00	20.00
Pounds Grain Per Day Per Head	2.92	1.59	3.00	1.50	1.00	10.00
Amt. Spent on Hay Per Year	302.15	689.45	100.00	175.00	0.00	5,4750.00
Time on Feed (Months)	9.79	3.82	8.00	8.50	3.50	14.00
Purchase Price	1,038.74	1,020.74	749.50	850.00	150.00	7,000.00
Cost of Supplies	242.08	227.47	149.50	275.00	12.50	750.00
Veterinarian Costs	151.39	174.46	74.50	112.50	12.50	750.00
Fees	187.17	177.03	149.50	212.50	12.50	750.00
Cost of Supplements	163.67	194.94	74.50	212.50	12.50	750.00

Wether does (N = 149) are commercial does that livestock exhibitors can show for one year in Texas (see Table 20). Respondents reported similar prices for this group as with the other sheep and goat species. The average total calculated cost for raising one wether doe (goat) was $2,080.34.

Table 20

Wether Does (N = 149)

Question	*M*	*SD*	*Mdn*	*IQR*	*Min.*	*Max.*
Number of Wether Does	2.74	3.02	2.00	2.00	1.00	21.00
Cost Per Bag of Feed	16.65	3.05	17.00	5.00	10.00	20.00
Pounds Grain Per Day Per Head	2.60	1.08	2.50	1.00	1.00	7.00
Amt. Spent on Hay Per Year	134.10	482.94	45.00	85.00	0.00	5,475.00
Time on Feed (Months)	8.00	2.95	8.00	2.50	1.50	14.00
Purchase Price	1,190.54	1,129.59	749.50	1,350.00	150.00	7,000.00
Cost of Supplies	191.13	205.90	149.50	212.50	12.50	750.00
Veterinarian Costs	123.85	161.81	74.50	112.50	12.50	750.00
Fees	178.47	178.74	149.50	212.50	12.50	750.00
Cost of Supplements	139.62	155.53	74.50	112.50	12.50	750.00

Expenses related to the raising and showing of livestock projects does not stop at that of purchase price, feed costs, supplies, veterinarian care, and other directly linked to the care of the animal. Livestock exhibitors and their families also invest monies into facilities to house their livestock, as well as travel expenses related to showing their projects. Out of the 6,984 livestock exhibitor families that responded, 1,569 families indicated that they had invested in a capital purchase during the 2019–2020 livestock show season. These types of investments are listed as construction of a barn, investment in a trailer, or other large purchases. On average, these investments cost families $16,757.29 (*SD* = 33,804.23). These purchases ranged from $0.00–$500,025.00. These types of purchases often benefit local economies and are relevant when considering economic flow in communities related to local livestock auctions that are heavily influenced by local businesses.

As previously stated, 47.57% (N = 6,984) of livestock exhibitor families reported they attended livestock shows other than just their local and county livestock shows. This could be jackpot shows across the state (20.80%) or Texas major livestock shows (26.78%). Attending shows of this caliber typically requires travel and overnight stay. On average, livestock exhibitor families reported they spent about $1,002.06 on fuel and mileage traveling to shows, $1,235.93 on hotel and lodging expenses, and $778.75 on food and meal-related purchases while at livestock shows (see Table 21).

Table 21

Livestock Project Investments (N = 6,984)

Variable	*M*	*SD*	*Mdn*	*IQR*
Dollar amount spent on major investment, if applicable? (N=1,569)	16,757.29	33,804.23	7,000.00	17,500.00
Fuel and Mileage Expenses	1,002.06	1,666.84	500.00	800.00
Hotel and Lodging Expenses	1,235.93	1,997.17	600.00	1,500.00
Food and Meals Expenses	778.75	1,227.02	400.00	840.00
Time Investment Per Exhibitor Per Week (Hrs.)	25.88	51.13	20.00	14.00

Finally, a major investment made by livestock exhibitors and their families is time. Livestock projects require feeding, care, maintenance and training. Young people and their families invest hours in the barn, practicing showmanship, and caring for these projects. It is through this time and effort that life skill development occurs. I will discuss those aspects of this project area in later sections. On average, livestock

exhibitor families reported they invested 25.88 hours (51.13) per exhibitor per week in time spent with their livestock projects. These data are also detailed in Table 21.

As illustrated by the monetary and time investments listed above, the livestock project is extensive and intricate. All Texas livestock projects are supervised by a County Extension Agent (4-H) or Agricultural Science Teacher (FFA). However, often times, families will also seek advice from other groups to learn more about their livestock or gain help from other sources (see Table 22). Asking the advice and help of their livestock breeder was the highest response (*f* = 2,296, 22.12%).

Table 22

Sources of Assistance (N = 6,984)

Variable	*f*	*%*
Breeder	2,996	22.12
Family Friend	2,738	20.22
Agricultural Science Teacher	2,664	19.67
The Internet	1,747	12.90
County Extension Agent	1,267	9.35
Third Party Consultant (Fitter)	779	5.75
4-H Club/Project Leader	677	5.00
Educational Resources	676	4.99
Total	**13,544**	**100.00**

Note. This question allowed respondents to select an option labeled, "Select All That Apply."

This objective was met by gathering data to help quantify the costs associated with raising each of the species of livestock studied in this project. This information will be beneficial in communicating to educators and exhibitors the average cost of

raising livestock projects. In turn, these educators and livestock exhibitor families will be better prepared to select a species that is most fitting for their resources and situation. Additionally, these data will be useful in telling an accurate story to stakeholders and donors of the program to increase monetary support for this project area.

Objective Three: Estimate Total Number of County Livestock Show Entries, Sale Lots, Dollars Raised at Local Auctions, and Local Scholarships Awarded.

I asked for responses about county livestock shows from the County Extension Agent respondent group to achieve this objective. County Extension Agents are employed by Texas A&M AgriLife Extension Service and serve in Texas counties to deliver research-based educational information to adults and youth. These Agents serve as supervisors for livestock projects, specifically for youth involved with 4-H. This group typically serves in advisory roles for county livestock show boards. They are also usually a more consistent source of this type of information as compared to Agricultural Science Teachers who may be more apt to transfer schools or more frequently change positions. County Extension Agents were asked to report data from their most recent county livestock show and auction.

I received survey responses from 234 of the 250 county programs in Texas. On average, CEAs responded they offer 1.28 (*SD* = 0.79) county level shows in their county. This will be the basis for the remainder of responses regarding county livestock show auction data.

I reported the average total auction dollars generated at these county livestock shows at $328,845.54 (*SD* = 382,692.70). Additional support in the form of local

scholarships awarded averaged $19,124.75 (*SD* = 29,493.52). Agents were asked to report only those scholarships that were awarded locally in conjunction with the county show, not other statewide scholarships or city/area scholarship opportunities. The grand total auction dollars awarded to youth in county livestock auctions was $66,426,799.00. The grand total scholarship dollars awarded to youth in these events was $3,021,710.00.

These two amounts bring the grand total support to youth at the county level to $69,448,509.00, which excludes16 Texas counties that were not reported in this study due to vacancies or non-response (see Table 23).

Table 23

County Extension Agent Information (N = 234)

Variable	*M*	*SD*	*Mdn*	*IQR*
Population of County	119,467.09	421,236.69	200,010.00	99,784.5
Number of FFA Chapters in County	4.22	4.54	3.00	3.00
Number of County Level Shows Offered	1.28	0.79	1.00	0.00
Average Total Auction Dollars Per County	328,845.54	382,692.70	189,975.00	353,500.00
Average Total Scholarship Dollars Per County	19,124.75	29,493.52	9,000.00	17,875.00

The type of county livestock show auction was reported by County Extension Agents (*N* = 234). Premium sales accounted for 141 (60.30%) of the responses by this group. Premium auctions allow exhibitors to receive premium dollars but retain ownership of the livestock projects for exhibition at subsequent major livestock shows. Thirty-six (15.40%) County Extension Agents reported their primary county level

livestock show hosted a terminal sale. Terminal livestock auctions are sales in which the exhibitor physically sells the livestock and does not retain ownership of the project. Participants recorded the remaining responses as a hybrid of these two options, freezer sales, or other county auction structures. I outlined in Table 24 the frequencies and percentages for the types of auctions hosted at the county level livestock show as reported by County Extension Agents in Table 24.

Table 24

County Auction Type (N = 234)

Auction Type	*f*	*%*
Premium Sale	141	60.30
Terminal Sale	36	15.40
Hybrid Sale	31	13.20
Other	26	11.10

I asked County Extension Agents to respond with the total number of county livestock show entries and auction sale lots for each species exhibited and sold at their county level livestock shows. This group was also asked the average price per head sold for each species. I explain responses for each of the species in Tables 25 – 40.

Though 234 counties responded to the survey, the highest species with auction data is reported by only 215 counties. This may be due to County Extension Agents not having data to report for certain species even though they did sell, CEAs indicating they held an auction but either did not have accurate data to report or experienced fatigue thus not completing the auction information, or misinterpretation of the instrument

instructions to report the most recent county auction data. Many county livestock shows and auctions did not occur in 2020 because of cancellations due to COVID-19. Some respondents may have answered the type of auction they typically offer, but then did not report data because they did not have a livestock show and auction in 2020.

The following species tables are presented in the order in which they appeared in the survey instrument. Table 25 shows county livestock show and auction data for market steers. Given the average entries and sale lots listed in the table, steers sold at 57.15% of those that were entered. The average price per head of steers sold at the county livestock show auction was reported at $3188.01. When compared with the cost reported by livestock exhibitor families to raise one head of market steers (*M* = $7,730.18, *N* = 1,267), this does not allow for a profit on average.

Table 25

Steer Auction Data (N = 208)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	27.87	26.54	20.00	26.00
Sale Lots	15.93	12.70	15.00	16.00
Price Per Head	3,188.01	2,317.21	3,000.00	2,785.00

Participants recorded commercial steers at 8.23 (*SD* = 6.74) head entered on average at county livestock shows (see Table 26). Of these, 5.38 (*SD* = 5.48) were sold in the county sale. These averages indicate that 65.37% of commercial steer entries were sold for commercial steers.

Table 26

Commercial Steer Auction Data (N = 13)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	8.23	6.74	6.00	9.50
Sale Lots	5.38	5.48	4.00	4.5
Price Per Head	1,363.00	1,101.27	1,000.00	1,030.00

Registered halter heifers are registered in a recognized breed association. Given the recorded averages, approximately 24.77% of registered halter heifers that were entered were sold at their respective county livestock show auctions (see Table 27).

Table 27

Registered Halter Heifer Auction Data (N = 146)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	24.14	24.34	15.00	29.25
Sale Lots	5.98	4.84	4.00	6.00
Price Per Head	1,627.50	1,013.33	1,500.00	1,000.00

Commercial penned heifers do not have to be registered in a breed association. Respondents reported the average number of head of livestock for entries and sale lots (see Table 28). However, this type of entry is typically shown as pens of two or three cattle. Therefore, the sale lots per entries is higher as some respondents likely answered differently depending on the way in which they interpreted the question.

Table 28

Commercial Penned Heifer Auction Data (N = 48)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	30.15	28.81	21.50	29.75
Sale Lots	30.80	27.95	23.00	23.75
Price Per Head	2,800.21	1,564.07	2,500.00	1,000.00

Commercial halter heifers are not registered but are shown by exhibitors with a halter (see Table 29). On average, 65.63% of those commercial halter heifers that entered their county livestock show were sold in their auction.

Table 29

Commercial Halter Heifer Auction Data (N = 42)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	24.38	30.79	12.00	25.5
Sale Lots	16.00	11.44	15.00	21.25
Price Per Head	2,411.09	1,387.16	2,411.09	1,254.00

Market goats averaged 52.26% sold given their entries and sale lots (see Table 30). Market goats averaged $1337.82 in county livestock show auctions per head. This was lower than the cost reported to raise one market goat (*M* = $2,375.64, *N* = 1,131).

Table 30

Market Goat Auction Data (N = 215)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	49.22	40.76	38.00	50.00
Sale Lots	25.72	21.82	20.00	23.00
Price Per Head	1,337.82	1,073.73	1,000.00	1,000.00

Breeding does averaged 15.71 (*SD* = 11.29) head entered and 8.27 (*SD* = 8.04) head sold in county livestock auctions (see Table 31). On average, 52.64% of these breeding does were sold in county auctions.

Table 31

Breeding Doe Auction Data (N = 59)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	15.71	11.29	14.00	16.00
Sale Lots	8.27	8.04	6.00	13.00
Price Per Head	1,003.03	563.58	1,000.00	950.00

Wether does (goats) averaged more sale lots than breeding does at an average of 10.86 (*SD* = 8.73) head but reported a lower average price per head of $914.29 (*SD* = 728.99). Wether does averaged 69.48% sold in county livestock show sales. This information is recorded in Table 32.

Table 32

Wether Doe Auction Data (N = 19)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	15.63	12.59	15.00	15.00
Sale Lots	10.86	8.73	10.00	18.00
Price Per Head	914.29	728.99	700.00	500.00

By dividing the sale lots by the number of entries, market lambs were on average sold at 53.81% of those entered (see Table 33).

Table 33

Market Lamb Auction Data (N = 211)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	39.19	39.22	30.00	38.00
Sale Lots	21.09	22.83	15.00	18.00
Price Per Head	1,467.79	1,162.13	1,060.00	1,000.00

By comparing the number of sale lots and entries, on average, 54.19% of breeding sheep were sold in county livestock show auctions (see Table 34).

Table 34

Breeding Sheep Auction Data (N = 49)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	13.84	11.20	10.00	13.50
Sale Lots	7.50	5.87	5.00	8.25
Price Per Head	829.86	498.35	725.00	575.00

Wether dams (sheep) are entered and sold at less frequency than breeding sheep (see Table 35). The average amount of head sold as compared to head entered was 39.35%.

Table 35

Wether Dam Auction Data (N = 14)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	8.64	9.74	6.50	825.00
Sale Lots	3.40	2.07	3.00	3.00
Price Per Head	760.00	501.75	750.00	5.25

Market barrows accounted for the highest number of entries and sale lots among all of the species (see Table 36). County Extension Agents reported an average of 108.21 (*SD* = 95.69) barrows entered in their county livestock shows. This group also reported 54.64 (*SD* = 47.87) sale lots offered in their auctions. Thus, 50.49% of market barrows entered were sold at the county level.

Table 36

Market Barrow Auction Data (N = 211)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	108.21	95.69	80.00	1,050.00
Sale Lots	54.64	47.87	42.50	55.00
Price Per Head	1,414.96	1,076.39	1,046.00	108.00

Breeding gilts are shown and sold at less frequency as compared to their barrow counterparts (see Table 37). Even still, on average, 53.11% of gilts entered in county livestock shows were sold in county auctions.

Table 37

Breeding Gilt Auction Data (N = 84)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	34.21	30.28	25.00	625.00
Sale Lots	18.17	18.87	15.00	13.75
Price Per Head	931.10	665.52	800.00	39.50

Statistics reported for rabbits are reported in Table 38. By dividing the average number of sale lots by the number of entries, this species averages 41.85% sold in county livestock auctions. On average, rabbit exhibitors can expect to profit by showing this species. Livestock exhibitors reported that on average it costs $208.24 (*N* = 570) to raise one head, and County Extension Agents reported these lots average $968.82 (*N* = 168) in county auctions.

Table 38

Rabbit Auction Data (N = 168)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	61.96	64.33	40.00	807.74
Sale Lots	25.93	30.68	15.00	26.00
Price Per Head	968.82	905.52	700.00	57.75

County Extension Agents reported an average of 37.49 (*N* = 139) entries for chickens/broilers in their county level livestock shows (see Table 39). Of these, on average, 18.02 lots are awarded. With these numbers, chickens average 48.07% sold in county show sales. On average, this species nets a profit when the total cost to raise a group of 25 birds averages $195.78 (*N* = 358) as reported by livestock exhibitor families is compared to the $1,094.18 (*N* = 139) price received per lot.

