

ACADEMIC MOTIVATION AND SUCCESS OF TEXAS HIGH SCHOOL  
GRADUATES WHO WERE AND WERE NOT INVOLVED IN TEXAS 4-H

A Thesis

by

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## ABSTRACT

The purposes of this study were to (a) examine if Texas 4-H alumni perform better academically than the population of Texas post-secondary education students, with respect to the four Texas Higher Education Coordinating Board (THECB) 60x30TX goals, (b) examine if Texas 4-H alumni are better prepared for post-secondary education entry than the population of Texas higher education students, and (c) to determine if 4-H participation (sparks and dosage) is associated with post-secondary academic motivation and success of Texas 4-H alumni. Existing data regarding high school students who graduated in 2013 and 2014 were secured from THECB. Original data were collected through a supplemental survey of Texas 4-H alumni. A subset of the sample surveyed were Texas 4-H members who also received a Texas 4-H Foundation Scholarship. Tests of hypotheses about relations between select dimensions of Texas 4-H participation (e.g., sparks and dosage) and academic motivation and success (degree and certificate completion, development of marketable skills, collegiate qualifying exam scores, and dual credit enrollment) were conducted. Texas 4-H alumni were found to have significantly greater five-year completion rates and marketable skills, lower student loan debt, and they reported substantially higher rates of enrollment in dual-credit courses. Texas 4-H alumni also had higher 4-year completion rates, but the difference was not statistically significant. Increased dosage did not lead to significantly greater academic success.

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Analyses depicted in Chapter 4 were conducted in part by Dr. Ellis of the Department of Recreation, Park and Tourism Sciences. All other work and analyses conducted for the thesis was completed by the student independently.

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## NOMENCLATURE

4HFD	Texas 4-H Youth Development Foundation
ACT	American College Testing
HLSR	Houston Livestock Show and Rodeo
OST	Out-of-School Time
PYD	Positive Youth Development
SALE	San Antonio Livestock Exposition
THECB	Texas Higher Education Coordinating Board
WALL	Richard Wallrath Education Foundation

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## 1. INTRODUCTION

Academic motivation and success are central to outcomes targeted by all major models of youth development. Youth who succeed academically are well-positioned to thrive and flourish through meaningful careers, community leadership, and rewarding personal and family lives (Arnold, 2018; Arnold & Gagnon, 2020a, 2020b; Witt & Caldwell, 2018). As such, the Texas Higher Education Coordinating Board (THECB) has established a set of ambitious goals for post-secondary education of Texas youth. Through the establishment of its 60x30TX academic achievement plan (60x30TX, 2019), THECB is advancing post-secondary academic success according to four key goals:

1. **Educated Population:** By 2030, at least 60 percent of Texans ages 25-34 will have a post-secondary certificate or degree.
2. **Completion:** By 2030, at least 550,000 students in that year will complete a certificate, associate, bachelor's, or master's degree from an institution of higher education in Texas.
3. **Marketable Skills:** By 2030, all graduates from Texas public institutions of higher education will have completed programs with identified marketable skills.
4. **Student Debt:** By 2030, undergraduate student loan debt will not exceed 60 percent of first-year wages for graduates of Texas public institutions.

THECB has advanced four priority strategies as the foundation for statewide educational policy initiatives to accomplish these goals: (1) improve academic preparation for

students to enter and complete higher education; (2) promote college enrollment and completion to students and parents before high school graduation; (3) support completion by improving the ability of students to transfer credits; and (4) mobilize education and workforce stakeholders (*60x30TX*, 2019). The 2019 progress report (*60x30TX*, 2019) emphasizes the need for programs that accelerate the number of students completing degrees. Programs are also needed to ensure that high school-to-college enrollment targets are met and to “support this critical student transition from high school into higher education” (*60x30TX*, 2019). Clearly, high school and primary schools play a pivotal role in developing the academic skills and motivation needed for students to succeed in post-secondary education.

Yet, out-of-school time (OST) programs also offer vast potential to facilitate academic success and thriving (Arnold, 2018; Arnold & Gagnon, 2020b). As the largest youth-serving organization in Texas, Texas 4-H has a long history of cultivating and developing positive outcomes (*What is Texas 4-H*). Texas 4-H’s OST, community-centered approach facilitates developmental outcomes for youth that promote academic success and are sustained through adulthood and subsequent careers (Arnold et al., 2016; Borden et al., 2014; Lerner & Lerner 2013; Ratkos & Knollenberg, 2015). Texas 4-H’s impact on post-secondary academic success is documented in a 2020 study showing Texas 4-H members substantially outperforming the population of Texas high school students on certificate or degree completion, development of marketable skills, limiting student debt, elevating standardized admissions exam scores, and facilitating dual credit enrollment (Skrocki et al., in review). While these results point to the potential of Texas

4-H as a powerful agent of academic success, results are far from conclusive. The correlational design of that study does not establish the direction of cause and effect. Post-secondary academic success may be a result of Texas 4-H participation, or Texas 4-H may simply attract youth who have strong academic talents. Further, the study did not reveal the types or dosages (Eccles & Gootman, 2002; Weiss et al., 2005) of Texas 4-H participation most impactful in elevating academic success, nor did it include scrutiny of “sparks” which are central to contemporary models of youth development programs (Arnold, 2018; Scales et al., 2011). Dosage refers to the duration, breadth, and depth of participation in Texas 4-H, and sparks are circumstances in which youth discover and pursue topics in which they have a keen interest. The purposes of this study, then, are to (a) examine if Texas 4-H alumni perform better academically than the population of Texas post-secondary education students, with respect to the four THECB 60x30TX goals, (b) examine if Texas 4-H alumni are better prepared for post-secondary education entry than the population of Texas higher education students, and (c) to determine if 4-H participation (sparks and dosage) is associated with post-secondary academic motivation and success of Texas 4-H alumni.

## 2. LITERATURE REVIEW

The literature review is comprised of two essays. The first provides a review of positive youth development (PYD) frameworks that promote academic motivation and success. The second essay addresses Texas 4-H and impacting elements of participation. The literature review concludes with hypotheses that follow from propositions within the two essays.

### **2.1. Essay One: Positive Youth Development Outcomes and Thriving**

Academic motivation and success are among the six developmental outcomes targeted by Arnold's (Arnold, 2018; Arnold & Gagnon, 2020a) 4-H Thriving Model. The 4-H Thriving Model is a recent innovation. It builds upon eight prominent positive youth development frameworks grouped underneath the categories of research-driven (three frameworks), research-referenced (three frameworks), and research-adapted (two frameworks) (Arnold et al., 2016; Arnold & Silliman, 2017). Four of the eight frameworks are heavily instilled within Extension and Texas 4-H programs: (1) *Targeting Life Skills* (Hendricks, 1996); (2) *Essential Elements* (Kress, 2005); (3) *Developmental Assets* (Search Institute, 1997, 2007); and (4) *The Five C's* (Lerner et al., 2000). The first section of this essay provides a comprehensive overview of PYD, including discussion of its origin and evolution as well as the four aforementioned frameworks. Having laid the foundation, the second section contains an overview of PYD models and features of PYD programs that facilitate academic motivation and success, along with other PYD outcomes. The final section provides discussion of

thriving, including its origin and evolution and the trajectories and outcomes signifying thriving has occurred or is occurring.

### **2.1.1. Overview of Positive Youth Development**

The PYD framework for youth development was not always the norm. Before the twenty-first century, youth were largely viewed as problems to be solved rather than resources to be developed (e.g., Larson, 2000; Lerner et al., 2005). As such, practitioners and researchers used such terms as “at-risk youth,” and they focused their attention on such problem behaviors as substance abuse, smoking, teenage pregnancy, and school drop-out behavior (Witt & Caldwell, 2018). PYD is a radical departure from this focus. Instead of focusing on problems, PYD addresses positive developmental aspects of youth. PYD assumes there is an inherent need for youth to feel supported and empowered in leading a successful life (Witt & Caldwell, 2018). In combination with the emergence of PYD and changes in how youth are viewed, new terminology has evolved, including developmental assets, moral development, civic engagement, well-being, and thriving. These have become ‘buzz words’ among youth development practitioners and researchers (Lerner et al., 2019). While these terms are necessary and significantly advance the literature surrounding PYD, the introduction of such terminology further contributes to the issues of contextualizing and applying theories and frameworks within youth development programs (Arnold, 2018; Arnold & Silliman, 2017; Heck & Subramanian, 2009).

Given the emergence of PYD, youth development practitioners and researchers have focused their efforts on identifying positive outcomes and processes of the many

sources of socialization of youth (e.g., parenting, youth services, formal education, recreation services) (e.g., Lerner & Lerner, 2013). This shift in focus has brought extensive breadth in answering the question of “What’s inside the black box of youth programs?” (Yohalem & Wilson-Ahlstrom, 2010). The “black box” is a metaphor representing the unknown processes within youth services that yield positive developmental outcomes; youth enter a program and exit after a period of participation, ordinarily with enhanced developmental outcomes and potential for thriving and flourishing. Substantial evidence suggests that quality youth programs promote positive developmental outcomes, but the mechanisms through which these effects occur are not fully understood (Larson, 2000; Yohalem & Wilson-Ahlstrom, 2010).