Table 39

Broilers/Chickens Auction Data (N = 139)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	37.49	38.32	25.00	1,000.00
Sale Lots	18.02	16.97	13.00	14.00
Price Per Lot	1,094.18	952.64	800.00	33.00

Turkeys also average a profit when comparing the average cost of raising a group of 25 birds reported at $1,081.05 (*N* = 132) to the auction price reported by County Extension Agents of $1,615.50 (*N* = 43). On average, 48.01% of turkeys entered in county livestock shows are sold in county level auctions (see Table 40).

Table 40

Turkeys Auction Data (N = 43)

Variable	*M*	*SD*	*Mdn*	*IQR*
Entries	25.14	23.61	20.00	23.00
Sale Lots	12.07	9.51	10.00	9.50
Price Per Lot	1,615.50	1,647.45	1,052.00	1,200.00

I quantified county livestock show auction support and the amount received per each livestock species in objective two. These data will help researchers continue to fill gaps in areas where monetary return may not match inputs. These findings are also helpful in communicating economic return per species of involvement for new exhibitor families. With this information, educators will be better positioned to support and inform livestock exhibitors and their families.

Objective Four: Gauge Perceptions of County Extension Agents, Agricultural Science Teachers, and Livestock Exhibitor Families Regarding Educational and Life Skill Development Outcomes of the Texas 4-H and FFA Livestock Projects Raised for Exhibition.

In objectives one, two and three, I discussed economic information related to showing livestock projects. However, the true missions of 4-H and FFA livestock projects are life skill development and achieving educational outcomes related to raising animals. According to Boleman et al. (2005), these skills can include responsibility, goal setting, self-discipline, self-motivation, livestock industry knowledge, self-esteem, and decision-making.

In objective four, I sought to gain information related to perceptions of the three respondent groups (County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families) about development of young people in the areas of life skills and educational outcomes. I will describe mean scores for each of the three groups, as well as orthogonal contrasts that will compare educators (County Extension

Agents and Agricultural Science Teachers) to the livestock exhibitor family group, and separately comparing the CEA respondents to the AST respondents in Tables 41–55.

I described the mean values for the three respondent groups related to their perceptions regarding education outcomes of the livestock project in Table 41. The response scale for Table 41 is as follows: *Definitely* – 3, *Somewhat* – 2, *Does Not* – 1. For the purpose of discussion, I distinguished this scale as: 2.50–3.0 – *Definitely*; 1.50–2.49 – *Somewhat; and* 1–1.49 – *Does Not.*

Table 41

Perceptions of County Extension Agent, Agricultural Science Teachers and Livestock Exhibitor Families Regarding Life Skill Development and Educational Outcomes (N = 7,527)

Perceptions	CEA			AST			*Families*		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Increase Responsibility	219	2.85	0.36	248	2.85	0.37	4,654	2.95	0.25
Increase Sportsmanship	219	2.62	0.51	248	2.55	0.55	4,653	2.83	0.41
Increase Work Ethic	218	2.81	0.43	246	2.78	0.42	4,653	2.93	0.26
Increase Respect	219	2.68	0.50	247	2.60	0.55	4,643	2.86	0.38
Increase Ethical Decision Making	219	2.51	0.59	248	2.46	0.60	4,652	2.79	0.48
Increase Animal Science Knowledge	219	2.68	0.50	247	2.80	0.42	4,650	2.90	0.32
Increase Knowledge About the Food Supply	219	2.45	0.59	248	2.57	0.61	4,653	2.77	0.46
Increase Knowledge of Safe Animal Handling and Welfare	219	2.60	0.55	248	2.70	0.49	4,652	2.90	0.32
Increase Knowledge of Producing a Safe Food Animal Product	219	2.48	0.62	247	2.56	0.57	4,645	2.79	0.45
Perceived Development Total	219	2.63	0.39	248	2.65	0.37	4,659	2.86	0.25

Note. Definitely – 3, *Somewhat* – 2, *Does Not* – 1

All respondent groups indicated that the livestock project either *somewhat* or *definitely* did foster an environment for increasing educational outcomes and life skill development traits in the areas of: responsibility, sportsmanship, work ethic, respect, ethical decision making, animal science knowledge, knowledge about the food supply,

safe animal handling and welfare knowledge, and knowledge about producing a safe food animal product.

A combined construct variable was calculated to comprise all nine variables. I called this variable Perceived Development Total in Tables 41–43. County Extension Agents' total perceived impact of educational outcomes and life skill development through the livestock project was 2.63 (*SD* = 0.39). Agricultural Science Teachers reported a combined perceived impact total of 2.65 (*SD* = 0.37). The livestock exhibitor family respondents averaged the highest cumulative response for this construct of 2.86 (*SD* = 0.25).

The family respondent group is the most closely associated with the actual exhibitor and livestock project and rated the highest perceived outcomes. The individual perception with the highest mean value across all groups was increase responsibility (*M* = 2.85, 2.85, 2.95).

I outlined the orthogonal contrasts used to compare the professional educators (CEAs and ASTs) to the livestock exhibitor family respondent groups in Table 42. I evaluated the previous nine perceptions, along with the total construct variable (Perceived Development Total). All 10 variables show that the two groups were statistically significantly different in their responses related to educational outcomes and life skill development traits learned through the livestock project.

I reported for all the values of each contrast (livestock show families compared to educators), its standard error, t-statistic, p value, and Cohen's d in Table 42. The contrast of the overall construct variable ($t = 16.75$, $p < 0.001$, $d = 0.81$) was statistically

significantly different as the traits are *definitely* or *somewhat* achieved through participation in the Texas 4-H and FFA livestock project. Using Cohen's d effect size (d = 0.81), I determined a large practical significance.

Table 42

Orthogonal Contrast Comparing Professional Educators (CEA/AST) to Livestock Exhibitor Families Regarding Life Skill Development and Educational Outcomes (N = 7,527)

Perceptions	*Value of Contrast*	*Std. Error*	*t*	*p*	*Cohen's d*
Increase Responsibility	0.10	0.01	8.84	<0.01	0.43
Increase Sportsmanship	0.25	0.02	12.06	<0.01	0.59
Increase Work Ethic	0.13	0.01	9.83	<0.01	0.48
Increase Respect	0.22	0.02	11.34	<0.01	0.55
Increase Ethical Decision Making	0.30	0.02	13.36	<0.01	0.65
Increase Animal Science Knowledge	0.16	0.02	9.75	<0.01	0.47
Increase Knowledge About the Food Supply	0.26	0.02	11.10	<0.01	0.54
Increase Knowledge of Safe Animal Handling and Welfare	0.25	0.02	15.33	<0.01	0.75
Increase Knowledge of Producing a Safe Food Animal Product	0.26	0.02	11.61	<0.01	0.57
Perceived Development Total	0.22	0.01	16.75	<0.01	0.81

I outlined the orthogonal contrasts used to compare the County Extension Agent respondents to the Agricultural Science Teacher respondents in Table 43. I evaluated the previous nine perceptions, along with the total construct variable. Only four variables (increase respect, increase animal science knowledge, increase knowledge about the food supply, and increase knowledge about safe animal handling and welfare)

showed the two professional educator groups were statistically significantly different in their responses related to educational outcomes and life skill development traits learned through the livestock project.

Table 43

Orthogonal Contrast Comparing County Extension Agents to Agricultural Science Teachers Regarding Life Skill Development and Educational Outcomes (N = 543)

Perceptions	*Value of Contrast*	*Std. Error*	*t*	*p*	*Cohen's d*
Increase Responsibility	0.00	0.02	0.11	0.91	0.01
Increase Sportsmanship	0.07	0.04	1.74	0.08	0.13
Increase Work Ethic	0.03	0.03	1.05	0.30	0.07
Increase Respect	0.09	0.04	2.34	0.02	0.16
Increase Ethical Decision Making	0.05	0.05	1.10	0.27	0.08
Increase Animal Science Knowledge	-0.12	0.03	-3.77	<0.01	-0.26
Increase Knowledge About the Food Supply	-0.12	0.04	-2.63	0.01	-0.19
Increase Knowledge of Safe Animal Handling and Welfare	-0.10	0.03	-3.28	<0.01	-0.20
Increase Knowledge of Producing a Safe Food Animal Product	-0.08	0.04	-1.92	0.06	-0.14
Perceived Development Total	-0.02	0.03	-0.77	0.44	-0.05

County Extension Agents indicated a higher level of agreement as participation in the livestock project increases respect in exhibitors. Agricultural Science Teachers indicated a higher level of agreement that participation in the livestock project increases

animal science knowledge, knowledge about the food supply, and knowledge about safe animal handling and welfare.

I displayed all the values of contrast, standard error, t-statistic, p value, and Cohen's d for the variables in this construct in Table 43. The combined construct variable (t = -0.77, p = 0.44, d = -0.05) was not statistically significant different among the total construct. This is agreeable as these two educator groups tend to be similar. Cohen's D effect size value (d = -0.05) suggested a small practical significance.

I used Chi-Square analyses to describe associations between the three respondent groups on a variety of questions related to the perceptions of these participants regarding various aspects of the livestock project. Participants reported that 41.00% (M = 2,171) of all respondents have heard of resources published by Texas 4-H and FFA but have never used them (see Table 44).

Table 44

Chi-Square Analysis of Responses to Question "Have You Utilized Resources Published by Texas 4-H and FFA Related to Livestock Projects?" As Expressed by County Extension Agents, Agricultural Science Teachers, And Livestock Exhibitor Families (N = 5,299)

Respondent Group	*I have used at least one of these resources.*	*I have heard of them, but never used them.*	*I have never heard of these resources.*	Total
	f %	*f* %	*f* %	*f* %
County Extension Agent	181 (81.20%)	35 (15.70%)	7 (3.10%)	223 (100.00%)
Agricultural Science Teacher	97 (31.50%)	110 (35.70%)	101 (32.80%)	308 (100.00%)
Livestock Exhibitor Family	1,026 (21.50%)	2,026 (42.50%)	1,716 (36.00%)	4,768 (100.00%)
Total	1,304 (24.60%)	2,171 (41.00%)	1,824 (34.40%)	5,299 (100.00%)
x^2	420.89			
Contingency Coefficient	0.27			
p	<0.01			

Note. I have used at least one of these resources. = 3, I have heard of these resources, but I have never used them. = 2, I have never heard of these resources. = 1

There was a statistically significant association between the three respondent groups and their level of utilization of the resources ($p < 0.01$). The County Extension Agent respondent group reported the highest percentage of those who had used at least one of the resources (81.20%, $f = 181$). The exhibitor family respondents were the least familiar with educational resources. Many of these resources were published by Texas

A&M AgriLife Extension and there may be a gap between authors and those consuming the resources.

I reported responses to, “Are resources related to livestock projects sufficient in helping exhibitor families in this project area” in Table 45. I analyzed only respondents who indicated they had used the resources. Nearly 75% (74.40%, $f = 941$) of respondents believe the resources were sufficient to help exhibitor families. The livestock exhibitor family respondent group reported the highest percentage of those who agreed the resources were sufficient (75.50%, $f = 753$). Though they were the group with the lowest amount that had used the resources, those who had used them believed them to be beneficial. There was not a statistically significant association between the respondent groups and how they perceived the resources to be sufficient ($p = 0.24$).

Table 45

Chi-Square Analysis of Responses to Question "Do You Believe Current Educational Resources Published by Texas 4-H and FFA Related to Livestock Projects Are Sufficient for Helping Exhibitor Families In This Project Area?" As expressed by County Extension Agents, Agricultural Science Teachers, and Livestock Exhibitor Families (N = 1,265)

Respondent Group	*Yes*	*No*	Total
	f %	*f* %	*f* %
County Extension Agent	125 (70.60%)	52 (29.40%)	177 (100.00%)
Agricultural Science Teacher	63 (70.00%)	27 (30.00%)	90 (100.00%)
Livestock Exhibitor Family	753 (75.50%)	245 (24.50%)	998 (100.00%)
Total	941 (74.40%)	324 (25.60%)	1,265 (100.00%)
x^2	2.82		
Contingency Coefficient	0.05		
p	0.24		

Note. These resources are beneficial. – 2, *These resources need work*. – 1

I reported the results to, "Do you believe life skill development traits learned through the livestock project are relevant in real-world application?" in Table 46. The response from all three groups supported that the skills learned through the youth livestock project do lend to relevancy in real-world application (99.50%, $f = 5{,}099$).

There was not a statistically significant association between the respondent groups and how they perceived the relevancy of life skill development traits learned through the livestock project ($p = 0.42$).

Table 46

Chi-Square Analysis of Responses to Question "Do You Believe Life Skill Development Traits Learned Through the Livestock Project Are Relevant in Real-World Application?" As Expressed by County Extension Agents, Agricultural Science Teachers, and Livestock Exhibitor Families (N = 5,123)

Respondent Group	*Yes*	*No*	Total
	f %	*f* %	*f* %
County Extension Agent	215 (99.10%)	2 (0.90%)	217 (100.00%)
Agricultural Science Teacher	244 (99.20%)	2 (0.80%)	246 (100.00%)
Livestock Exhibitor Family	4,640 (99.60%)	20 (0.40%)	4,660 (100.00%)
Total	5,099 (99.50%)	24 (0.50%)	5,123 (100.00%)
x^2	1.74		
Contingency Coefficient	0.02		
p	0.42		

Note. Yes – 2, No – 1

I reported responses to the question, "Do you believe educational objectives learned through the livestock project are relevant in real-world application?" in Table 47. This question varies from the previous question as it is related to educational outcomes (e.g., animal science knowledge) and the previous was regarding life skill development traits (e.g., responsibility). Even still, most of all respondent groups agreed that the educational outcomes learned through the youth livestock project are relevant in real-world application (98.50%, *f* = 5,055).

Texas 4-H and FFA members are often challenged to address this type of question. However, it is clear from these data that educators and exhibitor families believe this is a worthwhile venture to learn more about animal agriculture. There was a statistically significant association between the three respondent groups and how they

perceived the relevancy of educational outcomes learned through the livestock project ($p < 0.01$).

Table 47

Chi-Square Analysis of Responses to Question "Do You Believe Educational Objectives Learned Through the Livestock Project Are Relevant in Real-World Application?" As Expressed by County Extension Agents, Agricultural Science Teachers, and Livestock Exhibitor Families (N = 5,130)

Respondent Group	*Yes*	*No*	Total
	f %	*f* %	*f* %
County Extension Agent	207 (95.80%)	9 (4.20%)	216 (100.00%)
Agricultural Science Teacher	234 (94.40%)	14 (5.60%)	248 (100.00%)
Livestock Exhibitor Family	4,614 (98.90%)	52 (1.10%)	4,666 (100.00%)
Total	5,055 (98.50%)	75 (1.50%)	5,130 (100.00%)
x^2	45.01		
Contingency Coefficient	0.09		
p	<0.01		

Note. Yes – 2, No – 1

The development of life skills and the attainment of educational outcomes are the hallmark for Texas 4-H and FFA livestock show projects. I helped to solidify that the learning opportunities provided through this project area are still a crucial and relevant aspect of the livestock project in objective four. Educators and exhibitor families agree that these objectives are being met and are still relevant in real-world settings.

Objective Five: Capture Perceptions of County Extension Agents, Agricultural Science Teachers, And Livestock Exhibitor Families Regarding Return-On-Investment and Alignment of Project Inputs with Intrinsic and Extrinsic Rewards.

In this objective, I sought to gain information related to return-on-investment for youth livestock projects. Though the intent of raising and exhibiting livestock is typically not focused on economic returns, these data may be useful in telling a story of investment and reward. I will discuss both monetary and non-monetary (intrinsic) benefits related to Texas 4-H and FFA livestock projects. I used mean scores for County Extension Agents and Agricultural Science Teachers related to their levels of agreement with nine statements pertaining to the cost and economic return of livestock projects in Table 48.