Notable progress has been made toward understanding those mechanisms. Perhaps the most impactful contributions toward that understanding are reviewed in the second section of this essay (Eccles & Gootman, 2002; Roth & Brooks-Gunn, 2003; Smith & Hohmann, 2005). The focus of the remainder of this section is on the nature, origin, evolution, and four frameworks of PYD.

The tripartite conception of PYD suggested by Hamilton (1999) states that PYD has been used in the following ways: (a) as a developmental process; (b) as a philosophy or approach to youth programming; and (c) as instances of youth programs and organizations focused on fostering the healthy or positive development of youth. Using this conception as the foundation, multiple models were established to frame the adolescent developmental period (Benson et al., 2011; Larson, 2000; Lerner et al., 2005, 2011). While all of those models incorporated ideas associated with “relational,

developmental systems”, Lerner’s 4-H longitudinal study made significant headway in looking specifically at “possible relations between involvement in 4-H and positive youth development” (Lerner & Lerner, 2013, p. 13). As a result, PYD was propelled immensely within the youth development field, bringing light to how PYD impacts developmental outcomes.

Numerous programs and models encompass the concepts of PYD. Among these, Texas 4-H and the following four frameworks have had significant and documented traction in representing the core PYD concepts, including youth and the many contexts through which their development occurs (Arnold, 2018; Arnold & Gagnon, 2020a, 2020b; Lerner & Lerner, 2013): (1) *Targeting Life Skills* (Hendricks, 1996); (2) *Essential Elements* (Kress, 2005); (3) *Developmental Assets* (Search Institute, 1997, 2007); and (4) *The Five C’s* (Lerner et al., 2000).

The *Targeting Life Skills* framework was developed by Hendricks (1996) and is a research-referenced framework, as it “emerged from a systematic review of youth development and/or practice literature” (Arnold & Silliman, 2017, p.5). *Targeting Life Skills* advocates the use of experiential learning. The larger ecosystem of this model is comprised of 35 identified life skills that are connected back to the four Hs; head, heart, hands, and health. Extension educators use the *Targeting Life Skills* framework to intentionally design and implement youth programs focused on the 35 life skills and subsequent outcomes.

Also categorized as a research-referenced framework, the *Essential Elements* framework (Kress, 2005) sought to condense the eight elements identified by the



National 4-H Impact Assessment Project (Peterson et al., 2001) into four: belonging, mastery, independence, and generosity. Utilized predominately within 4-H, the application of this model calls upon a social learning approach where participation in programs is likely to lead to the development of the four elements (Arnold & Silliman, 2017). Extension educators seek to develop programs that specifically address the eight essential elements through hands-on learning experiences. More specifically, Texas 4-H programs place great emphasis on belonging and mastery by providing youth opportunities to demonstrate leadership and knowledge of subject materials.

Unlike the first two frameworks, the following two are categorized as research-driven frameworks as they were “developed through rigorous literature review and confirmatory analysis of youth data” (Arnold & Silliman, 2017, p. 5). Additionally, it is important to note that as the *Developmental Assets* and *Five C's* frameworks did not originate out of extension and 4-H programs, their models are more commonly used and known across a wide variety of OST programs.

Crafted by the Search Institute (1997, 2007; Benson et al., 2011) the *Developmental Assets* framework identifies external and internal factors that are considered to be “the building blocks of positive (healthy) development” (Roth & Brooks-Gunn, 2003, p. 97). External assets are the supports, opportunities, and relationships young people need across all aspects of their lives, while internal assets are the personal skills, commitments, and values they need to make good choices, take responsibility for their own lives, and be independent and fulfilled (Benson et al., 2011). Studies involving the *Developmental Assets* framework (Search Institute 1997, 2007)

have found that there is a “relationship between the number of assets young people have and their problem or positive behaviors and attitudes” (Witt & Caldwell, 2018, p. 8).

The *Five C's* framework, developed by Lerner et al., (2000), focuses on five pivotal outcomes and processes: competence, caring, character, connection, and confidence. A sixth C, contribution, was added after additional studies (Lerner et al., 2005) and emerges when all other C's are present (Geldhof et al., 2014; Witt & Caldwell, 2018). The *Five C's* are achieved when individual and contextual elements positively interact and have become the most established and widely used PYD model within academic studies and applied practice (Arnold & Silliman, 2017).

### **2.1.2. Positive Youth Development Models and Features**

Academic motivation and success are components of all models of PYD that address out-of-school time (OST) programs. Motivation is a state of activation; it is energy that drives people toward actions leading to desired conditions. More precisely, motivation refers to “internal processes that give behavior its energy, direction, and persistence” (Reeve, 2018, p. 8). Success refers to the accomplishment of a valued goal. THECB indicators of academic success include completion of degrees and certificates, development of marketable skills, and minimization of student debt. Other indicators of academic success include scores on college admissions exams and dual-credit enrollment (Skrocki et al., in review).

The mechanisms through which OST programs facilitate the development of outcomes have become of recent interest among youth practitioners and researchers (e.g., Arnold, 2018; Roth & Brooks-Gunn, 2003; Smith & Hohmann, 2005; Yohalem &

Wilson-Ahlstrom, 2010). These research programs have revealed some of the important mechanisms inside the black box of OST programs. The effective and successful application of knowledge from this body of inquiry has substantially informed youth development policy and technique (Yohalem & Wilson-Ahlstrom, 2010).

A list of major components of each model is presented in Table 2.1. Common elements are evident across all of these models. Perhaps most notably, all models emphasize the importance of (a) explicit program goals that guide program development; (b) intentional program activities that yield a sense of competence and accomplishment; and (c) an atmosphere providing safety and support (Arnold & Gagnon, 2020a, 2020b; Eccles & Gootman, 2002; Lerner et al., 2005; Roth & Brooks-Gunn, 2003; Smith & Hohmann, 2005). Goals are an essential component of youth programs as they promote positive development and recognize the need for ongoing support and challenging opportunities (Roth & Brooks-Gunn, 2003). Measuring and evaluating developmental outcomes can become quite frustrating and challenging if the purpose and goal of a particular OST program are unknown.

On a similar theme, program activities create situations for youth to “nurture their interests, practice new skills, and gain a sense of personal or group recognition” (Roth & Brooks-Gunn, 2003, p. 98). Incorporating a variety of activities within OST programs is important as it can lead to the development of numerous positive outcomes (Witt & Caldwell, 2018). The atmosphere of a program is heavily cultivated by the leaders and staff (Roth & Brooks-Gunn; 2003, Witt & Caldwell, 2018). Programs that

create physically and psychologically safe spaces with a strong sense of commitment can and do nourish youth’s ability to positively develop (Roth & Brooks-Gunn, 2003).

**Table 2.1 Major Components of PYD Models**

<b>Component</b>	<b>Characteristics</b>
<i>Explicit Program Goals</i>	Guides program development by: <ul style="list-style-type: none"> <li>• Recognizing the need for ongoing support</li> <li>• Recognizing the need for challenging opportunities</li> <li>• Measuring and evaluating developmental outcomes</li> <li>• Establishing the purpose of an OST program</li> </ul>
<i>Intentional Program Activities</i>	Yields a sense of competence and accomplishment by: <ul style="list-style-type: none"> <li>• Nurturing youths’ interests</li> <li>• Allowing youth to practice new skills</li> <li>• Creating opportunities for youth to gain a sense of personal or group recognition</li> <li>• Developing positive outcomes</li> </ul>
<i>Atmosphere</i>	Provides safety and support by: <ul style="list-style-type: none"> <li>• Selecting capable program leaders and staff</li> <li>• Establishing a strong sense of commitment</li> <li>• Nourishing youth’s ability to positively develop</li> </ul>

### **2.1.3. Understanding Thriving and its Outcomes**

Quality youth programs contribute to youth thriving, which has been defined by Arnold (2018) as, “the growth of attributes that mark a young person who is healthy and flourishing” (p. 149). Thriving has been embraced by 4-H at the national level. The 4-H Thriving Model (Arnold, 2018; Arnold & Gagnon 2020) depicts thriving as a mediating variable between youth program contexts and developmental outcomes. In other words, if thriving does not occur, no developmental outcomes result from youth programs.

Explicit outcomes of thriving have been established. The 4-H Thriving Model (Arnold, 2018; Arnold & Gagnon 2020) specifies six developmental outcomes: (a) academic motivation and success; (b) social competence; (c) personal standards; (d) contribution to others; (e) connection to others; and (f) personal responsibility. Among these, academic motivation and success are the focus of this study.

#### **2.1.4. Conclusion of Essay One**

PYD is “rooted in a commitment to enabling all young people to thrive” (Hamilton et al., 2004, p. 3). Essay one provided an overview of PYD outcomes and introduced thriving. Sections discussed the origin and evolution of PYD, reviewed four PYD frameworks, outlined PYD models and features, and described thriving. Texas 4-H programs and opportunities for youth are intentionally designed to support PYD core concepts through the utilization of the four PYD frameworks discussed: (1) *Targeting Life Skills* (Hendricks, 1996); (2) *Essential Elements* (Kress, 2005); (3) *Developmental Assets* (Search Institute, 1997, 2007); and (4) *The Five C’s* (Lerner et al., 2000) in addition to the 4-H Thriving Model proposed by Arnold (2018). As a community-based out-of-school provider, Texas 4-H is well-positioned to enhance engagement, develop positive outcomes, and prepare youth for post-secondary academic success.

#### **2.2. Essay Two: Texas 4-H Programs and Participatory Impacts**

“Out-of-school time (OST) programs are important vehicles for providing supports, opportunities, programs, and services for youth to be engaged in a variety of positive activities and reap developmental benefits” (Witt & Caldwell, 2018, p. 6). Texas 4-H is an OST program that has been facilitating the positive development of outcomes

through its community-based projects and programs since the late 1890s. The first section of this essay provides a comprehensive overview of Texas 4-H, including discussion of its history, structure, scope, and programming areas. Having laid the foundational knowledge of what 4-H is, the second section outlines impacting dimensions of participation including sparks and dosage.

### **2.2.1. Texas 4-H Programs**

Starting as an outreach program, 4-H's main goal was to address the need for better agricultural education in the late 1890s (Borden et al., 2014). During this timeframe, agricultural practices were developing rapidly. Researchers quickly discovered that youth were far more receptive to new farming developments than adults. The first to connect education to country life through the use of "hands-on" learning was A.B. Graham who established a "corn club" in Clark County, Ohio in 1902. Shortly thereafter, the creation of the cooperative education system in 1914 assisted in the nationalization of 4-H. Linking with the cooperative educational system has proven to be instrumental in the rapid growth of 4-H as this system provides expertise and resources to meet the needs of research, knowledge, and educational programs (*History of 4-H*, 2021).

With more than 550,00 youth enrolled in Texas 4-H each year, Texas 4-H has become the largest youth development program within the state (*What is Texas 4-H*). Founded in 1908, Texas 4-H is a part of the Texas A&M AgriLife Extension Service and the greater Texas A&M System (*What is Texas 4-H*). Its history is symmetrical to that of the nationwide 4-H program unit, with the establishment of a "corn club" in 1908 and

expansive growth as the 4-H name became nationally known. While historical structures remain fairly consistent from state to state, the organizational size and scope of state 4-H programs can differ significantly. As a whole, “4-H is the only youth program connected to land-grant universities and geared to develop social and academic skills needed for a successful transition to college and adulthood” (Ratkos & Knollenberg, 2015). Youth become eligible to join 4-H upon entry into third grade, and can continue their membership through twelfth grade. The longevity of involvement within 4-H, coupled with the commitment to develop lifelong skills, has allowed 4-H to grow into a nationally known and successful youth program.

As a community-based program, 4-H relies heavily on adult volunteers and Extension Educators to manage 4-H clubs at the community level. In addition to community clubs, Texas 4-H also utilizes curriculum enrichment through programs conducted within public and private schools. Structured through the use of ‘projects’ Texas 4-H members learn everything about their topic area through hands-on activities, community service, and public events. Project activities are typically facilitated by a 4-H Adult Volunteer or Extension Educator. Within Texas A&M AgriLife Extension, an Extension Educator in each of the 254 counties is designated as ‘4-H Coordinator’ and provides administrative leadership for the 4-H program in that county. Projects within 4-H are grouped in five overarching project areas known as the “Big 5” and include: (1) Agriculture and Livestock; (2) Family and Community Health; (3) Leadership and Citizenship; (4) Natural Resources; and (5) STEM. The largest of these project areas within Texas 4-H for 2017-2018 enrollment was Family and Community Health, with

187,705 participants; followed by Citizenship and Leadership with 164,172 (*Texas 4-H Through the Year*). Also unique to Texas 4-H is the involvement and financial support of the Texas 4-H Youth Development Foundation. Established in the early 1950s, the Foundation has annually awarded over \$2.5 million in scholarships to over 200 Texas 4-H members (*About the Texas 4-H Foundation*, 2021). These scholarships are awarded based on academic record, 4-H experience, and financial need and include; Houston Livestock Show and Rodeo (HLSR), San Antonio Livestock Exposition (SALE), Richard Wallrath Education Foundation (WALL), and Texas 4-H Youth Development Foundation (4HFD).

### **2.2.2. Dimensions of Participation**

The literature surrounding the development of positive outcomes through participation in OST programs stresses the impact of sparks and dosage on youth development (Roth & Brooks-Gunn, 2003; Yohalem & Wilson-Ahlstrom, 2010). In combination with the reality that all OST programs are not created equal, a challenge for practitioners and researchers alike includes measuring, evaluating, and improving programmatic impacts (Witt & Caldwell, 2018; Yohalem & Wilson-Ahlstrom, 2010). This section will define and outline specific impacts pertaining to various dimensions of participation.

Participation is defined as the active enrollment in something. In further defining participation, Weiss et al., (2005) suggested the following equation: “participation = enrollment + attendance + engagement” (p. 19). This participation equation suggests that in order for OST programs to maximize their impact on youth, the equation must be



balanced (Weiss et al., 2005). Within the context of OST programs, there will always be varying levels of participation among youth, thereby leading to inconsistent development of outcomes such as, increased academic achievement, reduced problem behaviors, and heightened psychological competencies (Witt & Caldwell, 2018). To combat these inconsistencies, program leaders can look to and evaluate the participatory elements of sparks and dosage to understand how to fully reap participation-based benefits.

Sparks have been defined by numerous OST practitioners within the context of their program or to fit the needs of their evaluations. However, almost all of those definitions are truth asserting; they embed both cause and effect within the definition. Empirical relations cannot be reasonably tested, because phenomena not conforming to the specified cause and effect sequence are, by definition, not the concept. In the context of this study, a truth-asserting definition might propose that thriving is enthusiastic and focused pursuit of interests leading to academic motivation and success. Given that definition, thriving is present only when academic motivation and success are present.

Formal definitions are much better suited to the advancement of behavioral science (Zetterberg, 1954; Chavetz, 1978). Formal definitions include two parts: a *genus proximum* and a *differentia specifica*. The *genus proximum* establishes the greater set within which a phenomenon belongs. Thriving, for example, might be defined as a transitory condition or as a relatively stable disposition. The *differentia specifica*, then, distinguishes the concept or entity being defined from other elements within the set. Thus, in the context of this research, a spark is defined as a disposition toward enthusiastic involvement (interest, motivation, and passion; *genus proximum*) in

pursuing a specific topic, problem, issue, opportunity, skill, talent, or capacity (differentia specifica). The development and nurturing of sparks throughout adolescence assists youth in constructing an “idealized personhood” (Lerner et al., 2000). With this construction, youth become empathetic to those who have not found the intrinsic motivation that comes from having sparks (Scales et al., 2011) which in turn develop their sense of belonging and personal relationships.

Dosage “involves some form of length of program exposure” (Eccles & Gootman, 2002). Three dimensions of dosage are: (a) duration, the quantity of time during which one was a participant; (b) breadth, participation in one or several activities; and (c) depth, level of concentration in a specific content area (Weiss et al., 2005). Collecting data on all three measures allows program managers to begin establishing goals and program content that matches the involvement and the development of participants. Furthermore, the more frequently youth attend and are engaged within OST programs, the more likely it is that they will yield a larger number of positive developmental outcomes (Witt & Caldwell, 2018).

### **2.2.3. Conclusion of Essay Two**

4-H Programs offer opportunities for youth to develop critical life skills that foster citizenship and promote leadership (Borden et al., 2014). That said, with the use of the community-based context, members are able to determine the degree to which they participate, thereby impacting the extent to which positive developmental outcomes and life skills are fostered. Essay two of this literature review provided an overview of Texas 4-H and outlined the various elements of participation that impact the positive

development of outcomes. In short, “youth must enroll, for a sufficient length of time, in an engaging OST environment” in order to successfully reap all of the positive developmental outcomes an OST program provides (Weiss et al., 2005, p. 25).

### **2.3. Conclusion of Entire Literature Review**

Separating the literature review into two essays allows for the clear identification of a “problem” and a “potential solution”. The first essay or “problem” was discussed through an elaboration of PYD as well as, the commonalities of components that lead to the thriving and flourishing of youth within OST programs. The second essay or “potential solution” outlined and classified the largest youth serving organization in Texas, Texas 4-H as a community-based OST program.

Through the utilization of this format, three conclusions were derived, thereby providing the foundation for this research. Those conclusions are as follows: (1) academic motivation and success are pivotal outcomes for PYD and OST programs; (2) existing evidence suggests Texas 4-H is an OST program that facilitates the development of these outcomes; and (3) effects of dimensions of participation (sparks and dosage) are unknown.

### **2.4. Hypotheses**

The first three hypotheses pertain to the goals set forth by THECB’s 60x30TX academic achievement plan (H<sub>1</sub> through H<sub>3</sub>). The following two hypotheses relate to elements of post-secondary student preparation (H<sub>4</sub> and H<sub>5</sub>). In acknowledging the potential impact of Texas 4-H, the remaining seven hypotheses predict a significant relationship between Texas 4-H dosage (H<sub>6</sub> through H<sub>8</sub>), sparks (H<sub>9</sub> and H<sub>10</sub>), and

program quality (H<sub>11</sub> and H<sub>12</sub>) as it relates to the developmental outcomes of academic motivation and success. Thus, confirming the role Texas 4-H plays in developing pivotal outcomes within their members, thereby translating to post-secondary academic success of Texas 4-H alumni.