The scale for Table 48 is as follows: *strongly agree* – 4, *agree* – 3, *disagree* – 2, *strongly disagree* – 1. The response with the highest mean score was, "The cost of raising and showing livestock projects affects project participation" (M = 3.43, SD = 0.61). Respondents' perceptions with the lowest mean score were to the statement, "Major livestock shows provide adequate premiums/auction prices as they compare to the cost of raising livestock projects" (M = 2.29, SD = 0.78).

Overall, both educator groups (CEA and AST) agreed that the cost of raising livestock projects had an impact on participation (see Table 48). Additionally, they reported county and major livestock shows do not provide adequate premiums to offset these costs. They also agreed that the economy has a major effect on the premiums paid at county shows.

Table 48

County Extension Agent and Agricultural Science Teacher Perceptions of Livestock Project (N = 530)

Variable	*M*	*SD*
The cost of raising and showing livestock projects affects project participation.	3.43	0.61
The cost of livestock project participation has increased at the same rate as inflation.	2.43	0.85
County livestock shows provide adequate premiums/auction prices as they compare to the cost of raising livestock projects.	2.44	0.77
Major livestock shows provide adequate premiums/auction prices as they compare to the cost of raising livestock projects.	2.29	0.78
Major livestock show premiums and sale prices have increased at a higher rate than those at county livestock shows.	2.44	0.79
County livestock show premiums and sale prices have increased at a higher rate than those at major livestock shows.	2.34	0.77
The financial support of my county and local livestock shows remains fairly constant from year to year.	2.93	0.66
The economy (crop yields, oil prices, etc.) has a major effect on the premiums paid to youth in my county show.	3.09	0.80
New 4-H/FFA members in my chapter are more likely to select a non-animal or small animal project due to the lower cost of investment required.	3.17	0.74

Note. Likert scale as follows: *Strongly Agree* – 4, *Agree* – 3, *Disagree* – 2, *Strongly Disagree* – 1

I reported in Table 49 the mean values for the two educator respondent groups related to their perceptions regarding return-on-investment of livestock projects. The response scale for Table 49 was as follows: *strongly agree* – 4, *agree* – 3, *disagree* – 2, *strongly disagree* – 1.

Both respondent groups indicated similar responses for six of the perceptions regarding return-on-investment. Responses from the educators were statistically

significantly different for three of the perceptions: 1) The cost of raising and showing livestock projects affects project participation ($p < 0.01$). ASTs more strongly agreed; 2) The financial support of my county and local livestock shows remains fairly constant from year to year ($p < 0.01$); and, 3) The economy (crop yields, oil prices, etc.) has a major effect on the premiums paid to youth in my county show ($p < 0.01$). CEAs more strongly agreed.

County Extension Agents and Agricultural Science Teachers displayed the same mean score for the perception variable of, "Major livestock show premiums and sale prices have increased at a higher rate than those at county livestock shows," ($M = 2.44$, 0.77, 0.78; see Table 49).

Table 49

Comparisons of County Extension Agent and Agricultural Science Teachers Using Independent Samples T-Test (N = 543)

Perceptions	CEA			AST					
	n	*M*	*SD*	*n*	*M*	*SD*	*t*	*p*	*Cohen's d*
The cost of raising and showing livestock projects affects project participation.	222	3.34	0.61	308	3.50	0.60	-2.99	<0.01	-0.26
The cost of livestock project participation has increased at the same rate as inflation.	219	2.41	0.85	306	2.45	.85	-0.50	0.58	-0.05

Table 49 Continued

Perceptions	CEA			AST					
	n	*M*	*SD*	*n*	*M*	*SD*	*t*	*p*	*Cohen's d*
County livestock shows provide adequate premiums/auction prices as they compare to the cost of raising livestock projects.	220	2.48	0.72	307	2.41	0.80	1.03	0.30	0.09
Major livestock shows provide adequate premiums/auction prices as they compare to the cost of raising livestock projects.	219	2.32	0.75	307	2.26	0.79	0.81	0.42	0.72
Major livestock show premiums and sale prices have increased at a higher rate than those at county livestock shows.	219	2.44	0.77	307	2.44	0.78	0.00	1.00	0.00
County livestock show premiums and sale prices have increased at a higher rate than those at major livestock shows.	219	2.42	0.77	307	2.29	0.60	1.80	0.07	0.16
The financial support of my county livestock shows remains fairly constant.	219	3.07	0.60	308	2.83	0.68	4.12	<0.01	0.37

Table 49 Continued

Perceptions	CEA			AST					
	n	*M*	*SD*	*n*	*M*	*SD*	*t*	*p*	*Cohen's d*
The economy (crop yields, oil prices, etc.) has a major effect on the premiums paid to youth in my county show.	219	3.21	0.76	307	3.00	0.82	3.00	<0.01	0.27
New FFA members in my chapter are more likely to select a non-animal or small animal project due to the lower cost of investment required.	221	3.15	0.75	308	3.18	0.74	-0.38	0.71	-0.03

Note. Likert scale as follows*: Strongly Agree* – 4, *Agree* – 3, *Disagree* – 2, *Strongly Disagree* – 1.

I described means for the three respondent groups related to their perceptions regarding education outcomes of the livestock project in Table 50. The response scale for Table 50 is as follows: *worth the investment* – 3, *somewhat worth the investment*– 2, *not worth the investment* – 1. For the purpose of discussion, I distinguished this scale as: 1-1.49 – *not worth the investment*, 1.50-2.49 – *somewhat worth the investment*, 2.50-3.0 – *definitely worth the investment*.

All respondent groups indicated that their livestock project(s) was/were *definitely worth the investment* in the areas of: family time spent together, educational outcomes, life skill development, professional connections, and career preparation.

Respondents indicated that the livestock project was only *somewhat worth the returns-on-investment* in the areas of: monetary returns (dollars earned) and potential scholarships received. The lowest mean scores were reported for monetary returns-on-investment in terms of dollars earned (M = 1.79, 1.73, 1.98; M = 0.70, 0.64, 0.77).

I calculated a combined construct variable to comprise responses to all nine statements. I called this variable ROI Total in tables 50–52 . County Extension Agents' total perceived return-on-investment through livestock projects was 2.62 (SD = 0.33). Agricultural Science Teachers reported a combined perceived impact total of 2.53 (SD = 0.37). The livestock exhibitor family respondents averaged the highest cumulative response for this construct of 2.65 (SD = 0.34). The family respondent group was the most closely associated with the expenses of the livestock project but rated the highest perceived outcomes for return-on-investment.

Table 50

Perceptions of County Extension Agent, Agricultural Science Teachers and Livestock Exhibitor Families Regarding Return-On-Investment (N = 7,527)

Perceptions	CEA			AST			Families		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Family Time Spent Together	219	2.95	0.21	244	2.85	0.37	4,615	2.87	0.37
Educational Outcomes	219	2.79	0.44	244	2.77	0.48	4,609	2.87	0.36
Life Skill Development	217	2.90	0.30	242	2.86	0.40	4,599	2.95	0.23
Monetary Returns (Dollars Earned)	219	1.79	0.70	244	1.73	0.64	4,608	1.98	0.77
Potential Scholarships Received	218	2.46	0.64	244	2.30	0.65	4,600	2.52	0.66
Professional Connections	219	2.73	0.48	243	2.58	0.56	4,605	2.63	0.60
Career Preparation	219	2.72	0.52	243	2.63	0.54	4,608	2.75	0.50
ROI Total	219	2.62	0.33	244	2.53	0.37	4,617	2.65	0.34

Note. Scale as follows: *Worth the Investment* – 3, *Somewhat Worth the Investment*– 2, *Not Worth the Investment* – 1

I evaluated the previous seven perceptions, along with the total construct variable (ROI Total) in Table 51 as orthogonal contrasts comparing professional educators (CEAs and ASTs) to livestock exhibitor families. Six of the variables showed that the two groups were statistically significantly different in their responses related to return-on-investment through livestock projects (educational outcomes, life skill development, monetary returns, potential scholarships received, and career preparation).

The two variables not statistically significantly different between the groups were family time spent together and professional connections.

These groups were statistically significantly different ($t = 4.70$, $p < 0.01$, $d = 0.23$) in their perceptions of return-on-investment related to Texas 4-H and FFA livestock projects. I identified a small practical significance using Cohen's d effect size ($d = 0.23$).

Table 51

Orthogonal Contrast Comparing Professional Educators (CEA/AST) to Livestock Exhibitor Families Return-On-Investment Related to Inputs (N = 7,527)

Perceptions	*Value of Contrast*	*Std. Error*	*t*	*p*	*Cohen's d*
Family Time Spent Together	-0.03	0.02	-1.75	0.08	-0.09
Educational Outcomes	0.09	0.02	5.05	<0.01	0.25
Life Skill Development	0.07	0.01	6.26	<0.01	0.31
Monetary Returns (Dollars Earned)	0.22	0.04	5.95	<0.01	0.29
Potential Scholarships Received	0.14	0.03	4.22	<0.01	0.21
Professional Connections	-0.03	0.03	-0.96	0.34	-0.05
Career Preparation	0.07	0.02	3.01	<0.01	0.15
ROI Total	0.08	0.02	4.70	<0.01	0.23

I computed another set of orthogonal contrasts of the County Extension Agent respondents and the Agricultural Science Teacher respondents on topics regarding return-on-investment in Table 52. I evaluated the previous seven perceptions and the total construct variable. Three variables (family time spent together, potential received

scholarships, and professional connections) showed that the two professional educator groups were statistically significantly different in their responses related to return-on-investment through the livestock project. County Extension Agents reported higher mean scores than Agricultural Science Teachers for all three of these perception variables. I identified a statistically significant difference among the two groups (t = 2.78, $p < 0.01$, $d = 0.25$) for the total construct. I found a small practical significance using Cohen's D effect size ($d = 0.25$).

Table 52

Orthogonal Contrast Comparing County Extension Agents to Agricultural Science Teachers Regarding Return-On-Investment Related to Inputs (N = 543)

Perceptions	*Value of Contrast*	*Std. Error*	*t*	*p*	*Cohen's d*
Family Time Spent Together	0.10	0.03	2.98	<0.01	0.34
Educational Outcomes	0.01	0.03	0.43	0.66	0.03
Life Skill Development	0.04	0.02	1.74	0.08	0.11
Monetary Returns (Dollars Earned)	0.07	0.07	0.97	0.33	0.10
Potential Scholarships Received	0.16	0.06	2.53	0.01	0.24
Professional Connections	0.15	0.06	2.63	0.01	0.28
Career Preparation	0.08	0.05	1.78	0.07	0.16
ROI Total	0.09	-0.03	2.78	0.01	0.25

I used Chi-Square analyses to describe associations between the three respondent groups on a variety of questions related to the perceptions of these participants regarding various aspects of return-on-investment in this project area. I reported the results to, "Do you think the resources invested in the livestock project (including time and money) match the return received in regard to benefits other than

money?" in table 53. The table indicates 89.50% (*f = 4,540*) of all respondents believe investments match return regarding benefits other than money.

Table 53

Chi-Square Analysis of Responses to Question "Do You Think the Resources Invested in the Livestock Project (Including Time and Money) Match the Return Received in Regard to Benefits Other Than Money?" As Expressed by County Extension Agents, Agricultural Science Teachers, and Livestock Exhibitor Families (N = 5,072)

Respondent Group	*Yes*	*Not Sure*	*No*	Total
	f %	*f* %	*f* %	*f* %
County Extension Agent	206 (94.90%)	4 (1.80%)	7 (3.20%)	217 (100.00%)
Agricultural Science Teacher	225 (92.20%)	9 (3.70%)	10 (4.10%)	244 (100.00%)
Livestock Exhibitor Family	4,109 (89.10%)	259 (5.60%)	243 (5.30%)	4,611 (100.00%)
Total	4,540 (89.50%)	272 (5.40%)	260 (5.10%)	5,072 (100.00%)
x^2	10.05			
Contingency Coefficient	0.04			
p	0.04			

Note. Scale as follows: *Yes; there is a return-on-investment in terms of dollar amount spent and received in the livestock project*. – 3, *I am not sure about return-on-investment*. – 2, *No; there is not a monetary return-on-investment in this project area*. – 1

The County Extension Agent respondent group reported the highest percentage of those that agree *the return-on-investment is worth it in terms of benefits other than money (94.90%, f* = 206). I found a statistically significant association between the three

respondent groups and their perception of return-on-investment other than money (p = 0.04).

I reported responses to, “Do you think the resources invested in the livestock project (including time and money) match the return received in regard to true monetary return-on-investment?” in Table 54. The majority of all three respondent groups indicated they do not think there is a true monetary return-on-investment in Texas 4-H and FFA livestock project(s). In total, 64.70% (f = 3,286) reported no when asked their perception of this question. Only 27.20% (f = 1,383) reported that they do think there is the opportunity for true money return in this project area.

The exhibitor family respondent group was the lowest of the three groups in reporting “no” (64.10%, f = 2,959), even though they are the group paying for the expenses. There was a statistically significant association between the respondent groups and how they perceived monetary return-on-investment through the livestock project ($p < 0.01$).

Table 54

Chi-Square Analysis of Responses to Question "Do You Think the Resources Invested in the Livestock Project (Including Time and Money) Match the Return Received in Regard to True Monetary Return-On-Investment?" As Expressed by County Extension Agents, Agricultural Science Teachers, and Livestock Exhibitor Families (N = 5,076)

Respondent Group	*Yes*	*Not Sure*	*No*	Total
	f %	*f* %	*f* %	*f* %
County Extension Agent	39 (17.80%)	31 (14.20%)	149 (68.00%)	219 (100.00%)
Agricultural Science Teacher	43 (17.60%)	23 (9.4%)	178 (73.00%)	244 (100.00%)
Livestock Exhibitor Family	1,301 (28.20%)	353 (7.7%)	2,959 (64.10%)	4,613 (100.00%)
Total	1,383 (27.20%)	407 (8.00%)	3,286 (64.70%)	5,076 (100.00%)
x^2	31.83			
Contingency Coefficient	0.08			
p	<0.01			

Note. Yes; there is a return-on-investment in terms of dollar amount spent and received in the livestock project. – 3, I am not sure about return-on-investment. – 2, No; there is not a monetary return-on-investment in this project area. – 1

I reported in Table 55 responses to, "Do you believe participation in the livestock project is 'worth it'?". An overwhelming majority of all three respondent groups indicated they do believe participation in the Texas 4-H and FFA livestock project is worth it. In total, 97.90% (*f* = 4,956) reported "yes" when asked their perception of this question. Only 2.10% (*f* = 104) reported that they do not believe participation in this project area is worth it.

The Agricultural Science Teacher respondent group was the lowest of the three groups in reporting "yes" (93.50%, $f = 229$). I found a statistically significant association between the respondent groups and how they perceived the idea of the livestock project being "worth it" ($p < 0.01$).

Table 55

Chi-Square Analysis of Responses to Question "In Conclusion, Do You Believe Participation in the Livestock Project Is "Worth It"?" As Expressed by County Extension Agents, Agricultural Science Teachers, and Livestock Exhibitor Families (N = 5,060)

Respondent Group	*Yes*	*No*	Total
	f %	*f* %	*f* %
County Extension Agent	216 (99.50%)	1 (0.50%)	217 (100.00%)
Agricultural Science Teacher	229 (93.5%)	16 (6.50%)	245 (100.00%)
Livestock Exhibitor Family	4,511 (98.10%)	87 (1.90%)	4,598 (100.00%)
Total	4,956 (97.90%)	104 (2.10%)	5,060 (100.00%)
x^2	27.72		
Contingency Coefficient	0.07		
p	<0.01		

Note. Yes – 2, *No* – 1

I asked participants to provide context for their responses via short answer text. I chose a few excerpts from the 3,090 text responses to highlight the sentiments of respondents on the question of, "Do you believe participation in the livestock project is 'worth it'?"

Most of the 3,090 text responses can be summarized by this quote, "The intrinsic return has always surpassed the financial return." However, I included additional quotes to describe the passion and conviction livestock exhibitor participants

felt toward this project area. Only 77 respondents provided text to support their response of ‘no’ to this question.

“You shouldn't go into this project to ‘make money’. It takes a lot of luck to do that. But, it is absolutely an incredible way for students to learn many life skills that will benefit them after the projects are done.”