H<sub>1</sub>: Texas 4-H alumni will complete post-secondary credentials at a faster rate.

H<sub>2</sub>: Texas 4-H alumni will be more marketable.

H<sub>3</sub>: Texas 4-H alumni will have lower student loan debt.

H<sub>4</sub>: Texas 4-H alumni will have higher ACT scores.

H<sub>5</sub>: Texas 4-H alumni will have higher completion rates of dual credit courses.

H<sub>6</sub>: Marketable skills of Texas 4-H alumni varies by the presence of sparks.

H<sub>7</sub>: Time-to-completion of Texas 4-H alumni varies by the presence of sparks.

H<sub>8</sub>: As dosage in Texas 4-H increases, marketable skills increase.

H<sub>9</sub>: As dosage in Texas 4-H increases, time-to-completion decreases.

H<sub>10</sub>: As dosage in Texas 4-H increases, student loan debt ratios decrease.

H<sub>11</sub>: Time-to-completion of Texas 4-H alumni decreases as the quality of the Texas 4-H programs in which they participated increases.

H<sub>12</sub>: As the quality of the Texas 4-H programs in which Texas 4-H alumni participated increases, dual credit enrollment increases.

### 3. METHOD

This study compared the academic motivation and success of Texas high school graduates who participated in Texas 4-H (“Texas 4-H alumni”) with that of Texas high school students who did not participate in Texas 4-H. Specifically, the study (a) examined if Texas 4-H alumni perform better academically than the population of Texas post-secondary education students, with respect to the four Texas Higher Education Coordinating Board (THECB) 60x30TX goals, (b) examined if Texas 4-H alumni are better prepared for post-secondary education entry than the population of Texas higher education students, and (c) determined if 4-H participation (sparks and dosage) is associated with post-secondary academic motivation and success of Texas 4-H alumni.

#### **3.1. Materials**

Materials included (a) THECB data and (b) American College Testing (ACT) data. A supplemental survey was also conducted. THECB databases are managed by the highest authority of public higher education in Texas, thereby providing statewide records. ACT is an administrator of standardized exams. Their statewide report and database provided aggregate scores for both populations.

#### **3.2. Populations**

Populations studied included (a) all students who graduated from Texas high schools in 2013 and 2014, and (b) Texas 4-H alumni who also graduated from Texas high schools in 2013 and 2014 and were involved in Texas 4-H for two or more years. A subset of the latter population are Texas 4-H members who also received one of the four

Texas 4-H Foundation Scholarships; Houston Livestock Show and Rodeo (HLSR), San Antonio Livestock Exposition (SALE), Richard Wallrath Education Foundation (WALL), and Texas 4-H Youth Development Foundation (4HFD). Data for the former group were retrieved from the THECB databases. Data for the latter group were identified on 4HOnline, the Texas 4-H online member database and received a supplemental survey. The sampling frame for the supplemental survey was assembled using on-file email lists for Texas 4-H alumni who graduated high school in 2013 and 2014 (4-H All:  $n= 180$ ; 4-H Scholar:  $n= 70$ ).

### 3.3. Measures

Table 3.1 provides a description of all measures and data sources that were used in the study. Data sources included THECB, ACT, and a survey of Texas 4-H alumni. THECB measures included educated population, marketable skills, and student debt. Educated population is operationalized as completion of a post-secondary degree or certificate. Marketable skills are indicated by students either being in graduate school or employed one year following graduation with a post-secondary credential. Debt is the ratio of dollar amount of student loans to income during the first year following graduation. The metric for debt is cents of debt per dollar of income.

**Table 3.1 Study Measures**

<b>Component</b>	<b>Measure</b>	<b>Data Source</b>
<i>60x30TX</i>	Educated Population	THECB, Survey
	Marketable Skills	THECB, Survey

<b>Component</b>	<b>Measure</b>	<b>Data Source</b>
	Student Debt	THECB, Survey
<i>Student Preparation</i>	ACT Scores	ACT, Survey
	Dual Credit Enrollment	THECB, Survey
<i>Dimensions of Participation</i>	Sparks	Survey
	Dosage	Survey
<i>Program Quality</i>	Texas 4-H	Survey

The survey of 4-H alumni also included items to measure each of these variables. Completion of an academic credential (educated population) was measured by asking respondents to report their age and the year they graduated from post-secondary education. The difference between these was the measure of time-to-completion. Marketable skills were measured with the item, “In the year following graduation from college, were you working or enrolled in higher education for an additional degree?” Respondents indicated either “yes” or “no.” To measure debt, respondents were asked, “How much student loan debt did you have” and “what was your approximate first year gross income?” Responses to the first item were divided by responses to the second item to obtain the ratio of cents of debt per dollar of income.

ACT scores were retrieved from the American College Testing Service annual report (ACT, 2014). The 4-H alumni were given the range of ACT scores and were asked to recall their score, to the best of their ability:

“For 2013, the average composite score (English, mathematics, reading, and science) in the state of Texas was 21; the range is 1 to 36. To the best of your ability to remember, what was your score?”

For the dual credit enrollment variable, we asked, “Did you complete one or more dual credit courses?” The definition of dual credit courses was also provided. A dual credit course is when a high school student enrolls in college course(s) and receives credit for the course(s) from both the college and high school. Respondents indicated “yes” or “no.”

Sparks, program quality, and dosage were measured only in the 4-H alumni survey. Sparks was defined as a disposition toward enthusiastic involvement in pursuing a specific topic, problem, issue, opportunity, skill, talent, or capacity. Nurturing of sparks leads to the “ideal personhood” of youth (Lerner et al., 2000). The measure of sparks was modeled after Arnold and Gagnon (2020). Five of their items were slightly adapted to fit the context of the current study. The items were as follows:

- In general, how passionate were you about the things you did in Texas 4-H?
- How strong was your desire to learn all you could about your Texas 4-H project?
- To what extent was Texas 4-H important to who you were?
- How enthusiastic were you about your Texas 4-H projects?
- How enthusiastic were you about everything you did in Texas 4-H?

We also added an item to improve content-related evidence of validity, i.e., the fit of the measure with our definition of sparks. The following item was included to represent the impact of sparks on the “personhood” of youth (Lerner et al., 2000):



- How impactful was Texas 4-H in helping you discover what you have to offer the world?

The alpha reliability of the six-item measure of sparks was .957.

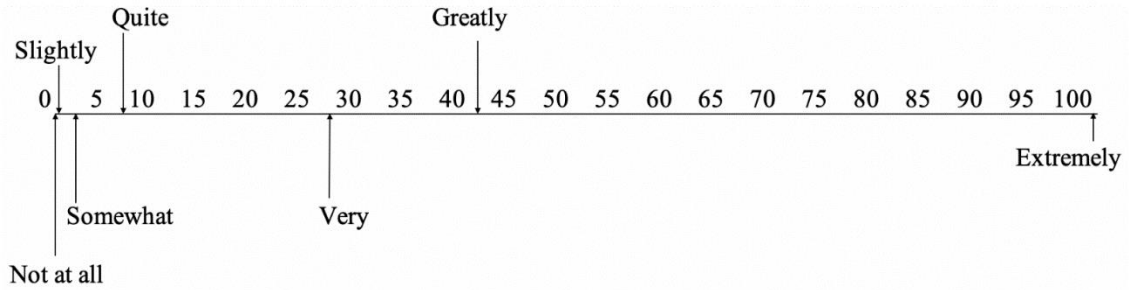
The measure of program quality also included six items. These items were also adapted from Arnold and Gagnon (2020). They are based on Eccles and Gootman's (2020) impactful research on youth program quality, and they are also fully consistent with research on the same topic by Smith and Hohmann (2005). The six items were as follows:

- To what extent did you feel welcome in Texas 4-H?
- To what extent did you feel safe in Texas 4-H?
- To what extent did you feel supported by adults in Texas 4-H?
- To what extent did you feel supported by other youth in Texas 4-H?
- To what extent did Texas 4-H enforce rules for all members to follow?
- To what extent did you feel like you mattered in Texas 4-H?

The alpha reliability coefficient for the six-item scale was .935.

The measures of sparks and program quality used a labeled magnitude scale (e.g., Schutz & Cardello, 2001) format. As such, seven adverbial modifiers were arranged on a continuum of intensity at empirically identified intervals, resulting in a true ratio scale (Figure 3.1). The modifiers were calibrated through ratings by 158 judges who were university students, and thus of similar ages to our study respondents. Adverbial modifiers were not at all, slightly, somewhat, quite, very, greatly, and extremely.

**Figure 3.1 Labeled Magnitude Scale (LAM)**



Dosage was measured with six items. Respondents were asked to indicate their degree of involvement in each of the “Big 5” program areas of Texas 4-H: (1) Agriculture and Livestock; (2) Family and Community Health; (3) Leadership and Citizenship; (4) Natural Resources; and (5) STEM (science, technology, engineering, and mathematics). They indicated their responses along a 100-point continuum, anchored with “no involvement” and “greatest possible involvement.” At the 28th unit along the continuum, “typical 4-H involvement” was indicated. This measure used the “direct magnitude scaling” format describe by Lodge (1981), and is thus a ratio-level measure. The set of variables measuring dosage also included an item asking respondents to report the number of years they were a member of Texas 4-H. The alpha reliability coefficient for the six-item scale was .453.

### **3.4. Procedures**

Data for all students who graduated high school in 2013 and 2014 were pulled from THECB’s database. Utilizing their interactive database, data were filtered to only include statewide numbers for the high school graduation year of 2013 and 2014.

Names of Texas 4-H alumni were pulled from 4HOnline, the Texas 4-H online database. Texas 4-H alumni records were aggregated and cleaned to provide a

comprehensive list of Texas 4-H alumni who met the criteria for this study. Names on this comprehensive list were assigned a reference code consisting of: graduation year, gender, scholarship received, years enrolled in Texas 4-H, school type, and identification number. Texas 4-H alumni records were then uploaded into Qualtrics for distribution of the supplemental survey to secure Texas 4-H specific data.

Texas 4-H alumni received an initial email asking for their participation in completing the supplemental survey. Contents of this email included the study's purpose and incentive information. Follow up emails were sent out weekly for three consecutive weeks and included a shorter summary of the study's purpose as well as the total number of responses received. Techniques utilized for email communication were consistent with Dillman's survey methodology (Dillman et al., 2014). Furthermore, to increase response rates, the first 100 respondents received a \$15 Amazon gift card.

### **3.5. Data Analysis**

Data management strategies were used to fit the data into formats necessary for analysis. Data analysis was conducted using SPSS and EXCEL. Texas 4-H alumni data were cleaned and evaluated. Because data were collected through an electronic survey, minimal cleaning was required. The first question asked participants if they attended college. Respondents who answered "No", were removed from the data set. All cases where study participants failed to complete the entire survey were removed as well.

Central tendency, dispersion, and shape of distributions were described through statistics and visual displays of data. Hypotheses about group differences (Texas 4-H alumni vs. others) were tested using *t*-tests and chi square. Relations between scale

variables (interval- and ratio level measurement) were tested through Pearson correlation coefficients, scatterplots, and multiple regression analysis. Binary logistic regression was used to test hypotheses about enrollment in dual credit courses, time-to-completion (4- and 5- year completion), and program quality.

## 4. RESULTS

The results of this study are discussed in four sections. The first section includes results pertaining to the four goals set forth by THECB's 60x30TX as predicted by H<sub>1</sub> through H<sub>3</sub>. The second section describes evaluation of academic preparation and thus includes tests of H<sub>4</sub> (ACT scores) and H<sub>5</sub> (enrollment in dual credit courses). Section three describes testing of hypotheses about relations between marketable skills, time-to-completion, and sparks and dosage (H<sub>6</sub> through H<sub>10</sub>). The fourth section presents results of the examination between program quality and academic performance (H<sub>11</sub> and H<sub>12</sub>).

Before interpreting the hypotheses tests, it is important to note the response rate for the supplemental survey. As mentioned in the procedures section, Texas 4-H Alumni received a total of four emails in regard to completing the supplemental survey. Table 4.1 outlines the 11% response rate. In short, there were 2,618 possible total responses, with 292 alumni actually completing the survey.

**Table 4.1 Supplemental Survey Distribution**

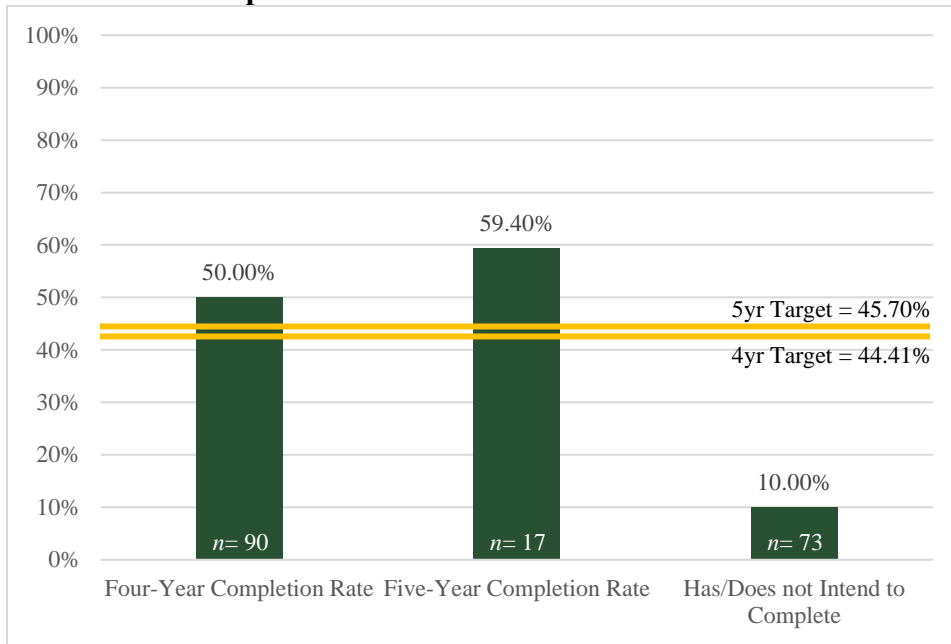
Status	N	%
Sent	4,761	100.00
Failed	1	0.02
Started	324	6.80
Finished	292	6.10
Bounced	1,159	24.34
Duplicate	1,967	41.31

## **4.1. Texas 4-H Alumni 60x30TX Performance**

### **4.1.1. H<sub>1</sub>: Texas 4-H alumni will complete post-secondary credentials at a faster rate.**

The THECB established a progressive target based on completion rates per year needed to obtain and stay on track to achieve 60% by the year 2030. Figure 4.1 shows the 4-H alumni time-to-completion rates compared to the progressive targets established by THECB. The four-year completion rate target is 44.41%, and the five-year target is 45.70%. The four-year completion rates of 4-H alumni is 50% and the five-year completion rate is 59.40%. The four-year completion rate of 4-H alumni is not significantly greater than the THECB target ( $t_{179} = 1.496, p=.068$ ), but the five-year rate of 4-H alumni is significantly greater than the target ( $t_{179} = 3.745, p<.001$ ). Performance on this metric for 4-H alumni scholars is parallel to that of the larger 4-H alumni sample. The four-year completion rate difference was not statistically significant ( $t_{68} = 1.523, p=.132$ ), but the five-year rate difference was statistically significant ( $t_{68} = 2.304, p=.024$ ).

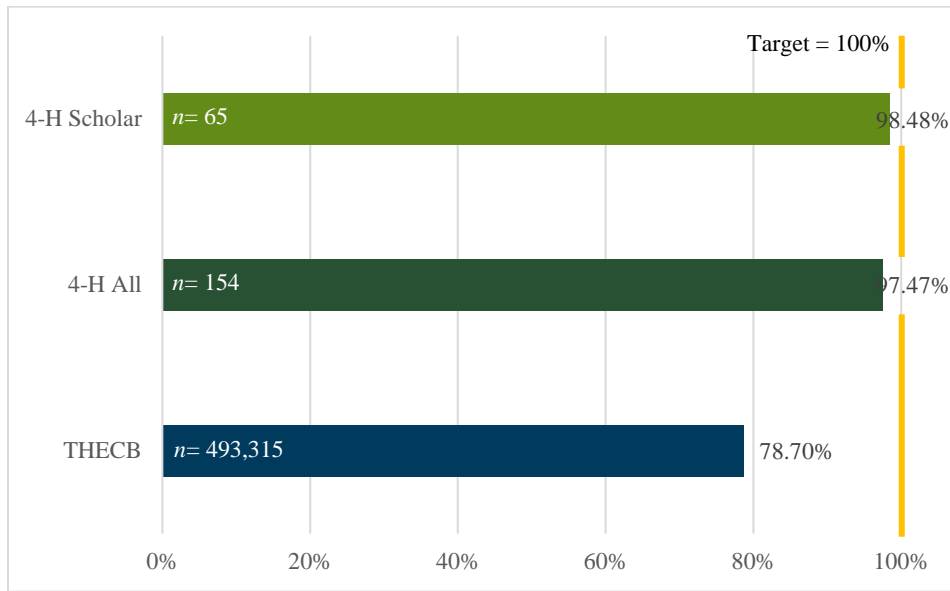
**Figure 4.1 Time-to-Completion Across Texas 4-H Alumni**



**4.1.2. H<sub>2</sub>: Texas 4-H alumni will be more marketable.**

THECB defines marketable skills as either being employed or in graduate school one year following graduation. Figure 4.2 compares the presence of marketable skills of THECB (all Texas students), 4-H alumni, and 4-H alumni scholars to the progressive target established by THECB. The progressive target of 100% is shown as a horizontal line in Figure 4.2. The THECB population developed marketable skills at a rate of 78.70% (21.3% below the target). 4-H alumni and alumni scholars developed those skills at a rate of 97.47% (2.53% below the target), and at a rate of 98.48% (1.52% below the target) respectively. The differences between performance of the two 4-H groups and the THECB group is statistically significant (4-H alumni:  $t_{157}=14.971$ ,  $p<.001$ ; 4-H alumni scholars:  $t_{65}=13.058$ ,  $p<.001$ ).