“You simply cannot replace the time spent together, meeting new people, learning and making connections, along with all of the other benefits listed above! We love what we do as a family!”

“You have a great time doing it and you learn to focus on you and your project. Plus, it can be a great way to make friends and become more knowledgeable about livestock and raising. I don’t expect much in return because I am just doing it because I truly love the whole experience and I would say it is definitely worth it.”

“You cannot put a price on life lessons. Livestock projects give the family an opportunity to grow. Yes, there are other avenues families can take sports being one. But the beauty of livestock it does not matter if you are fast, tall, or strong. Boys and girls get a chance to compete against each other on who works the hardest and smartest.”

“Without question it is worth it! But it is a matter of perspective! For our family we understand the risk/reward of the projects and understand what our children can gain from completion, hard work, education, and a willingness to learn.”

“This is a way of life for my family! We do it together.”

“This box isn't big enough for my explanation! As a parent, I did not make my children take part in livestock projects, they chose this, and we support them. We tell them that as long as they keep working hard at it and show that they deserve for us to spend the money on their project, then we will continue to support them. They have definitely held up their end of the deal. Now that they are old enough to drive, set up stalls at a show, pay their own entries, check in at the show and we get to just watch and be proud. I'd say it’s all worth it! At home, they halter break, work on showmanship, work hair, drive hogs, feed correctly and do their own research for improvements, clean stalls and keep the barn organized. I'd say it’s all worth it!”

“The long term of this project is not about the monetary return and that isn’t the way a person should look at it. If that’s what they are in it for they need to look elsewhere. The goal is far more broad. Time with family and personal development and a goal toward further education and marketing yourself is worth far more than money.” “The experiences you have and the people you meet and build relationships with CANNOT be measured in dollar values!”

“Livestock projects are a main part of why I am the person I am today. It has given me the friends and relationships that have become so important to me. Livestock projects do more than just teach you about animals, it gives you great memories and fantastic life lessons that you can use in any career, scenario, or setting.”

Finally, one livestock exhibitor family respondent simply concluded, “It made me a better person, you can’t put a dollar sign on that.”

CHAPTER V

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Based on findings in Chapter IV, many conclusions, implications and recommendations can be proposed about the Texas 4-H and FFA livestock program. Because of these findings, perhaps educators, administrators, and all stakeholders involved in this project area can better understand, supervise, manage, support and recruit for Texas youth livestock projects. In Chapter V, I summarized the findings and reported conclusions, implications and recommendations of this dissertation research project.

Purpose, Summary, and Objectives

The purpose of the study was to measure and explain the scope, relevance, and overall impact of the Texas 4-H and FFA youth livestock program. I aimed to quantify current livestock project totals per species, assign economic values to these projects per head raised, gain a greater understanding of educational and life skill development outcomes, and better understand perceived return-on-investment through the following objectives:

1. Describe the current size and scope of Texas 4-H and FFA youth livestock projects to investigate trends from previous studies.
2. Determine the average cost of raising and exhibiting Texas 4-H and FFA livestock projects by identifying the average purchase price of each species, the

cost of feed, hay and supplies, and the dollar amounts spent on fees, veterinarian bills, and other associated costs.

3. Estimate total number of county livestock show entries, sale lots, dollars raised at local auctions, and local scholarships awarded.
4. Gauge perceptions of County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families regarding educational and life skill development outcomes of the Texas 4-H and FFA livestock projects raised for exhibition.
5. Capture perceptions of County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families regarding return-on-investment and alignment of project inputs with intrinsic and extrinsic rewards.

In this quantitative study, I used three survey instruments to gauge perceptions of County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families regarding several constructs of youth livestock projects. I answered the following research questions:

1. What is the current size and scope of Texas 4-H and FFA youth livestock projects?
2. What are current trends of Texas 4-H and FFA youth livestock projects?
3. Do livestock project resource inputs align with intrinsic and extrinsic returns-on-investment of the youth livestock project?
4. Does monetary support from local, county and state livestock shows in the form of premiums, auction dollars, and scholarship dollars match economic inputs of the project area?

5. Do intended educational objectives of the project match actual experiences?
6. Is there a disconnect of goals within certain areas of the program with respect to real-world application?
7. Is the Texas 4-H and FFA livestock project 'worth it'?

In Chapter II, I described the framework for this study by highlighting previous studies that helped describe the impact youth livestock programs had on life skill development and the attainment of educational outcomes related to animal agriculture. I also described my own previous thesis research that helped inform this study and build upon existing information about this project area (Cook et al., 2015).

The results from this study will prove beneficial to livestock exhibitors and their families, County Extension Agents, Agricultural Science Teachers, Texas A&M AgriLife Extension, Texas FFA, local and county show boards, major livestock shows, donors, and other stakeholders.

I received responses from 234 County Extension Agents out of 250 Texas counties (four counties are combined). I received 309 responses from Texas Agricultural Science Teachers out of 2,621 contacts in the Texas FFA email contact list. And, I garnered responses from 6,984 Texas 4-H and FFA livestock exhibitor families. The three separate surveys included Likert-type scale questions, multiple choice questions, numerical fill-in answers, and short answer questions.

I asked respondents of each of the three groups to report data based on their most recent livestock show season or the most recent county livestock show. It is important to note that I conducted this study during the historic COVID-19 pandemic.

This is relevant to results as several major and local livestock shows were cancelled immediately before or during the data collection phase of the study. While exhibitors and educators were encouraged to not allow current events to alter their responses (including economic losses directly related to the pandemic and cancellations), consumers/readers of the results of this study should be aware that these events were taking place while conducting the study.

I analyzed the data using the IBM SPSS Statistics for Macintosh (SPSS), version 27 (IBM Corp., Armonk, N.Y., USA). I reported descriptive statistics and the relationships between the variables using averages, frequencies, percentages, Chi-Square analyses, orthogonal contrasts, and non-parametric and parametric tests.

Objective One: Describe the Current Size and Scope of Texas Youth Livestock Projects to Investigate Trends from Previous Studies.

Conclusions

Livestock exhibitor family respondents recorded a total of 11,423 livestock projects shown during the 2019–2020 livestock show season. A breakdown of each of the species is as follows: barrows – 1,853, breeding heifers – 1,590, market steers – 1,567, market lambs – 1,400, market goats – 1,392, breeding gilts – 1,227, rabbits – 808, broilers/chickens – 529, breeding sheep – 252, wether does (goat) – 224, breeding does – 223, wether dams (sheep) – 184, and turkeys – 174.

These respondents indicated family tradition/history to be the most dominant factor in selecting the species in which they show. This was followed by availability of support and resources and cost of exhibiting the species. These closely mirrored the

responses from previous studies conducted in 2014, which also concluded family tradition to be the main factor in choosing which species to exhibit (Cook et al., 2015).

The most notable difference between this study and the previous research I completed in 2015 was the size and scope of the study described herein. The 2014 project was much more condensed in nature. In the previous study, I received responses from only 472 livestock exhibitor families and gauged only County Extension Agents from the educator group. Recommendations from the previous study helped inform decisions for this much larger research project (Cook et al., 2015).

I believe we gathered more accurate data for this study with more respondents from the livestock exhibitor family group and included input from the Agricultural Science Teacher group. Additionally, I expanded research questions to gain a more comprehensive understanding of the Texas 4-H and FFA youth livestock program.

Implications

These data help convey the breadth and scope of this project area. The livestock projects with all species combined are the largest of the projects offered through Texas 4-H. These numbers solidify that the total size of this project area lends to continuously improving the way in which educators, administrators and facilitators understand and provide leadership to these livestock projects and the young people involved.

The results captured in this objective of the study help lay a foundation for the remainder of the findings. Harder and Hodges (2011) suggested that explaining scope and economic impact of livestock programs is beneficial in communicating with supporters and donors.

Objective Two: Determine the Average Cost of Raising and Showing Texas 4-H and FFA Livestock Projects by Identifying the Average Purchase Price of Each Species, the Cost of Feed, Hay and Supplies, and the Dollar Amounts Spent on Fees, Veterinarian Bills, and Other Associated Costs.

Conclusions

I totaled species averages based on responses by the livestock exhibitor families. This group reported the average total cost of raising and showing each species by answering questions about purchase price, cost of feed, hay, supplies, fees, veterinarian costs, and supplements.

On average, market steers were the most expensive project to raise and exhibit. This species cost approximately $7,730.18, including purchase price and all other associated costs. The remaining species totals were as follows: heifers – $7,445.63, barrows – $2,156.16, gilts – $1,987.92, market lambs – $2,460.67, market goats – $2,375.64, rabbits – $208.24, broilers/chickens – $198.78 (per group of 25 birds), turkeys – $1,081.05 (per group of 25 birds), breeding sheep – $2,375.46, wether dams – $2,571.93, breeding does – $2,145.75, and wether does – $2,080.34.

With the species averages listed above, coupled with state validation totals from the 2019–2020 livestock show season, I calculated the average statewide total dollar amount spent per species. The species breakdown is as follows: steers – $61,407,120.20, heifers – $39,290,589.50, barrows – $44,466,487.70, gilts – $17,680,560.50, market lambs – $23,506,780.50, market goats – $18,812,693.20, rabbits – not available, broilers/chickens – $1,500,192.66 (per group of 25 birds),

turkeys – $703,114.92 (per group of 25 birds), breeding sheep – $2,301,820.74, wether dams – $1,512,294.84, breeding does – $751,012.50, and wether does – $2,230,124.48. These average totals bring the estimated grand total amount spent on state-validated livestock projects to $196,482,231.24. Rabbits are not included in this total because they are not state-validated. Similarly, some animals of the other species are not state-validated if they are not to be shown at major shows or local or county shows that do not require state-validation.

What is important to note for all of the aforementioned total averages is that these values are not inclusive of all Texas 4-H and FFA youth livestock projects. These averages are representative only of state validated livestock and of poultry that are purchased from Texas A&M University (most Texas county and major livestock show poultry). Unfortunately, at this time, there is no feasible way to quantify the census total number of livestock projects raised for exhibition in Texas county or major livestock shows. Certainly, there are under-estimates in the numbers presented in this section; thus, these are not representative of the entire total dollar amount spent on all Texas livestock projects. The total of $196,482,231.24 only begins to tell the story of the economic value Texas livestock projects represent.

The 2019–2020 state validation totals for each species were: steers – 7,944, heifers – 5,277, market lambs – 9,553, market goats – 7,919, breeding does – 350, breeding sheep – 969, wether dams – 588, wether does – 1,072, barrows – 20,623, gilts – 8,894, rabbits – not available, chickens – 188,675 (7,547 groups of 25), turkeys – 14,010 (650.40 groups of 25).

As compared to the data collected in 2014, all 2019 species average costs were higher except for rabbits, chickens and turkeys which were reported more expensive to raise and show five years ago (Cook et al., 2015). The estimated total amount spent on state validated livestock projects in 2014 was $108,774,353.75. However, I asked fewer questions in the 2014 study regarding amount spent on associated costs and feed costs, and did not include the cost of hay. Additionally, the previous study combined market and breeding animals of the same species (Cook et al., 2015).

The average total cost per "animal show unit" from the previous study conducted in 2014 were as follows: cattle (steers and heifers) – $5,840.32, swine (barrows and gilts) – $1,377.30, sheep (breeding and market) – $1,700.55, goats (breeding and market) – $1,447.73, rabbits – $151.75, chickens – $690.85, and turkeys – $1,620.76 (Cook et al., 2015).

Livestock exhibitor families also reported the average total they spent in capital purchases and investments to be $16,757.29. This amount included purchases such as building materials for barns and structures, trailers, and fencing. These dollar amounts help tell a story of regional and local economic support (Hill & Goodwin, 2015).

Travel-related expenses are another source of large expenditures for livestock exhibitor families. This respondent group reported spending approximately $1,002.06 on fuel and mileage attending livestock shows, $1,235.93 on hotel and lodging expenses, and $778.75 on average for food and meal-related purchases while attending livestock shows. These values are a significant monetary factor in exhibiting livestock.

These data were gathered on a recommendation from previous studies (Cook et al., 2015).

The last investment gauged for livestock exhibitor families is perhaps the most precious resource they have to give, which is time. Raising livestock projects requires feeding, care, maintenance and training. Young people and their families invest hours in the barn feeding their animals, practicing showmanship, and caring for these projects. Livestock exhibitor families reported they invested approximately 25.88 hours per exhibitor per week in time spent with their livestock projects.

Considering the average length of time projects are on feed among the species gauged was approximately 7.58 months, this means the average livestock exhibitor spends about 784.68 hours working with their projects each year. Multiplied across the thousands of livestock exhibitors in Texas, the time and effort invested in the livestock project is massive. In 2015, it was reported that there were 47,452 exhibitors who exhibited livestock projects at county livestock shows in Texas (Texas 4-H, 2015).

Considering this number of livestock exhibitors, it can be calculated that these young people invest 37,234,635.40 hours per year in raising, working with, and exhibiting livestock projects. This incredible number is indicative of the time Texas livestock exhibitors and their families spend with these animals. They do this because they believe in this project and the value it holds for youth development.

Implications

These data are crucial to communicating the overall average costs of raising and showing these livestock species. From an educational standpoint, these values help

County Extension Agents and Agricultural Science Teachers effectively convey the average costs associated with raising each of these projects. From a fundraising standpoint, these values help administrators communicate to donors the rising costs of raising livestock show projects. Kirk et al. (2014) agreed that economic figures and comparisons help to communicate returns-on-investment, strategic planning decisions, and achieving programmatic goals.

Understanding the average total amount spent on investments and travel also helps communicate the financial capital livestock exhibitors and their families have in this project area. These data help fill in the gaps of previous research in terms of additional costs associated with showing livestock. As recommended by Hill and Goodwin (2015), youth development programs provide positive benefits to youth, but little research has been conducted on the economic contribution of 4-H to state and local county development. The data gathered in this objective begin to explain the contributions made to these economies.

Finally, the major investment that livestock exhibitors and their families contribute in this project area is time and effort. We know this is where the life skill development and educational outcomes that are so highly regarded with this project area are gained and refined (Boleman et al., 2005). The ability to accurately communicate the amount of time spent working with these livestock is a topic of conversation Texas 4-H and FFA administrators rely on to quantify these efforts. This is supported by many studies which have found that participation in youth livestock projects increases

knowledge, skills, and leadership traits (Boleman et al., 2003, 2005; Curtis & Mahon, 2010; Rusk et al., 2003; Smith et al., 2009).

Objective Three: Estimate Total Number of County Livestock Show Entries, Sale Lots, Dollars Raised at Local Auctions, and Local Scholarships Awarded.

Conclusions

County Extension Agents reported average dollar amounts for each species and total auction dollars for the most recent county livestock show. The average total auction dollars generated at these county livestock shows was $328,845.54 per auction. Additional support in the form of local scholarships awarded averaged $19,124.75 per county. The grand total auction dollars awarded to youth in Texas county livestock auctions for the 2019–2020 livestock show season was $66,426,799.00 for the 234 counties included.

As compared to a study conducted by Texas 4-H in 2015, the total estimated statewide dollars generated at Texas county livestock shows was $77,209,795.07 (Texas 4-H, 2015). This decrease could be due to shifts in our state's economy, less respondents from County Extension Agents in the current study, less terminal sales offered in 2019–2020, or a combination of these factors.

Premium sales accounted for 60.30% of the responses by County Extension Agents. County Extension Agents reported 15.40% of their primary county level livestock show hosted a terminal sale. The remaining responses were recorded as a hybrid of these two options or other county auction structures.

The County Extension Agent respondent group was also asked to report the total number of entries, sale lots, and price per head for each species exhibited at the county livestock show. Based on the auction prices reported, only turkey, chicken, and rabbit exhibitors may on average expect a profit when comparing auction prices to average total cost of raising each species. All other species averaged lower auction prices than the cost associated with raising the livestock project.