**Figure 4.2 Marketable Skills**



**4.1.3. H3: Texas 4-H alumni will have lower student loan debt.**

The progressive target established for student loan debt by THECB is no more than \$0.60 cents per dollar of debt. THECB population had a debt ratio of \$0.52 per \$1. The 4-H alumni reported significantly less debt than the THECB target and the THECB population (Table 4.2). The 4-H alumni reported \$0.37, and the 4-H alumni scholars reported \$0.22.

**Table 4.2 Student Loan Debt Comparisons**

	THECB Target <sup>1</sup>		THECB Performance <sup>2</sup>		<i>p</i>	Cohen's <i>d</i>
	MD ¢ per \$	<i>t</i> (df)	MD ¢ per \$	<i>t</i> (df)		
4-H All	0.22	-3.74(142)	0.15	-2.41(142)	<.001	0.74
4-H Scholar	0.37	-6.58(60)	0.29	-5.15(60)	<.001	0.45

<sup>1</sup>THECB Target: < 60¢ per \$1.00; <sup>2</sup>THECB Performance: 52¢ per \$1.00  
 4-H All: *n*= 143; 4-H Scholar: *n*= 61

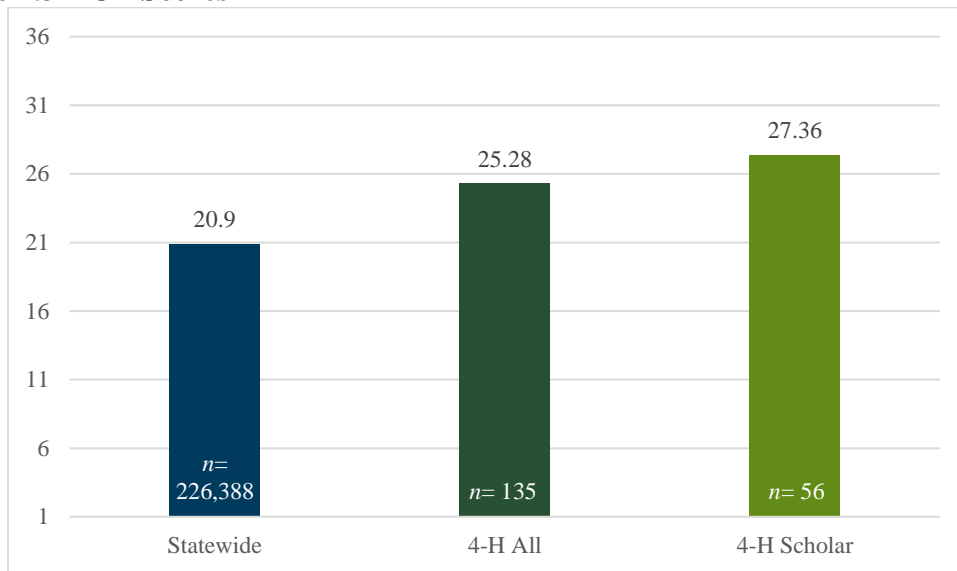


## 4.2. Texas 4-H Post-Secondary Academic Preparation

### 4.2.1. H<sub>4</sub>: Texas 4-H alumni will have higher ACT scores.

The statewide average score for the ACT was 20.9, with the scoring range being between 1-36 (ACT, 2014). In contrast, 4-H alumni reported an average ACT score of 25.28, and 4-H alumni scholars reported an average score of 27.36. As shown in Figure 4.3, both of these differences are statistically significant (Table 4.3).

**Figure 4.3 ACT Scores**



**Table 4.3 ACT Score Comparisons**

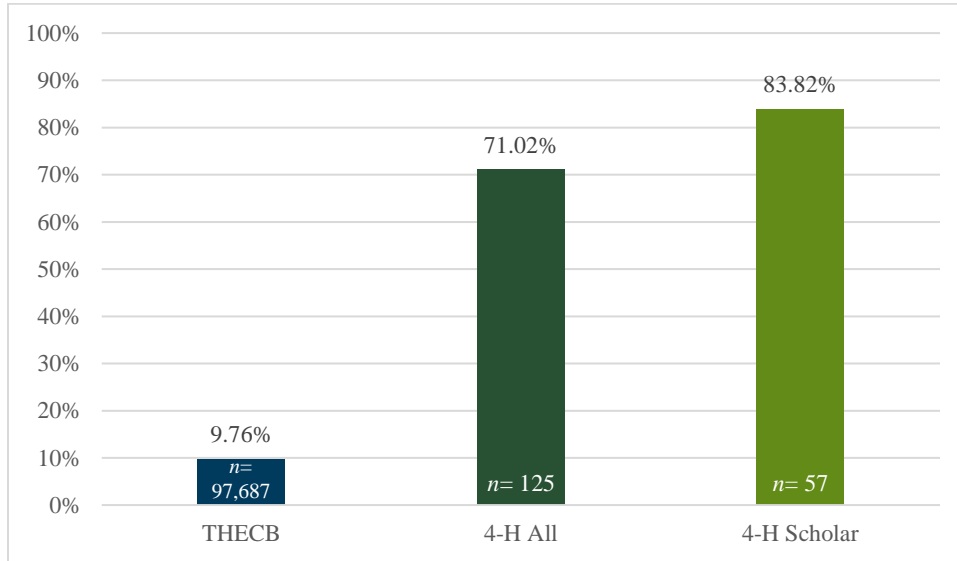
	MD	Statewide Performance <sup>1</sup> <i>t</i> (df)	<i>p</i>	Cohen's <i>d</i>
4-H All	4.38	9.65(134)	<.001	5.28
4-H Scholar	6.46	10.39(55)	<.001	4.65

<sup>1</sup>The statewide average ACT score was 20.9. “MD” is the difference between 4-H alumni scores and this statewide average.

Statewide: *n*= 226,388; 4-H All: *n*= 135; 4-H Scholar: *n*= 56

**4.2.2. H5: Texas 4-H alumni will have higher completion rates of dual credit courses.**

**Figure 4.4 Dual Credit Enrollment**



**Table 4.4 Dual Credit Comparisons**

	Performance	Statewide Performance <sup>1</sup>			
		MD	t(df)	p	Cohen's d
4-H All	71.02%	0.27	-7.75(175)	<.001	0.46
4-H Scholar	83.82%	0.14	-3.06(67)	0.003	0.37

<sup>1</sup> The statewide performance was 9.76%. “MD” is the difference between 4-H alumni enrollment percentages and this statewide average.

THECB: n= 97,687; 4-H All: n= 125; 4-H Scholar: n= 57

Dual credit courses are college courses taken while in high school. Students receive both college and high school credit for the course. Figure 4.4 shows 9.7% of THECB population enrolled in dual credit courses, compared to 71.0% and 83.82% of 4-H alumni and alumni scholars, respectively. The differences between performance of

the two 4-H groups and the THECB group is statistically significant (4-H alumni:  $t_{175} = -7.75, p < .001$ ; 4-H alumni scholars:  $t_{67} = -3.06, p = .003$ ).

### **4.3. Dimensions of Participation Across Texas 4-H**

#### **4.3.1. H<sub>6</sub>: Marketable skills of Texas 4-H alumni varies by the presence of sparks.**

Only 2.53% ( $n=4$ ) 4-H alumni reported not having marketable skills, as compared to 21.30% ( $n= 133,505$ ) of THECB. Thus, variation in the 4-H alumni data was insufficient for testing the hypothesis about marketable skills.

#### **4.3.2. H<sub>7</sub>: Time-to-completion of Texas 4-H alumni varies by the presence of sparks.**

Time-to-completion measures the number of years taken to complete a post-secondary degree or certificate. The regression model was not significant ( $F_{1,164} = 1.993, p = .160, R^2 = .012$ ).

#### **4.3.3. H<sub>8</sub>: As dosage in Texas 4-H increases, marketable skills increase.**

Variation for the relationship between dosage and marketable skills was insufficient to test this hypothesis. Only four respondents reported not having marketable skills.

#### **4.3.4. H<sub>9</sub>: As dosage in Texas 4-H increases, time-to-completion decreases.**

Time-to-completion was regressed on six dimensions of dosage: years in 4-H, and depth of involvement in each of the “Big 5” programs of Texas 4-H: (1) Agriculture and Livestock; (2) Family and Community Health; (3) Leadership and Citizenship; (4) Natural Resources; and (5) STEM. The regression model was not significant ( $F_{6,164} = 1.952, p = .075, R^2 = .067$ ).

#### **4.3.5. H<sub>10</sub>: As dosage in Texas 4-H increases, student loan debt ratios decrease.**

The six dimensions of dosage as noted in H<sub>9</sub> were used to test this hypothesis. The relationship between dosage and debt ratios among 4-H alumni was not significant ( $F_{6,54}=1.28, p=.417, R^2=.103$ ).

#### 4.4. Texas 4-H Program Quality

##### 4.4.1. H<sub>11</sub>: Time-to-completion of Texas 4-H alumni decreases as the quality of the Texas 4-H programs in which they participated increases.

Program quality was measured with six items ( $\alpha=.935$ ). Table 4.5 shows the results of binary logistic regression of four- and five-year completion rates on program quality. Relations were not significant in either model (4-year:  $p=.271, R^2=.007$ ; 5-year:  $p=.053, R^2=.023$ ).