Implications

Unfortunately, the returns for youth livestock projects do not match inputs. Only three species showed a net profit on average, and while making money is not the main objective of the youth livestock project, losing money could be detrimental to retaining or increasing participation.

Scholarships are a major asset to youth livestock exhibitors who have access to via participation in this project area. However, for those youth not seeking degrees after high school, these may not be enough to help offset the cost of raising and showing livestock projects.

Fannin and LeBlanc (2007) suggested to receive consistent support from stakeholders in the community, we must illustrate the financial value of the livestock show. The data gathered to support this objective are beneficial in communicating this value.

Objective Four: Gauge Perceptions of County Extension Agents, Agricultural Science Teachers, and Livestock Exhibitor Families Regarding Educational and Life Skill Development Outcomes of the Texas 4-H Livestock Project.

Conclusions

All three respondent groups (County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families) indicated the livestock project either *somewhat* or *definitely* fostered an environment for increasing educational outcomes and life skill development traits in the areas of: responsibility, sportsmanship, work ethic, respect, ethical decision making, animal science knowledge, knowledge about the food supply, safe animal handling and welfare knowledge, and knowledge about producing a safe food animal product. These youth development traits are supported by several previous studies (Boleman et al., 2005; Curtis & Mahon, 2010; Rusk et al., 2003).

The most notable information discovered in this objective was livestock exhibitor families reported the highest perceived outcomes related to life skill development and educational outcomes. This is relevant because while it may be apparent that the educator groups believe these outcomes are occurring, the livestock exhibitor family group is the most closely associated with the projects and young people.

Four of the nine variables tested for this objective (increase respect, increase animal science knowledge, increase knowledge about the food supply, and increase knowledge about safe animal handling and welfare) showed that the two professional

educator groups (CEA and AST) were statistically significantly different in their responses related to educational outcomes and life skill development traits learned through the livestock project. This concludes the two educator groups do not agree on these topics.

Agricultural Science Teachers averaged a higher mean score for the perception that participation in the livestock project increases animal science knowledge, knowledge about the food supply, and knowledge about safe animal handling and welfare. This could be because ASTs are more closely tied to classroom instruction where they provide lessons on these topics. Additionally, ASTs teach students who are older on average and more experienced in the livestock project; thus, lending to the opportunity to discuss higher level topics like animal science concepts. The combined construct variable for life skill development and educational outcomes showed no statistically significant difference among the construct for the two educator groups.

Educational resources are periodically published by Texas 4-H and Texas FFA to help provide additional learning opportunities for youth livestock exhibitors. These resources are promoted via social media, websites, and email communication to these groups (Texas A&M AgriLife Extension, 2019). When asked about these statewide resources, only 24.60% of respondents answered that they have used at least one of these resources. Furthermore, 41% of respondents indicated they have heard of the resources but have never used them.

County Extension Agents were the highest reported group (81.20%) to indicate they used these resources. Nonetheless, of the respondents who answered they had used

the resources, 74.40% of them indicated the resources were sufficient in helping exhibitor families in this project area.

Real-world application is a major concern for educators and administrators of the Texas youth livestock program. To stay relevant as a source of youth development, Texas 4-H and FFA must ensure our projects are applicable in real-world settings (Smith et al., 2009). All three respondent groups agreed that life skills learned through the livestock project are relevant in real-world application (99.50%). The highest of these percentages for this perception was from livestock exhibitor families. This is beneficial as this group is the most closely connected to the youth involved.

Similarly, all three groups agreed that the educational outcomes learned through the livestock project are relevant in real-world settings (98.50%). Again, the highest respondent group to answer 'yes' to this question were the livestock exhibitor family participants.

Implications

The implications of this research help solidify what program administrators hoped was still true for Texas 4-H and FFA livestock projects. These data confirmed that according to County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families, livestock projects foster an environment for life skill development and the attainment of educational outcomes related to raising animal projects. As found by Boleman et al. (2003, 2005), these skills can include responsibility, goal setting, self-discipline, self-motivation, livestock industry

knowledge, self-esteem, and decision-making. This project confirmed many of these same traits.

Additionally, these results suggested that the knowledge and skills learned through the livestock project can be applied in real-world situations and are relevant for young people as they progress to college and career settings.

Most importantly, these results imply that responsibility, sportsmanship, work ethic, respect, ethical decision making, animal science knowledge, knowledge about the food supply, knowledge of safe animal handling and welfare, and knowledge of producing a safe food animal product are positive outcomes of the youth livestock program and are perceived as somewhat or definitely a result of participation. These data are supported by previous researchers who suggested that the improved problem solving, decision making skills, and enhanced people skills these young people learn, "make alumni of the 4-H livestock projects valuable citizens at work and in their communities" (Rusk et al., 2003, p. 10).

Objective Five: Capture Perceptions of County Extension Agents, Agricultural Science Teachers, and Livestock Exhibitor Families Regarding Return-On-Investment and Alignment of Project Inputs with Intrinsic and Extrinsic Rewards.

Conclusions

The foundation of the Texas 4-H and Texas FFA youth livestock program has been and will remain positive youth development, the acquisition of life skills, and achieving educational outcomes related to raising livestock. However, there is value in

quantifying these assets, as well as the monetary returns youth obtain through this project area.

County Extension Agents and Agricultural Science Teachers agreed that the cost of raising and showing livestock projects does effect project participation (M = 3.43, SD = 0.61). Additionally, both groups strongly disagree with the statement: "Major livestock shows provide adequate premiums/auction prices as they compare to the cost of raising livestock projects," (M = 2.29, SD = 0.78). The findings of the study described herein suggested that CEA and AST educators understand the cost of raising and showing livestock projects has a negative impact on the overall project experience.

Regardless of the negativity expressed by respondents in terms of monetary returns, all three respondent groups indicated the livestock project is definitely worth the investment in the areas of: family time spent together, educational outcomes, life skill development, professional connections, and career preparation. Respondents indicated that the livestock project was only *somewhat worth the returns-on-investment* in terms of: monetary returns (dollars earned) and potential scholarships received.

The livestock exhibitor family respondents averaged the highest cumulative response for the return-on-investment construct. This is notable as this group mostly closely tied to expenditures and returns. Additionally, 89.50% of all respondents agreed that the resources invested in the livestock project (including time and money) matched the return received regarding benefits other than money.

Conversely, only 27.20% of all respondents indicated they believed there is a true monetary return-on-investment. Despite this finding, the livestock exhibitor family

group was still the lowest mean of the groups to respond that resources invested in the livestock project do not match the return received in regard to monetary benefits. This is notable, as this group of participants are the ones actually spending money in this project area.

Finally, when asked if they believe the livestock project is "worth it", 97.90% of all respondents agreed that participation in this project area is worth the investment when all intrinsic and extrinsic returns are considered. These data were followed up by more than 3,090 short answer text responses explaining the benefits of participating in the Texas 4-H and FFA livestock project.

Implications

Based on these results, I submit the groups most closely involved with livestock projects (County Extension Agents, Agricultural Science Teachers, and livestock exhibitor families) do not believe there is a positive monetary return-on-investment. However, all three respondent groups agree that when considering the life skill development and educational opportunities offered through the livestock project, this program is worthwhile. The intrinsic returns outweigh the negative monetary returns as expressed by all three groups.

The data reported regarding return-on-investment is clear that participants believe participation in the Texas 4-H and FFA youth livestock program is "worth it". This implies that this project area remains a vital and viable source of positive youth development and an opportunity to gain valuable life skills and knowledge related to raising livestock. This is supported by previous research conducted by Smith et al.

(2009), that found livestock projects provide youth with knowledge, leadership skills, and a deep sense of personal responsibility and accomplishment.

Recommendations

Research

I recommend future research focus on continuing to gauge a larger sample size in an attempt to get complete data. This has been confirmed through this project and the two previous studies (Cook et al., 2015; Texas 4-H, 2015). Future studies should continue to include both 4-H and FFA educators to build upon these new findings. I recommend continuing efforts to survey exhibitor families that compete at both the county and state levels. I have had success in reaching the latter audience, but it is more difficult to obtain county-level contact lists. Research should be conducted comparing the two groups and investigating potential differences in average costs per species.

I recommend future research include true economic impact measures. The IMPLAN model is one method that could be used in future research to gauge economic impact (Hill & Goodwin, 2015). This type of research could help assign actual economic values to livestock projects and may be more indicative of monetary program impact.

Future research should assess buyers and donors to youth livestock programs. I recommend gauging this audience in an effort to better understand who the monetary supporters are and how we can better reach this group. By understanding their demographics, motivations, interests, and requests, livestock program administrators and livestock show boards can better recruit and serve these stakeholders.

Additionally, to continue to tell an accurate story to stakeholders, we must continue to evaluate these programs (Stup, 2003). Program evaluation is a powerful tool in demonstrating the value of education and researchers should continue to gauge audiences of youth livestock programs (Hachfeld et al., 2013). I recommend future research continue to evaluate the youth livestock program for improvement and continued support. This research should be expanded to also include educational efforts and program resources.

An area of youth development that is widely discussed and accredited for adult involvement and education is youth sports activities. Extensive monetary, time and resource support is dedicated to youth sports, especially in terms of coaches, equipment and time allotted for practice, competition and travel. This research project has proven the amount of time and money youth livestock exhibitor families are willing to invest despite an average economic loss. Even still, stakeholders in this project area are constantly vying for acknowledgment in terms of monetary support, educator support, and academic eligibility for youth livestock exhibitors in school and county settings. I recommend that future research dedicate attention to comparing the time and monetary investments of youth livestock projects against other youth activities such as sports.

Future research should also measure perceptions, behaviors, and decision-making regarding the involvement of adults in livestock projects. Adult guidance ranges from educators and supervisors, to parents and volunteers, and third-party personnel that may not have an official tie to the youth livestock program. These groups should be studied, including asking questions to parents and supervisors regarding the influence of

the aforementioned third-party group. This research should consider the overall impact these people have on the youth livestock program, the effect these groups have on the young people themselves involved in the project, and gather information and perceptions regarding their positive or negative impact through the lens of youth development.

Practice

My first recommendation for practice is two-fold: applaud and recognize the funding Texans provide youth livestock exhibitors and also seek additional monetary support. While these two seem contradictory, it is important to understand that Texas enjoys the highest monetary support of youth livestock projects in the nation. However, youth livestock exhibitors invest large quantities of time and money in this area. While program administrators and participants are most appreciative of the generous supporters of youth livestock exhibitors, these groups must continuously try to raise the bar in terms of monetary support to help continue to maintain participation in livestock projects.

I also recommend to accurately convey the time investments made by youth livestock exhibitors when communicating with donors. These stakeholders should be made aware of the efforts put forth before the exhibitor ever enters the show arena. By communicating the work ethic of these young people, donors may be made aware of the skills instilled as a result of this project area in regard to resiliency, mental strength, and persistence. Further, these character traits translate directly into college and career outcomes that truly impact donors in terms of their investment in these young people as

it relates to the future workforce. This is confirmed by Curtis and Mahon (2010), as they explained that experiential learning encourages students to apply concepts to actual problems in the area, thus increasing their skills and value to future employers.

I recommend administrators in both Texas 4-H and Texas FFA help facilitate a shift in the support provided by County Extension Agents and Agricultural Science Teachers. When asked who they go to for assistance with their projects, 22.12% of livestock exhibitor families reported they ask their breeder for help. This was followed by 20.22% asking family friends for assistance. Agricultural Science Teachers ranked third in this list with County Extension Agents ranking fifth in the list of who exhibitors go to for help.

To elevate these two educator groups, organization administration must look to additional training opportunities for CEAs and ASTs. Additionally, conversations must be held with Texas A&M AgriLife Extension administration, county commissioners' courts, school administration, and local school boards about the important role these educators play in leading youth livestock projects. These groups must recognize that time away from the office and the classroom is necessary to aide in the supervision and care of livestock projects. Furthermore, funding may be necessary to support these educators in travel and lodging for these efforts. Finally, program administrators collectively help foster a shift in mindset that these educators are still relevant and effective in assisting with animal projects.

I recommend Texas 4-H and FFA program administrators exhaust efforts to increase monetary support of the youth livestock program. Auction prices and

premiums simply cannot stay the same as in years past if the cost of raising livestock continues to increase. Compared to two consecutive studies (Cook et al., 2015; Texas 4-H, 2015), purchase prices and other associated costs continue to increase. With this information, program administrators must look to viable options of increasing returns. Turning a profit is not, and should not, be the goal of participating in youth livestock projects. However, if young people continuously lose money through raising these projects, they may not be able to sustainably continue to participate.

It is crucial any time Texas 4-H and Texas FFA administrators are communicating the monetary contributions of livestock shows and auctions, we should include scholarships. These gifts are extremely valuable to young people and their families, and scholarships are a unique and esteemed component of the youth livestock program in Texas. Even still, these program administrators must not lose sight of the fact that not all young people can fully use these scholarships and they may not directly benefit families in terms of cash available to purchase and raise projects in subsequent years.

Overall, I recommend educators, livestock show administrators, Texas 4-H and FFA personnel, and other stakeholders solicit support for youth livestock exhibitors to help invest in the success of this project area for future years. The amount of time and monetary investments young people and their families invest in livestock projects in pursuit of education and life skill development is motivation enough for stakeholders to realize their monetary support is crucial to continuing this worthwhile venture (Fannin & LeBlanc, 2007).

It is important for Texas 4-H and FFA educators and administration to continue to provide high-impact learning opportunities through the livestock project to facilitate learning across all levels. Additionally, the findings from the study described herein should be used to promote and reinstate the positive youth development aspects of this program.

I also recommend increasing promotion of educational resources in this project area. The data suggested that County Extension Agents are aware of these resources, but Agricultural Science Teachers and livestock exhibitor families indicated they less frequently used resources published by Texas 4-H and FFA. These resources should be equally distributed and communicated by both organizations to reach all audiences.

The variable with the lowest mean total for all of the educational perceptions was 'increase ethical decision making'. I recommend that training based on ethics be enhanced to ensure this learning outcome is being addressed. Educational resources such as Quality Counts should be updated on this topic.

Most importantly, I recommend for all involved stakeholders and entities to help communicate the relevancy of learning outcomes for this project area. In practice, all too often, livestock projects are considered out-of-date or out-of-touch with reality. The findings from this study suggest the opposite.

All three respondent groups agreed that life skill development and educational outcomes learned through raising and showing livestock are not only occurring but are also relevant to real-world application that prepare youth for practical settings. This information must be communicated effectively to sustain support and recognition of the

Texas 4-H and FFA youth livestock program. This is most important for local school boards, state agencies, and those seeking funding.

The data and perceptions collected in this research project help justify, solidify, and communicate the impact the Texas 4-H and FFA youth livestock program has on exhibitors, their families, and educators. The size and scope of this project area in Texas is basis enough to help stakeholders understand the amount of young people influenced through the livestock project. However, it does not stop there. Given the approximate 47,452 exhibitors raising livestock in Texas, it is apparent that showing livestock is big business in this state (Texas 4-H, 2015). Yet, this research defines that this business is more than the cash flow commonly associated with this word. This business is deeper than surface-level and transcends intrinsic benefits such as life skill development and educational outcomes.

This research helps define the dollar amount young people and their families are investing in this project area – more than $196,482,231.24 per year just from state-validated livestock in Texas. That's not including the $16,757.29 on average that each family invests in capital purchases each year or the $3,016.74 each exhibitor family spends on travel-related expenses going to livestock shows each season.

What's more, these families are also willing to invest immense amounts of time, a resource that rivals money for scarcity in this age. They are willing to invest 784.68 hours per exhibitor per year for these livestock projects. Even still, accounting for all of the time and money invested, 97.90% of all respondents agreed the livestock project is

"worth it" given the life skill development and educational benefits gained through participation in this project.

It has been made abundantly clear through this research that livestock exhibitors, their families, and educators in Texas understand the benefits of raising and showing livestock. However, this same amount of clarity also rings true for the fact that there is a gap in resources based on the cost of inputs and the dollars received in return. I strongly recommend that all stakeholders continue to try to increase monetary support of this project area. I also recommend that Texas A&M AgriLife Extension, the Texas FFA Association, and other entities continue to communicate the positive attributes associated with raising and showing livestock projects to intensify contributions.

This recommendation could be achieved by communicating the value the youth livestock program brings to Texas. This value is generated through the money exhibitors spend locally on supplies, feed, and associated costs. This value is also generated based on the time young people and their families spend with projects. Truly, it is the time investment that gains and refines skills that lead to increased volunteerism and a prepared and proficient future workforce.

To preserve the Texas 4-H and FFA livestock program for all of its value, administrators and educators must stand ready to protect its worth. We must empower educators in County Extension Agents and Agricultural Science Teachers through training and a shift in culture. We must also continue to gain the invaluable support of Independent School Districts and Texas A&M AgriLife Extension to defend academic eligibility and the educational foundation this project was built on. We must relentlessly

pursue financial support for youth livestock exhibitors to ensure this program continues for generations to come. And, we must keep positive youth development at the forefront. After all, it is the acquisition of life skills and educational outcomes that define our worth.

Quite simply, livestock exhibitors and their families believe in the livestock project. They are willing to invest their money, understanding the inherent risk of economic loss. They are willing to invest their time, to the point that this takes precedence over other areas of their life. Even more convincingly, I gathered these data and perceptions during the historic global COVID-19 pandemic. Respondents reported their own truths in the midst of livestock show cancellations, endless uncertainties, and unprecedented hardships. Even still, respondents still agreed livestock projects are worth it. They agreed when they may not have received the monetary returns they were hoping for, but even when they may not have been able to sell their projects at all. They agreed when the door of opportunity to showcase a year's worth of hard work was shut abruptly. They agreed when a virus shut down all they had known during the middle of the Texas livestock show season.

They agreed because they are extensively and passionately convinced this project area instills the far greater rewards of skills and traits that will help propel their children in college, career, and beyond. They understand participation in the livestock project is valuable from the standpoints of development, education, and intangible proficiencies for their youth.

Ultimately, the driving question for stakeholders must be, “How do we keep livestock exhibitors and their families convinced the livestock project is worth it for years to come?” This research demonstrated it is the life skill development, family time spent together, educational opportunities, college and career preparation, and the intrinsic rewards gained through raising and exhibiting livestock projects. At the heart of it all, these are people—people using livestock as a vector for positive youth development. These people are persistent, passionate, and unwavering when it comes to pursing opportunities for youth. We must be too.

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APPENDIX A

IRB APPROVAL LETTERS

DIVISION OF RESEARCH

TEXAS A&M UNIVERSITY

EXEMPTION DETERMINATION
(Common Rule –Effective January, 2018)

April 17, 2020

Type of Review:	IRB Amendment
Title:	Texas 4-H and FFA Livestock Project Study
Investigator:	Scott Cummings
IRB ID:	IRB2020-0230M
Reference Number:	109286
Documents Reviewed:	• IRB Amendment (v1.0) • Study Verbiage Email Exhibitors (v1.0) • Study Verbiage CEA (v1.0) • Study Verbiage AST (v1.0)
Review Category	Category 2: Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met: i. The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects; ii. Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or iii. The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by .111(a)(7).

Dear Scott Cummings:

The HRPP determined on 04/17/2020 that this research meets the criteria for Exemption in accordance with 45 CFR 46.104.

This determination applies only to the activities described in this IRB submission and does not apply should any changes be made. If changes are made you must immediately contact the IRB. You may be required to submit a new request to the IRB.

Your exemption is good for three (3) years from the Approval Start Date (3/26/2020). Thirty days prior to that time, you will be sent an Administrative Check-In Notice to provide an update on the status of your study.

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1186 TAMU
College Station, TX 77843-1186

Tel. 979.458.1467 Fax. 979.862.3176
http://rcb.tamu.edu

DIVISION OF RESEARCH

TEXAS A&M UNIVERSITY

EXEMPTION DETERMINATION
(Common Rule –Effective January, 2018)

March 26, 2020

Type of Review:	Submission Correction for Initial Review Submission Form
Title:	Texas 4-H and FFA Livestock Project Study
Investigator:	Scott Cummings
IRB ID:	IRB2020-0230
Reference Number:	107998
Documents Reviewed:	• IRB Application (Human Research) - (Version 1.1) • Livestock Project Study Dissertation Proposal 3.4.2020 - (Version 1.0) • Livestock Exhibitor Family Recruitment Email - (Version 1.0 Approved on 03/26/2020) • AST Recruitment Email - (Version 1.0 Approved on 03/26/2020) • Recruitment Email CEA - (Version 1.0 Approved on 03/26/2020) • Livestock_Project_Survey_-_Agricultural_Science_Teachers - (Version 1.0 Approved on 03/26/2020) • Livestock_Project_Survey_-_County_Extension_Agent - (Version 1.0 Approved on 03/26/2020) • Livestock_Project_Survey_-_Exhibitor_Families - (Version 1.0 Approved on 03/26/2020)
Review Category	Category 2: Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met: i. The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects; ii. Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or iii. The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to

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APPENDIX B

COUNTY EXTENSION AGENT RECRUITMENT LETTERS

County Extension Agents,

First, we want you to know how sincerely sorry we are for the countless ways in which COVID-19 has impacted the way in which you help lead livestock project experiences. For many of you, time was cut short this show season. For the numerous families who were unable to exhibit your projects at the Houston Livestock Show and Rodeo Austin – we are truly sorry. We know these two major livestock shows provide unparalleled experiences in terms of show atmosphere, learning opportunities, and first-class facilities to show off a year's worth of hard work. For those who also had county show opportunities cancelled, we are equally apologetic as we know these local show opportunities are a chance to learn and grow in ways major shows may not allow. The point is, all of the missed experiences are known and understood.

However, regardless of the situations life throws our way, we know – as agricultural producers – it is our responsibility to get back up, dust off, and continue to improve every single day. The same is true for the Texas 4-H and FFA livestock program and our exhibitors. We are quite literally trained, equipped, and prepared to face challenges just like this head on. And that's exactly what we plan to do! We are dedicated to improving the livestock project experience and learning opportunities, despite curveballs.

With that said, we had planned on conducting a study to gauge the current scope and impact of the Texas 4-H and FFA livestock program long before this virus landed on the radar. We are hopeful you will still help us gather this critical and program-shaping data in an effort to continue to ensure Texas can enjoy the largest and most successful livestock project experience in the world!

To be sure, this type of information is more important now than ever before. Here's our chance to come together and provide valuable feedback for the livestock program. Let's do it! As you thoughtfully take this survey, we would ask that you not let the current economic stress or unknowns sway your responses or opinions. We know that COVID-19 is causing some major ripple effects and unprecedented consequences. Keep in mind, we're asking for your overall/average responses to these questions – not responses in relation to post-March 2020.

As always, we are proud and grateful for the *people* that make this program the best in the world. We know it is the people, not the livestock, that ensure this legacy is carried on with a commitment to integrity and education. Thank you for taking time to contribute this study and we look forward to the impactful ways in which your responses will help us continue to serve livestock exhibitor families and improve the livestock project experience.

Best regards,

XXXXXXXX

IRB NUMBER: IRB2020-0230M
IRB APPROVAL DATE: 04/17/2020

County Extension Agents,

I would like to invite you to participate in a research project “Texas 4-H and FFA Livestock Project Study”. You were selected to be a possible participant because of your involvement with Texas 4-H and FFA livestock projects as a County Extension Agent. This study is being sponsored by Texas A&M University and Texas A&M AgriLife Extension.

If you agree to participate in this study, you will be asked to participate in an online survey in which we will ask you questions about your perceptions of livestock project costs and county-specific livestock show information. This study will take approximately 30 minutes.

The risks associated in this study are minimal and are not greater than risks ordinarily encountered in daily life.

You will receive no direct benefit from participating in this study; however, improving youth livestock programs may result in a positive impact for your community and society as a whole.

Your participation is voluntary. You may decide not to participate or to withdraw at any time without your current or future relations with Texas A&M University or Texas A&M AgriLife Extension being affected.

This study is confidential. The records for this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely, and only research personnel will have access to the records. Representatives of regulatory agencies such as the Office of Human Research Protections (OHRP) and entities such as the Texas A&M University Human Subjects Protection Program may access your records to make sure the study is being run correctly and that information is collected properly. Information about you and related to this study will be kept confidential to the extent permitted or required by law.

If you have questions regarding this study, you may contact Dr. Scott Cummings, Lead PI at s-cummings@tamu.edu.

Please follow the provided link below to begin participation in the survey via Qualtrics.

Survey Link:

https://agrilife.az1.qualtrics.com/SE/?SID=SV_4169X587xkWoADP

Thank you for your time and interest in helping to improve Texas 4-H and FFA livestock projects.

Sincerely,

IRB NUMBER: IRB2020-0230M
IRB APPROVAL DATE: 03/26/2020

APPENDIX C

AGRICULTURAL SCIENCE TEACHER RECRUITMENT LETTERS

Agricultural Science Teachers,

First, we want you to know how sincerely sorry we are for the countless ways in which COVID-19 has impacted the way in which you help lead livestock project experiences. For many of you, time was cut short this show season. For the numerous families who were unable to exhibit your projects at the Houston Livestock Show and Rodeo Austin – we are truly sorry. We know these two major livestock shows provide unparalleled experiences in terms of show atmosphere, learning opportunities, and first-class facilities to show off a year's worth of hard work. For those who also had county show opportunities cancelled, we are equally apologetic as we know these local show opportunities are a chance to learn and grow in ways major shows may not allow. The point is, all of the missed experiences are known and understood.

However, regardless of the situations life throws our way, we know – as agricultural producers – it is our responsibility to get back up, dust off, and continue to improve every single day. The same is true for the Texas 4-H and FFA livestock program and our exhibitors. We are quite literally trained, equipped, and prepared to face challenges just like this head on. And that's exactly what we plan to do! We are dedicated to improving the livestock project experience and learning opportunities, despite curveballs.

With that said, we had planned on conducting a study to gauge the current scope and impact of the Texas 4-H and FFA livestock program long before this virus landed on the radar. We are hopeful you will still help us gather this critical and program-shaping data in an effort to continue to ensure Texas can enjoy the largest and most successful livestock project experience in the world!

To be sure, this type of information is more important now than ever before. Here's our chance to come together and provide valuable feedback for the livestock program. Let's do it! As you thoughtfully take this survey, we would ask that you not let the current economic stress or unknowns sway your responses or opinions. We know that COVID-19 is causing some major ripple effects and unprecedented consequences. Keep in mind, we're asking for your overall/average responses to these questions – not responses in relation to post-March 2020.

As always, we are proud and grateful for the *people* that make this program the best in the world. We know it is the people, not the livestock, that ensure this legacy is carried on with a commitment to integrity and education. Thank you for taking time to contribute this study and we look forward to the impactful ways in which your responses will help us continue to serve livestock exhibitor families and improve the livestock project experience.

Best regards,

XXXXXXXX

IRB NUMBER: IRB2020-0230M
IRB APPROVAL DATE: 04/17/2020

Agricultural Science Teachers,

I would like to invite you to participate in a research project "Texas 4-H and FFA Livestock Project Study". You were selected to be a possible participant because of your involvement with Texas 4-H and FFA livestock projects as an Agricultural Science Teacher. This study is being sponsored by Texas A&M University and Texas A&M AgriLife Extension.

If you agree to participate in this study, you will be asked to participate in an online survey in which we will ask you questions about your perceptions of livestock project costs and county-specific livestock show information. This study will take approximately 15 minutes.

The risks associated in this study are minimal and are not greater than risks ordinarily encountered in daily life.

You will receive no direct benefit from participating in this study; however, improving youth livestock programs may result in a positive impact for your community and society as a whole.

Your participation is voluntary. You may decide not to participate or to withdraw at any time without your current or future relations with Texas A&M University or Texas A&M AgriLife Extension being affected.

This study is confidential. The records for this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely, and only research personnel will have access to the records. Representatives of regulatory agencies such as the Office of Human Research Protections (OHRP) and entities such as the Texas A&M University Human Subjects Protection Program may access your records to make sure the study is being run correctly and that information is collected properly. Information about you and related to this study will be kept confidential to the extent permitted or required by law.

If you have questions regarding this study, you may contact Dr. Scott Cummings, Lead PI at s-cummings@tamu.edu.

Please follow the provided link below to begin participation in the survey via Qualtrics.

Survey Link:

https://agrilife.az1.qualtrics.com/SE/?SID=SV_4169X587xkWoADP

Thank you for your time and interest in helping to improve Texas 4-H and FFA livestock projects.

Sincerely,

IRB NUMBER: IRB2020-0230M
IRB APPROVAL DATE: 03/26/2020

APPENDIX D

LIVESTOCK EXHIBITOR FAMILY RECRUITMENT LETTERS

Livestock exhibitors and families,

First, we want you to know how sincerely sorry we are for the countless ways in which COVID-19 has impacted your livestock project experience. For many of you, time was cut short this show season. For the numerous families who were unable to exhibit your projects at the Houston Livestock Show and Rodeo Austin – we are truly sorry. We know these two major livestock shows provide unparalleled experiences in terms of show atmosphere, learning opportunities, and first-class facilities to show off a year's worth of hard work. For those who also had county show opportunities cancelled, we are equally apologetic as we know these local show opportunities are a chance to learn and grow in ways major shows may not allow. The point is, all of the missed experiences are known and understood.

However, regardless of the situations life throws our way, we know – as agricultural producers – it is our responsibility to get back up, dust off, and continue to improve every single day. The same is true for the Texas 4-H and FFA livestock program and our exhibitors. We are quite literally trained, equipped, and prepared to face challenges just like this head on. And that's exactly what we plan to do! We are dedicated to improving the livestock project experience and learning opportunities, despite curveballs.

With that said, we had planned on conducting a study to gauge the current scope and impact of the Texas 4-H and FFA livestock program long before this virus landed on the radar. We are hopeful you will still help us gather this critical and program-shaping data in an effort to continue to ensure Texas can enjoy the largest and most successful livestock project experience in the world!

To be sure, this type of information is more important now than ever before. Here's our chance to come together and provide valuable feedback for the livestock program. Let's do it! We will ask things such as: investments in various portions of your livestock project, your perceptions of educational experiences this program offers, and also ask questions related to return-on-investment in terms of monetary aspects as well as life skill development. As you thoughtfully take this survey, we would ask that you not let the current economic stress or unknowns sway your responses or opinions. We know that COVID-19 is causing some major ripple effects and unprecedented consequences. Keep in mind, we're asking for your overall/average responses to these questions – not responses in relation to post-March 2020.

As always, we are proud and grateful for the *people* that make this program the best in the world. We know it is the people, not the livestock, that ensure this legacy is carried on with a commitment to integrity and education. Thank you for taking time to contribute this study and we look forward to the impactful ways in which your responses will help us continue to serve livestock exhibitor families and improve the livestock project experience.

Best regards,

XXXXXXXX

IRB NUMBER: IRB2020-0230M
IRB APPROVAL DATE: 04/17/2020

Texas 4-H and FFA Livestock Exhibitor Families,

I would like to invite you to participate in a research project “Texas 4-H and FFA Livestock Project Study”. You were selected to be a possible participant because of your involvement with Texas 4-H and FFA livestock projects as a family that exhibits livestock projects. This study is being sponsored by Texas A&M University and Texas A&M AgriLife Extension.

If you agree to participate in this study, you will be asked to participate in an online survey in which we will ask you questions about your perceptions of livestock project costs and county-specific livestock show information. This study will take approximately 15 minutes.

The risks associated in this study are minimal and are not greater than risks ordinarily encountered in daily life.

You will receive no direct benefit from participating in this study; however, improving youth livestock programs may result in a positive impact for your community and society as a whole.

Your participation is voluntary. You may decide not to participate or to withdraw at any time without your current or future relations with Texas A&M University or Texas A&M AgriLife Extension being affected.