**Table 4.5 Time-to-Completion on Program Quality**

	B	S.E	Wald	df	Sig.	Exp(B)
<b>Four-Year</b>						
Program Quality Score	0.007	0.006	1.214	1	0.271	1.007
Constant	-0.540	0.515	1.098	1	0.295	0.583
<b>Five-Year</b>						
Program Quality Score	0.012	0.006	3.729	1	0.053	1.013
Constant	-.532	0.514	1.07	1	0.301	0.587

##### 4.4.2. H<sub>12</sub>: As the quality of the Texas 4-H programs in which Texas 4-H alumni participated increases, dual credit enrollment increases.

Binary logistic regression was also used to test the relation between dual credit enrollment and program quality. Table 4.6 shows the relation is not statistically significant ( $p=.452, R^2=.003$ ).

**Table 4.6 Dual Credit on Program Quality**

	B	S.E	Wald	df	Sig.	Exp(B)
Program Quality Score	0.005	0.007	0.565	1	0.452	1.005
Constant	0.512	0.538	0.907	1	0.341	1.669

## 5. DISCUSSION

Texas 4-H has a long history of contributing to the development of youth. The purposes of this study were to evaluate whether Texas 4-H facilitates progress towards academic success and motivation outcomes. This evaluation comprised of (a) examining if Texas 4-H alumni perform better academically than the population of Texas post-secondary education students, with respect to the four Texas Higher Education Coordinating Board (THECB) 60x30TX goals, (b) examining if Texas 4-H alumni are better prepared for post-secondary education entry than the population of Texas higher education students, and (c) determining if 4-H participation (sparks and dosage) is associated with post-secondary academic motivation and success of Texas 4-H alumni.

Texas 4-H alumni were found to have significantly greater five-year completion rates and marketable skills, lower student loan debt, and they reported substantially higher rates of enrollment in dual-credit courses. Texas 4-H alumni also had higher 4-year completion rates, but the difference was not significant, and increased dosage did not lead to significantly greater academic success.

### **5.1. Key Findings**

The foundational basis for this study were the four metrics established by THECB: educated population, completion, marketable skills, and student debt. Results pertaining to these four metrics, as well as the additional hypotheses evaluating various programmatic outputs, directly align with the literature surrounding the benefits of being involved in OST's, specifically, Texas 4-H. Furthermore, the integration of PYD

principles into Texas 4-H has only enabled the further cultivation and development of academic motivation and success outcomes among its members. Results from tests of hypotheses H<sub>1</sub> through H<sub>3</sub> showed Texas 4-H alumni and alumni scholars outperformed the greater Texas high school group in relation to the four THECB metrics; educated population, completion, marketable skills, and student debt. There is a clear visible connection between time-to-completion and student loan debt. As post-secondary credentials are completed and achieved at a faster rate, access to employment or additional post-secondary educational opportunities will also be achieved faster. This affords Texas 4-H alumni and alumni scholars the prospect of having lower student loan debt to first year income ratios than that of the Texas high school student population.

Hypotheses H<sub>4</sub> and H<sub>5</sub> were both statistically significant and provided substantial context for the results shown in H<sub>1</sub> through H<sub>3</sub>. Texas 4-H groups scored higher on the ACT while also having a higher enrollment rate in dual credit courses. This suggests a higher level of post-secondary academic preparedness as opposed to the statewide population at large. Furthermore, the relationship between academic preparation and success is supported by the notion that youth who are involved in OST's are less likely to engage in high-risk activities, thereby engaging in settings where they are able to reap higher numbers of benefits pertaining to overall success (Witt & Caldwell, 2018). Success in this context, contributes to the notion that enrolling in higher numbers of dual credit courses leads to the connections made regarding the relationships between hypotheses H<sub>1</sub> through H<sub>3</sub>. The outperformance of Texas 4-H alumni and alumni scholars in comparison to the greater statewide population on dual credit enrollment may be

notable, given that 4-H members tend to live in rural areas. Rural youth tend to have limited access to dual credit opportunities than urban youth, yet Texas 4-H alumni and alumni scholars enrolled in such opportunities at a much higher rate. The data collected did not, however, allow determination of the place of residence of respondents.

The trend of success and outperformance among the Texas 4-H groups continues in results of tests of Hypotheses H<sub>6</sub> through H<sub>10</sub>. The marketable skills data did not have sufficient variation to permit testing H<sub>6</sub> (marketable skills and sparks) or H<sub>8</sub> (marketable skills and dosage). Yet, when taking into account what we know about 4-H and the academic performance of its members, the clear connection between involvement in Texas 4-H and presence of academic success and motivation outcomes still remain. For example, the original item added to Arnold and Gagnon's (2020) measure of sparks, still produced high reliability ( $\alpha = .957$ ). Program quality was also measured with Arnold and Gagnon's (2020) item set and also had high reliability ( $\alpha = .935$ ).

## **5.2. Connections to Previous Research**

Academic motivation and success outcomes are often studied through the lens of school-time development. Yet, PYD literature and the recent development of Arnold's (Arnold, 2018; Arnold & Gagnon, 2020a) 4-H Thriving Model has acknowledged academic motivation and success as a pivotal developmental outcome of OST programs, in particular, 4-H. The acknowledgement of academic motivation and success outcomes within 4-H has also been seen in recent research studies pertaining to preparation for post-secondary credentials and generalized academic success. While the sample size was fairly small ( $n=57$ ), Ratkos and Knollenberg (2015) found "4-H can help meet the need



of preparing students to navigate the demands, challenges, and rigor of college life”. Comparative to the Skrocki et al., (2020) study, the Michigan 4-H Alumni College Access Project (2019) found Michigan 4-H alumni are more likely to have earned a college degree six years after high school than their same age peers.

As a result of findings from the 2020 study (Skrocki et al.,) as well as the others mentioned, this research study was the second iteration of evaluating academic success across Texas 4-H alumni and alumni scholars with that of the statewide population. The 2020 study focused on measuring the four metrics as established by THECB and found Texas 4-H alumni and alumni scholars to outperform the greater Texas high school population on numerous measures of post-secondary academic success (Skrocki et al., in review). Due to data availability, this study focused on the high school years of 2013 and 2014, leaving out 2015. Although the “loss” of one high school year proved to be significant as the sample size from the 2020 study was 708 for Texas 4-H alumni and 218 for alumni scholars, the sample size for this study, while a limitation, is still large enough to draw conclusions and evaluate key findings.

### **5.3. Limitations of Study**

Self-selection is a known limitation of any evaluation looking at the impacts of OST programs. In the case of this research, Texas 4-H alumni self-selected themselves to complete the supplemental survey. Clearly, youth who are drawn to participate in 4-H have unique interests, motives, and characteristics. The same could be said for members of any OST program. Generalization from a population of any OST program members to a general population (e.g., youth in Texas) is thus not appropriate.

Keeping this in mind, while the results of the study visually showcased the outperformance of Texas 4-H alumni across academic motivation and success outcomes, the study was not without its own specific limitations. Notably, the sample size for Texas 4-H alumni and alumni scholars in relation to the total number of members for 2013 and 2014 was not overtly proportionate. The supplemental survey produced 295 total responses, however, after data cleaning  $n= 180$  for Texas 4-H alumni and  $n= 70$  for alumni scholars. Depending on the measure and number of alumni able to answer the question, the number of responses fluctuated thereby producing different sample sizes for almost every hypothesis test.

In addition to previous sample size limitations, hypotheses testing the relations between an outcome to the presence of marketable skills, lacked variation. Only 4 out of 158 4-H alumni reported not developing any marketable skills. This notion directly supports a generalized limitation noted in this study and numerous others of similar caliber. Texas 4-H alumni are successful individuals and their involvement in Texas 4-H only contributes to and enhances their substantial outperformance when compared to the greater statewide population across various developmental outcomes (Skrocki et al, in review; Michigan, 2019; Ratkos & Knollenberg, 2015).

#### **5.4. Recommended Direction for Future Research**

Like the outcome of the Skrocki et al. (2020) study, while compelling, the results of this study do not show a definitive direction of cause and effect between academic motivation and success with involvement in Texas 4-H. Future research on this relationship and supplemental effect, should include a larger sample of Texas 4-H

alumni and explore more effective ways to compare hypotheses with that of the larger statewide population. This could be accomplished by expanding and including subsequent years of Texas 4-H alumni or partnering with the THECB to gain additional data from them directly. Yet, it is important to acknowledge that results in both this study and the 2020 study (Skrocki et al.) demonstrate Texas 4-H alumni excelling substantially academically in relation to the greater statewide population. These studies support the argument that Texas 4-H attracts members who excel academically during their high school years, a trend which clearly continues well into their completion of post-secondary credentials.

Given this acknowledgement, future studies and research should be devoted to exploring programmatic outputs specifically in relation to the “Big 5” project areas within Texas 4-H. In conducting such research, results will be able to assist in the identification of project areas promoting higher levels of thriving and more substantial or successful development of academic motivation and success outcomes. Furthermore, the data set resulting from the supplemental survey has the potential to provide evidence for a myriad of outputs pertaining to the relationship between sparks, dosage, and program quality within Texas 4-H. This relationship while tangential to academic motivation and success outcomes, will prove to be exceptionally useful in understanding the innerworkings of Texas 4-H programs.