This study is confidential. The records for this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely, and only research personnel will have access to the records. Representatives of regulatory agencies such as the Office of Human Research Protections (OHRP) and entities such as the Texas A&M University Human Subjects Protection Program may access your records to make sure the study is being run correctly and that information is collected properly. Information about you and related to this study will be kept confidential to the extent permitted or required by law.

If you have questions regarding this study, you may contact Dr. Scott Cummings, Lead PI at s-cummings@tamu.edu.

Please follow the provided link below to begin participation in the survey via Qualtrics.

Survey Link:

https://agrilife.az1.qualtrics.com/SE/?SID=SV_4169X587xkWoADP

Thank you for your time and interest in helping to improve Texas 4-H and FFA livestock projects.

Sincerely,

IRB NUMBER: IRB2020-0230M
IRB APPROVAL DATE: 03/26/2020

APPENDIX E

COUNTY EXTENSION AGENT SURVEY

Default Question Block

Introduction
The purpose of this form is to provide you information that may affect your decision as to whether or not to participate in this research study. If you decide to participate in this study, this form will also be used to provide you with relevant information about the study.

You are being asked to participate in a research project to study Texas 4-H and FFA livestock projects. This study will investigate the size, scope, trends and perceptions surrounding the livestock project area. You were chosen for this survey based on you status as a Texas A&M AgriLife County Extension Agent.

What will I be asked to do?
If you agree to participate in this study, you will be asked to complete an online survey in which we will ask you questions about your perceptions and attitudes associated with livestock projects in your county. This study will take no more than 45 minutes to complete.

What are the risks involved in this study?
The risks associated in this study are minimal, and are not greater than risks ordinarily encountered in daily life.

What are the possible benefits of this study?
You will receive no direct benefit from participating in this study; however, data garnered from this study will provide useful information that will be used to improve Texas 4-H and Livestock Projects for the benefit of future participants and ultimately gain further support of the program.

Do I have to participate?
No. Your participation is voluntary. You may decide not to participate or to withdraw at any time without your current or future relations with the Texas A&M AgriLife Extension Service being affected.

Who will know about my participation in this research study?
This study is confidential. The records for this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely and only research personnel will have access to the records.

Whom do I contact with questions about the research?
If you have questions regarding this study, you may contact Dottie Goebel at 979-862-8919 or dottie.goebel@ag.tamu.edu

Whom do I contact about my rights as a research participant?
This research study has been reviewed by the Human Subjects' Protection Program and/or the Institutional Review Board at Texas A&M University. For questions about your rights as a research participant; or if you have questions, complaints, or concerns about the research, you may contact the Texas A&M University Human Subjects Protection Program at (979) 458-4067, toll-free at 1-855-795-8636, or email at irb@tamu.edu.

- ○ Agree
- ○ Disagree

Please select the name of the county in which you serve as a County Extension Agent.

Please indicate the estimated population of the county in which you are an agent.

How many FFA chapters are in your county?

How many county-level livestock shows does the county in which you are an agent offer?

What type of auction is conducted at the primary county-level livestock show in your county?

- ◯ Premium Sale
- ◯ Terminal Sale
- ◯ Hybrid Sale (mix of Premium and Terminal)
- ◯ Other, please describe below

Please provide an estimate of livestock show entries, sale lots, and price per head in the primary COUNTY level livestock show in your county for the *most recent show offered*. These estimates SHOULD include BOTH 4-H and FFA members in your county.

	Number of Entries	Number of Sale Lots	Average Price Per Head
Market Steers			
Commercial Steers			
Registered Haltered Heifers			

	Number of Entries	Number of Sale Lots	Average Price Per Head
Commercial Penned Heifers			
Commercial Haltered Heifers			
Market Goats			
Breeding Does			
Wether Does			
Market Lambs			
Breeding Sheep			
Wether Dams			
Market Barrows			
Gilts			
Rabbits			
Chickens			
Turkeys			

Please indicate the estimated total amount awarded to livestock exhibitors (4-H and FFA) at your county level livestock show auction.

Please indicate the estimated dollar amount of scholarships awarded to livestock exhibitors (4-H and FFA) in your county as a DIRECT result of livestock project participation (for example: DO count local livestock board scholarships, but do not count local Lion's Club scholarships not related to the show.)

Please provide your perceptions of the following:

	Strongly Disagree	Disagree	Agree	Strongly Agree
The cost of raising and showing livestock projects affects project participation.	○	○	○	○
The cost of livestock project participation has increased at the same rate as inflation.	○	○	○	○
County livestock shows provide adequate premiums/auction prices as they compare to the cost of raising livestock projects.	○	○	○	○

	Strongly Disagree	Disagree	Agree	Strongly Agree
Major livestock shows provide adequate premiums/auction prices as they compare to the cost of raising livestock projects.	○	○	○	○
Major livestock show premiums and sale prices have increased at a higher rate than those at county livestock shows.	○	○	○	○
County livestock show premiums and sale prices have increased at a higher rate than those at major livestock shows.	○	○	○	○
The financial support of my county and local livestock shows remains fairly constant from year to year.	○	○	○	○
The economy (crop yields, oil prices, etc.) has a major effect on the premiums paid to youth in my county show.	○	○	○	○
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.	○	○	○	○

Have you utilized resources published by Texas 4-H and FFA related to livestock projects? [These resources can include: species-specific guides, Explore Project Guides, other resources provided through Texas 4-H and FFA].

- ○ I have used at least one of these resources. Please list all below.
- ○ I have never heard of these resources.
- ○ I have heard of these resources, but I have never used them.

Do you believe current educational resources published by Texas 4-H and FFA related to livestock projects are sufficient for helping exhibitor families in this project area? Please indicate below. [These resources can include: species-specific guides, Explore Project Guides, other resources provided through Texas 4-H and FFA].

- ○ These resources are beneficial.
- ○ These resources need improvement.

Please explain how livestock project educational resources provided through Texas 4-H and Texas FFA could be improved.

Please list additional educational resources that would be helpful for livestock exhibitors and their families.

Texas 4-H and Texas FFA promote life skill development and educational outcomes through the livestock project, such as responsibility, character, work ethic, etc. Do you think what these groups claim about this project area matches the educational outcomes families experience? For example: Does the livestock project increase responsibility in exhibitors?

For each item on the left, please indicate your response for that trait matching the intended educational outcome through the livestock project.

	Definitely	Somewhat	Does Not
Increase Responsibility	○	○	○
Increase Sportsmanship	○	○	○
Increase Work Ethic	○	○	○
Increase Respect	○	○	○
Increase Ethical Decision Making	○	○	○
Increase Animal Science Knowledge	○	○	○
Increase Knowledge About the Food Supply	○	○	○
Increase Knowledge of Safe Animal Handling and Welfare	○	○	○
Increase Knowledge of Producing a Safe Food Animal Product	○	○	○

Do you believe *life skill development traits* (such as responsibility) learned through the livestock project are relevant in real-world application?

○ Yes

○ No, please explain.

Do you believe *educational objectives* (such as animal science knowledge) learned through the livestock project are relevant in real-world application?

○ Yes

○ No, please explain.

Do you think the resources invested in the livestock project (including time and money) match the return in the following areas? Please indicate in the table below.

	Worth the Investment	Somewhat Worth the Investment	Not Worth the Investment
Family Time Spent Together	○	○	○
Educational Outcomes	○	○	○
Life Skill Development	○	○	○
Monetary Returns (Dollars Earned)	○	○	○
Potential Scholarships Received	○	○	○
Professional Connections	○	○	○
Career Preparation	○	○	○

Do you think the resources invested in the livestock project (including time and money) match the return received in regard to true monetary return-on-investment? For example, do you think you make money in the livestock project?

- ○ Yes; there is a return-on-investment in terms of dollar amount spent and received in the livestock project.
- ○ No; there is not a monetary return-on-investment in this project area.
- ○ I am not sure about return-on-investment.

Do you think the resources invested in the livestock project (including time and money) match the return received in regard to benefits other than money? For example, do you think the investment is worth what families receive in terms of time spent together and lessons learned?

- ○ Yes; there is a return-on-investment in terms of benefits other than money.
- ○ No; there is not an intrinsic return-on-investment in this project area.
- ○ I am not sure.

In conclusion, do you believe participation in the livestock project is "worth it"?

- ○ Yes, please explain.
- ○ No, please explain.

APPENDIX F

AGRICULTURAL SCIENCE TEACHER SURVEY

Default Question Block

Introduction
The purpose of this form is to provide you information that may affect your decision as to whether or not to participate in this research study. If you decide to participate in this study, this form will also be used to provide you with relevant information about the study.

You are being asked to participate in a research project to study Texas 4-H and FFA livestock projects. This study will investigate the size, scope, trends and perceptions surrounding the livestock project area. You were chosen for this survey based on you status as an Agricultural Science Teacher in Texas.

What will I be asked to do?
If you agree to participate in this study, you will be asked to complete an online survey in which we will ask you questions about your perceptions and attitudes associated with livestock projects in your county. This study will take no more than 30 minutes to complete.

What are the risks involved in this study?
The risks associated in this study are minimal, and are not greater than risks ordinarily encountered in daily life.

What are the possible benefits of this study?
You will receive no direct benefit from participating in this study; however, data garnered from this study will provide useful information that will be used to improve Texas 4-H and FFA Livestock Projects for the benefit of future participants and ultimately gain further support of the program.

Do I have to participate?
No. Your participation is voluntary. You may decide not to participate or to withdraw at any time without your current or future relations with the Texas A&M AgriLife Extension Service being affected.

Who will know about my participation in this research study?
This study is confidential. The records for this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely and only research personnel will have access to the records.

Whom do I contact with questions about the research?
If you have questions regarding this study, you may contact Dottie Goebel at 979-862-8919 or dottie.goebel@ag.tamu.edu

Whom do I contact about my rights as a research participant?
This research study has been reviewed by the Human Subjects' Protection Program and/or the Institutional Review Board at Texas A&M University. For questions about your rights as a research participant; or if you have questions, complaints, or concerns about the research, you may contact the Texas A&M University Human Subjects Protection Program at (979) 458-4067, toll-free at 1-855-795-8636, or email at irb@tamu.edu.

- ○ Agree
- ○ Disagree

What is the name of the school in which you serve as an Agricultural Science Teacher?

Please select the name of the county in which you serve as an AST.

Please indicate the estimated population of the county in which you are an AST.

Please provide your perceptions of the following:

	Strongly Disagree	Disagree	Agree	Strongly Agree
The cost of raising and showing livestock projects affects project participation.	○	○	○	○
The cost of livestock project participation has increased at the same rate as inflation.	○	○	○	○
County livestock shows provide adequate premiums/auction prices as they compare to the cost of raising livestock projects.	○	○	○	○
Major livestock shows provide adequate premiums/auction prices as they compare to the cost of raising livestock projects.	○	○	○	○
Major livestock show premiums and sale prices have increased at a higher rate than those at county livestock shows.	○	○	○	○
County livestock show premiums and sale prices have increased at a higher rate than those at major livestock shows.	○	○	○	○
The financial support of my county and local livestock shows remains fairly constant from year to year.	○	○	○	○
The economy (crop yields, oil prices, etc.) has a major effect on the premiums paid to youth in my county show.	○	○	○	○
New FFA members in my chapter are more likely to select a non-animal or small animal project due to the lower cost of investment required.	○	○	○	○

	Definitely	Somewhat	Does Not
Increase Work Ethic	○	○	○
Increase Respect	○	○	○
Increase Ethical Decision Making	○	○	○
Increase Animal Science Knowledge	○	○	○
Increase Knowledge About the Food Supply	○	○	○
Increase Knowledge of Safe Animal Handling and Welfare	○	○	○
Increase Knowledge of Producing a Safe Food Animal Product	○	○	○

Do you believe *life skill development traits* (such as responsibility) learned through the livestock project are relevant in real-world application?

○ Yes

○ No, please explain.

Do you believe *educational objectives* (such as animal science knowledge) learned through the livestock project are relevant in real-world application?

○ Yes

○ No, please explain.

Do you think the resources invested in the livestock project (including time and money) match the return in the following areas? Please indicate in the table below for each.

	Worth the Investment	Somewhat Worth the Investment	Not Worth the Investment
Family Time Spent Together	○	○	○
Educational Outcomes	○	○	○
Life Skill Development	○	○	○
Monetary Returns (Dollars Earned)	○	○	○
Potential Scholarships Received	○	○	○
Professional Connections	○	○	○
Career Preparation	○	○	○

Do you think the resources invested in the livestock project (including time and money) match the return received in regard to true monetary return-on-investment? For example, do you think you make money in the livestock project?

Have you utilized resources published by Texas 4-H and FFA related to livestock projects? [These resources can include: species-specific guides, Explore Project Guides, other resources provided through Texas 4-H and FFA].

- ○ I have used at least one of these resources. Please list all below.
- ○ I have never heard of these resources.
- ○ I have heard of these resources, but I have never used them.

Do you believe current educational resources published by Texas 4-H and FFA related to livestock projects are sufficient for helping exhibitor families in this project area? Please indicate below. [These resources can include: species-specific guides, Explore Project Guides, other resources provided through Texas 4-H and FFA].

- ○ These resources are beneficial.
- ○ These resources need work.

Please explain how livestock project educational resources provided through Texas 4-H and Texas FFA could be improved.

Please list additional educational resources that would be helpful for livestock exhibitors and their families.

Texas 4-H and Texas FFA promote life skill development and educational outcomes through the livestock project, such as responsibility, character, work ethic, etc. Do you think what these groups claim about this project area matches the educational outcomes your families experience? For example: Does the livestock project increase responsibility in exhibitors?

For each item on the left, please indicate your response for that trait matching the intended educational outcome through the livestock project.

	Definitely	Somewhat	Does Not
Increase Responsibility	○	○	○
Increase Sportsmanship	○	○	○

- ◯ Yes; there is a return-on-investment in terms of dollar amount spent and received in the livestock project.
- ◯ No; there is not a monetary return-on-investment in this project area.
- ◯ I am not sure about return-on-investment.

Do you think the resources invested in the livestock project (including time and money) match the return received in regard to benefits other than money? For example, do you think the investment is worth what families receive in terms of time spent together and lessons learned?

- ◯ Yes; there is a return-on-investment in terms of benefits other than money.
- ◯ No; there is not an intrinsic return-on-investment in this project area.
- ◯ I am not sure.

In conclusion, do you believe participation in the livestock project is "worth it"?

- ◯ Yes, please explain.
- ◯ No, please explain.

APPENDIX G

LIVESTOCK EXHIBITOR FAMILY SURVEY

General

Introduction
The purpose of this form is to provide you information that may affect your decision as to whether or not to participate in this research study. If you decide to participate in this study, this form will also be used to provide you with relevant information about the study.

You are being asked to participate in a research project to study Texas 4-H and FFA livestock projects. This study will investigate the size, scope, trends and perceptions surrounding the livestock project area. You were chosen for this survey based on you status as a livestock exhibitor in Texas.

What will I be asked to do?
If you agree to participate in this study, you will be asked to complete an online survey in which we will ask you questions about your perceptions and attitudes associated with livestock projects in your county. This study will take no more than 30 minutes to complete. To be best prepared to answer questions in this survey, you will need information such as purchase price of your animals, costs of feed for your livestock, and costs of other supplies and expenses. Having these figures available will expedite your experience in completing this survey. Please keep in mind we are concerned with averages and estimates related to these costs.

What are the risks involved in this study?
The risks associated in this study are minimal, and are not greater than risks ordinarily encountered in daily life.

What are the possible benefits of this study?
You will receive no direct benefit from participating in this study; however, data garnered from this study will provide useful information that will be used to improve Texas 4-H and FFA Livestock Projects for the benefit of future participants and ultimately gain further support of the program.

Do I have to participate?
No. Your participation is voluntary. You may decide not to participate or to withdraw at any time without your current or future relations with the Texas A&M AgriLife Extension Service being affected.

Who will know about my participation in this research study?
This study is confidential. The records for this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely and only research personnel will have access to the records.

Whom do I contact with questions about the research?
If you have questions regarding this study, you may contact Dottie Goebel at 979-862-8919 or dottie.goebel@ag.tamu.edu

Whom do I contact about my rights as a research participant?
This research study has been reviewed by the Human Subjects' Protection Program and/or the Institutional Review Board at Texas A&M University. For questions about your rights as a research participant; or if you have questions, complaints, or concerns about the research, you may contact the Texas A&M University Human Subjects Protection Program at (979) 458-4067, toll-free at 1-855-795-8636, or email at irb@tamu.edu.

- ○ Agree
- ○ Disagree

Please select the name of the county in which you participate in 4-H or FFA.

Please select the estimated population of the city or town in which you participate in 4-H/FFA.

- ○ Farm/Rural less than 2,500
- ○ Town less than 10,000
- ○ Suburban city 10,000-50,000
- ○ Urban city over 50,0000

What species of livestock did you exhibit in the 2019-2020 show season? (Check all that apply)

- ☐ Steers
- ☐ Heifers
- ☐ Market Lambs
- ☐ Market Goats
- ☐ Rabbits
- ☐ Broilers/Chickens
- ☐ Turkeys
- ☐ Breeding Sheep
- ☐ Wether Dams
- ☐ Breeding Does
- ☐ Wether Does
- ☐ Barrows
- ☐ Gilts

What factors led to your selection of the specie(s) you have chosen to participate in? (select all that apply)

- ☐ Cost
- ☐ Facilities

- [ ] Location (space)
- [ ] Popularity in my area
- [ ] Availability of support/assistance
- [ ] Family tradition/history
- [ ] Friends participating in project
- [ ] Other (Please Specify)

At what level did or will you exhibit your projects this year? (select all that apply)

- [ ] Local Livestock Show
- [ ] County Livestock Show
- [ ] Jackpot Livestock Shows
- [ ] Major Livestock Shows

Steers

How many steers did you feed this year?

What type of steer project did you exhibit this year? Select all that apply.

- [ ] Market Steer
- [ ] Commercial Steers

What was the average cost per bag for the feed that you primarily fed to your steer projects?

What was the average pounds (grain) per day per head you fed your steer projects?

How much did you spend on hay last year for your steer projects? Please indicate in dollar amount.

Please select the value from the drop down list that best represents your project and project costs.

What was the average length of time you had these animals on feed?	
Please indicate the average cost per head to purchase your animals.	
Approximately how much did you spend on supplies per head (include grooming, feeding, show equipment and other supplies)?	
Approximately how much per head did you spend on veterinary care and animal health products? (include vet bills, vaccinations, wormer, etc.)	
Approximately how much did you spend, per head, on entry fees, passes, chute fees, etc. associated with entering shows?	
Approximately how much per head did you spend on feed supplements and additives?	

Heifers

How many heifers did you feed this year?

What type of heifer project did you exhibit this year? Select all that apply.

- [ ] Registered Haltered Heifer
- [ ] Penned Commercial Heifers
- [ ] Haltered Commercial Heifer

What was the average cost per bag for the feed that you primarily fed to your heifer projects?

What was the average pounds (grain) per day per head you fed your heifer projects?

How much did you spend on hay last year for your heifer projects? Please indicate in dollar amount.

Please select the value from the drop down list that best represents your project and project costs.

What was the average length of time you had these animals on feed?	
Please indicate the average cost per head to purchase your animals.	
Approximately how much did you spend on supplies per head (include grooming, feeding, show equipment and other supplies)?	
Approximately how much per head did you spend on veterinary care and animal health products? (include vet bills, vaccinations, wormer, etc.)	
Approximately how much did you spend, per head, on entry fees, passes, chute fees, etc. associated with entering shows?	
Approximately how much per head did you spend on feed supplements and additives?	

Lamb

How many market lambs did you feed this year?

What was the average cost per bag for the feed that you primarily fed to your market lamb projects?

What was the average pounds (grain) per day per head you fed your market lamb projects?

How much did you spend on hay last year for your market lamb projects? Please indicate in dollar amount.

Please select the value from the drop down list that best represents your project and project costs.

What was the average length of time you had these animals on feed?	
Please indicate the average cost per head to purchase your animals.	
Approximately how much did you spend on supplies per head (include grooming, feeding, show equipment and other supplies)?	
Approximately how much per head did you spend on veterinary care and animal health products?	

(include vet bills, vaccinations, wormer, etc.)

Approximately how much did you spend, per head, on entry fees, passes, chute fees, etc. associated with entering shows?

Approximately how much per head did you spend on feed supplements and additives?

Goat

How many market goats did you feed this year?

What was the average cost per bag for the feed that you primarily fed to your market goat projects?

What was the average pounds (grain) per day per head you fed your market goat projects?

How much did you spend on hay last year for your market goat projects? Please indicate in dollar amount.

Please select the value from the drop down list that best represents your project and project costs.

What was the average length of time you had these animals on feed?

Please indicate the average cost per head to purchase your animals.

Approximately how much did you spend on supplies per head (include grooming, feeding, show equipment and other supplies)?

Approximately how much per head did you spend on veterinary care and animal health products? (include vet bills, vaccinations, wormer, etc.)

Approximately how much did you spend, per head, on entry fees, passes, chute fees, etc. associated with entering shows?

Approximately how much per head did you spend on feed supplements and additives?

Rabbit

How many rabbits did you feed this year?

What type of rabbit project did you exhibit? (select all that apply)

- [ ] Meat Pen
- [ ] Fryer
- [ ] Breeding Rabbits
- [ ] Roaster

What was the average cost per bag for the feed that you primarily fed to your rabbit projects?

What was the average ounces per day per head you fed your rabbit projects?

Please select the value from the drop down list that best represents your project and project costs.

What was the average length of time you had these animals on feed?	
Please indicate the average cost per head to purchase your animals.	
Approximately how much did you spend on supplies? (include grooming, feeding, show equipment and other supplies)	
Approximately how much did you spend on veterinary care and animal health products? (include vet bills, vaccinations, wormer, etc.)	
Approximately how much did you spend on entry fees, passes, other fees, etc. associated with entering shows?	

Chickens

How many chickens did you feed this year?

What was the average cost per bag for the feed that you primarily fed to your chicken projects?

Approximately how many total bags of feed did you feed your chicken projects throughout the feeding period?

Please select the value from the drop down list that best represents your project and project costs.

What was the average length of time you had these animals on feed?	
Approximately how much did you spend on supplies? (include grooming, feeding, show equipment and other supplies)	
Approximately how much did you spend on veterinary care and animal health products? (include vet bills, vaccinations, wormer, etc.)	
Approximately how much did you spend on entry fees, passes, other fees, etc. associated with entering shows?	

Turkeys, Breeding Sheep, Breeding Does, Barrows and Gilts

How many turkeys did you feed this year?

What was the average cost per bag for the feed that you primarily fed to your turkey projects?

Approximately how many total bags of feed did you feed your turkey projects throughout the feeding period?

Please select the value from the drop down list that best represents your project and project costs.

What was the average length of time you had these animals on feed?

Approximately how much did you spend on supplies? (include grooming, feeding, show equipment and other supplies)

Approximately how much did you spend on veterinary care and animal health products? (include vet bills, vaccinations, wormer, etc.)

Approximately how much did you spend on entry fees, passes, other fees, etc. associated with entering shows?

How many breeding sheep did you feed this year?

What was the average cost per bag for the feed that you primarily fed to your breeding sheep projects?

What was the average pounds (grain) per day per head you fed your breeding sheep projects?

How much did you spend on hay last year for your breeding sheep projects? Please indicate in dollar amount.

Please select the value from the drop down list that best represents your project and project costs.

What was the average length of time you had these animals on feed?

Please indicate the average cost per head to purchase your animals.

Approximately how much did you spend on supplies per head (include grooming, feeding, show equipment and other supplies)?

Approximately how much per head did you spend on veterinary care and animal health products? (include vet bills, vaccinations, wormer, etc.)

Approximately how much did you spend, per head, on entry fees, passes, chute fees, etc. associated with entering shows?

Approximately how much per head did you spend on feed supplements and additives?

How many wether dams did you feed this year?

What was the average cost per bag for the feed that you primarily fed to your wether dam projects?

What was the average pounds (grain) per day per head you fed your wether dam projects?

How much did you spend on hay for your wether dam projects last year? Please indicate in dollar amount.

Please select the value from the drop down list that best represents your project and project costs.

What was the average length of time you had these animals on feed?	
Please indicate the average cost per head to purchase your animals.	
Approximately how much did you spend on supplies per head (include grooming, feeding, show equipment and other supplies)?	
Approximately how much per head did you spend on veterinary care and animal health products? (include vet bills, vaccinations, wormer, etc.)	
Approximately how much did you spend, per head, on entry fees, passes, chute fees, etc. associated with entering shows?	
Approximately how much per head did you spend on feed supplements and additives?	

How many breeding does did you feed this year?

What was the average cost per bag for the feed that you primarily fed to your breeding doe projects?

What was the average pounds (grain) per day per head you fed your breeding doe projects?

How much did you spend on hay for your breeding doe projects? Indicate in dollar amount.

Please select the value from the drop down list that best represents your project and project costs.

What was the average length of time you had these animals on feed?	
Please indicate the average cost per head to purchase your animals.	
Approximately how much did you spend on supplies per head (include grooming, feeding, show equipment and other supplies)?	
Approximately how much per head did you spend on veterinary care and animal health products? (include vet bills, vaccinations, wormer, etc.)	
Approximately how much did you spend, per head, on entry fees, passes, chute fees, etc. associated with entering shows?	
Approximately how much per head did you spend on feed supplements and additives?	

How many wether does did you feed this year?

What was the average cost per bag for the feed that you primarily fed to your wether doe projects?

What was the average pounds (grain) per day per head you fed your wether doe projects?

How much did you spend on hay for your wether doe projects this year? Indicate in dollar amount.

Please select the value from the drop down list that best represents your project and project costs.

What was the average length of time you had these animals on feed?	
Please indicate the average cost per head to purchase your animals.	
Approximately how much did you spend on supplies per head (include grooming, feeding, show equipment and other supplies)?	
Approximately how much per head did you spend on veterinary care and animal health products? (include vet bills, vaccinations, wormer, etc.)	
Approximately how much did you spend, per head, on entry fees, passes, chute fees, etc. associated with entering shows?	
Approximately how much per head did you spend on feed supplements and additives?	

How many barrows did you feed this year?

What was the average cost per bag for the feed that you primarily fed to your barrow projects?

What was the average pounds per day per head you fed your barrow projects?

Please select the value from the drop down list that best represents your project and project costs.

What was the average length of time you had these animals on feed?	
Please indicate the average cost per head to purchase your animals.	
Approximately how much did you spend on supplies per head (include grooming, feeding, show equipment and other supplies)?	

Approximately how much per head did you spend on veterinary care and animal health products? (include vet bills, vaccinations, wormer, etc.)

Approximately how much did you spend, per head, on entry fees, passes, chute fees, etc. associated with entering shows?

Approximately how much per head did you spend on feed supplements and additives?

How many gilts did you feed this year?

What was the average cost per bag for the feed that you primarily fed to your gilt projects?

What was the average pounds per day per head you fed your gilt projects?

Please select the value from the drop down list that best represents your project and project costs.

What was the average length of time you had these animals on feed?

Please indicate the average cost per head to purchase your animals.

Approximately how much did you spend on supplies per head (include grooming, feeding, show equipment and other supplies)?

Approximately how much per head did you spend on veterinary care and animal health products? (include vet bills, vaccinations, wormer, etc.)

Approximately how much did you spend, per head, on entry fees, passes, chute fees, etc. associated with entering shows?

Approximately how much per head did you spend on feed supplements and additives?

Block 2

Did your family invest in a large purchase this year (such as trailer, barn, concrete, etc.)?

- ○ Yes, please indicate purchase below.
- ○ No

Approximately how much did you invest in this purchase? Please indicate in dollar amount.

Related to exhibiting your livestock projects, approximately how much did you spend in travel-related expenditures in terms of fuel and mileage? Please indicate in dollar amount.

Related to exhibiting your livestock projects, approximately how much did you spend in travel-related expenditures in terms of hotel and lodging? Please indicate in dollar amount.

Related to exhibiting your livestock projects, approximately how much did you spend in travel-related expenditures in terms of food and meals? Please indicate in dollar amount.

Please estimate the time investment made by your family related to the livestock project on a weekly basis. Please indicate in number of hours spent per week per exhibitor.

Have you utilized resources published by Texas 4-H and FFA related to livestock projects? [These resources can include: species-specific guides, Explore Project Guides, other resources provided through Texas 4-H and FFA].

- ○ I have used at least one of these resources. Please list all below.
- ○ I have never heard of these resources.
- ○ I have heard of these resources, but I have never used them.

Do you believe current educational resources published by Texas 4-H and FFA related to livestock projects are sufficient for helping your family in this project area? Please indicate below. [These resources can include: species-specific guides, Explore Project Guides, other resources provided through Texas 4-H and FFA].

- ○ These resources are beneficial.
- ○ These resources need work.

○ I have not used any of these resources.

Please explain how livestock project educational resources provided through Texas 4-H and Texas FFA could be improved.

Please list additional educational resources that would be helpful for livestock exhibitors and their families.

Related to raising and exhibiting your livestock project, who or where do you go for help? (select all that apply)

- ☐ My County Extension Agent
- ☐ My Agricultural Science Teacher
- ☐ 4-H Club/Project Leader
- ☐ My Breeder
- ☐ Family Friend
- ☐ Third Party Consultant (Fitter)
- ☐ The Internet
- ☐ Educational Resources, like species guides

Texas 4-H and Texas FFA promote life skill development and educational outcomes through the livestock project, such as responsibility, character, work ethic, etc. Do you think what these groups claim about this project area matches the educational outcomes your family experiences. For example: Does the livestock project increase responsibility in exhibitors?

For each item on the left, please indicate your response for that trait matching the intended educational outcome through the livestock project.

	Definitely	Somewhat	Does Not
Increase Responsibility	○	○	○
Increase Sportsmanship	○	○	○
Increase Work Ethic	○	○	○
Increase Respect	○	○	○

	Definitely	Somewhat	Does Not
Increase Ethical Decision Making	○	○	○
Increase Animal Science Knowledge	○	○	○
Increase Knowledge About the Food Supply	○	○	○
Increase Knowledge of Safe Animal Handling and Welfare	○	○	○
Increase Knowledge of Producing a Safe Food Animal Product	○	○	○

Do you believe *life skill development* traits (such as responsibility) learned through the livestock project are relevant in real-world application?

○ Yes

○ No, please explain.

Do you believe *educational objectives* (such as animal science knowledge) learned through the livestock project are relevant in real-world application?

○ Yes

○ No, please explain.

Do you think the resources you have invested in the livestock project (including time and money) match the return you have received in the following areas? Please indicate in the table below for each.

	Worth the Investment	Somewhat Worth the Investment	Not Worth the Investment
Family Time Spent Together	○	○	○
Educational Outcomes	○	○	○
Life Skill Development	○	○	○
Monetary Returns (Dollars Earned)	○	○	○
Potential Scholarships Received	○	○	○
Professional Connections	○	○	○
Career Preparation	○	○	○

Do you think the resources you have invested in the livestock project (including time and money) match the return you have received with respect to true monetary return-on-investment? For example, do you think you make money in the livestock project?

- ◯ Yes; I have shown a return on my investment in terms of dollar amount spent and received in the livestock project. In other words, I have made money in this project area.
- ◯ No; I have lost money in this project area.
- ◯ I am not sure about return-on-investment.

Do you think the resources you have invested in the livestock project (including time and money) match the return you have received with respect to benefits other than money? For example, do you think the investment is worth what families receive in terms of time spent together and life skill development?

- ◯ Yes; there is a return-on-investment in terms of benefits other than money.
- ◯ No; there is not an intrinsic return-on-investment in this project area.
- ◯ I am not sure.

In conclusion, do you believe participation in the livestock project is "worth it"?

- ◯ Yes, please explain.
- ◯ No, please explain.