Such research also has the propensity to shed a bit of light into the black box phenomenon within youth programs (Yohalem & Wilson-Ahlstrom, 2010). The black box is a metaphor representing the unknown features of a program leading to

developmental outcomes. All black box effects may never be known. This study, though, included processes that can be used to uncover some of the effects. Most notably, measures of sparks, 4-H dosage, dosage of other OST programs, and program quality were taken. Comprehensive analysis of these data was beyond the scope of this thesis project, but preliminary analyses revealed moderate empirical relations among these black box features. Regression coefficients ranged from .32 (relation between program quality and sparks) to .67 (dosage and sparks). Future research is needed to confirm these relations and to estimate relations between participation in non 4-H OST programs and sparks. Such research represents an appropriate beginning to the process of understanding the contents of the black box.

## REFERENCES

- About the Texas 4-H Foundation.* (2021). Texas 4-H Foundation.  
<https://texas4hfoundation.org/>
- American College Testing.* (2014). ACT Profile Report – State, Graduating Class 2014, Texas. <https://www.act.org/content/dam/act/unsecured/documents/Natl-Scores-2014-Texas.pdf>
- Arnold, M. (2018). From context to outcomes: Adolescent thriving in 4-H Youth Development Programs. *Journal of Human Science and Education, 6(a)*, 141-160.
- Arnold, M., Silliman, B., Bledsoe, L., Diaz, L., Johnson, J., Lauxman, L., Miner, G., & White, D. (2016). *4-H program quality and accountability task force: PYD framework committee final report.*
- Arnold, M., & Gagnon, R. (2020a). Positive youth development theory in practice: An update on the 4-H Thriving Model. *Journal of Youth Development, 15(16)*, 1-23.
- Arnold, M., & Gagnon, R. (2020b). Illuminating the process of youth development: The mediating effect of thriving on youth development program outcomes. *Journal of Human Sciences and Extension, 7(3)*, 24-51.
- Arnold, M., & Silliman, B. (2017). From theory to practice: A critical review of positive youth development program frameworks. *Journal of Youth Development, 12(2)*, 1-20.
- Benson, P. L., Scales, P. C., & Syvertsen, A. K. (2011). The contribution of the developmental assets framework to positive youth development theory and

- practice. In R. M. Lerner, J. V. Lerner, & J. B. Benson (Eds.). *Advances in child development and behavior*. (pp. 125-228). Elsevir Publishing.
- Borden, L., Perkins, D., & Hawkey, K. (2014). 4-H youth development: The past, the present, and the future. *Journal of Extension*, 52(4).
- Chavez, J. (1978) *A primer on the construction and testing of theories in sociology*. F.E. Peacock Publishers, INC., Itasca, IL.
- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: the tailored design method*. John Wiley & Sons.
- Eccles, J., Gootman, J. A., & National Research Council. (2002). Institute of Medicine. *Community Programs to Promote Youth Development*. The National Academies Press. <https://doi.org/10.17226/10022>.
- Geldhof, G., Bowers, E., Boyd, M., Mueller, M., Napolitano, C., Schmid, K., Lerner, J., & Lerner, R. (2014). Creation of short and very short measures of the five cs of positive youth development. *Journal of Research on Adolescence*, 24(1), 163-176.
- Hamilton, S. (1999). *A three-part definition of youth development*. Unpublished manuscript, Cornell University College of Human Ecology, Ithaca NY.
- Hamilton, S., Hamilton, M., & Pittman, K. (2004). Principles for youth development. In S. Hamilton & M. Hamilton (Eds.). *The youth development handbook: Coming of age in American communities* (pp. 3-22). Thousand Oaks, CA: Sage Publications, Inc.

Heck, K. E., & Subramanian, A. (2009). *Youth development frameworks* (University of California 4-H Center for Youth Development Monograph). Davis, CA: University of California.

Hendricks, P. A. (1996). *Targeting life skills model*. Ames, IA: Iowa State University Extension.

*History of 4-H Youth Development Organization*. (2021). 4-H History. <https://4-h.org/about/history/>.

Kress, C. (2005). Essential elements of positive youth development. In *Strengthening positive youth development environments* (pp. 20–23). Madison, WI: University of Wisconsin Extension 4-H Program.

Larson, R. (2000). Toward a psychology of positive youth development. *American Psychologist*, 55, 170-183.

Lerner, R. M., Lerner, J. V., Almerigi, J., Theokas, C., Phelps, E., Gestsdottir, S., Naudeau, S., Jelicic, H., Alberts, A. E., Ma, L., Smith, L. M., Bobek, D. L., Richman-Raphael, D., Simpson, I., Christiansen, E. D., & von Eye, A. (2005). Positive youth development, participation in community youth development programs, and community contributions of fifth grade adolescents: Findings from the first wave of the 4-H Study of Positive Youth Development. *Journal of Early Adolescence*, 25(1), 17-71.

Lerner, R. M., Lerner, J. V., von Eye, A., Bowers, E. P., & Lewin-Bizan, S. (2011). Individual and contextual bases of thriving in adolescence: A view of the issues.

*Journal of Adolescence*, 34(6), 1107-1114.

doi:10.1016/j.adolescence.2011.08.001

Lerner, R., Dowling, E., & Anderson, P. (2019). Positive youth development: Thriving as the basis of personhood and civil society. *In Beyond the Self* (pp.172-180). Routledge.

Lerner, R., Fisher, C., & Weinberg, R. (2000). Toward a science for and of the people: Promoting civil society through the application of developmental science. *Child Development*, 71(1), 11-20.

Lerner, R. M., & Lerner, J. V. (2013). *The positive development of youth: Comprehensive findings from the 4-H study of positive youth development*. National 4-H Council.

Lodge, M. (1981). *Magnitude scaling*. SAGE Publications, Inc.

<https://www.doi.org/10.4135/9781412984874>

*Michigan 4-H Alumni College Access Project*. (2019). Manual for the Patterns of Adaptive Learning Scales. Ann Arbor, MI: University of Michigan.

Peterson, B., Gerhard, G., Hunter, L., Marek, L., Phillips, C., & Titcomb, A. (2001). *Prepared and engaged youth serving American communities: The National 4-H Impact Assessment Project*. Washington, DC: National 4-H Headquarters.

Ratkos, J., & Knollenberg, L. (2015). College transition study shows 4-H helps youth prepare for and succeed in college. *Journal of Extension*, 53(4).

Reeve, J. (2018). *Understanding motivation and emotion*. Hoboken, NJ: John Wiley and Sons.



- Roth, J., & Brooks-Gunn, J. (2003). What exactly is a youth development program? Answers from research and practice. *Applied Developmental Science, 7*(2), 94-111.
- Scales, P., Benson, P., & Roehlkepartian, E. (2011). Adolescent thriving: The role of sparks, relationships, and empowerment. *Journal of Youth and Adolescence, 40*, 263-277.
- Schutz, H., & Cardello, A. (2001). A labeled affective magnitude (LAM) scale for assessing food liking/disliking. *Journal of Sensory Studies, 16*, 117-159.  
10.1111/j.1745-459X.2001.tb00293.
- Search Institute. (1997). 40 developmental assets for adolescents (ages 12-18). Minneapolis, MN: Search Institute.
- Search Institute. (2007). 40 developmental assets for adolescents (ages 12-18). Minneapolis, MN: Search Institute.
- Skrocki, A., Locke, D., Ellis, G., & Williams, M. (in review) Academic performance of 4-H members. *Journal of Extension*.
- Smith, C., & Hohmann, C. (2005). *Full findings from the Youth PQA validation study*. Ypsilanti, MI: High/Scope Educational Research Foundation.
- Texas 4-H Though the Year*. (n.d.). Texas 4-H.
- Texas Higher Education Coordinating Board*. (2019). 60x30TX Progress Report. Austin, TX. <https://www.highered.texas.gov/>

Weiss, H., Little, P., & Bouffard, S. (2005). More than just being there: Balancing the participation equation. *New Directions for Youth Development*, (105), 15-10.

<https://doi.org/10/1002/yd.105>.

*What is Texas 4-H.* (n.d.). Texas 4-H. <https://texas4h.wpengine.com/about/what-is-4-h/>.

Witt, P., & Caldwell, L. (2018). *Youth development: Principles and practices in out-of-school time settings*, 2nd ed. Urbana, IL: Sagamore-Venture.

Yohalem, N., & Wilson-Ahlstrom, A. (2010). Inside the black box: Assessing and improving quality in youth programs. *American Journal of Community Psychology*, 45(3-4), 350-357. <https://doi.org/10.1007/s10464-010-9311-3>.

Zetterberg, H. (1954). *On theory and verification in sociology*. 3rd ed. The Bedminster

Press. Totowa, NJ.

## APPENDIX A

### SUPPLEMENTAL SURVEY EMAIL

Dear Texas 4-H Alumnus and/or Family,

The Texas 4-H Youth Development Program and the Texas 4-H Youth Development Foundation respectfully requests your participation in a survey to determine ‘Academic Motivation and Success of Texas High School Graduates who were and were not Involved in Texas 4-H’. Results will help us design impactful programs and secure funding that will help us ensure that future 4-H participants succeed. Data from this study are also vital to Ms. Skrocki completing her master’s thesis at Texas A&M University.

The anonymous survey should take less than 10 minutes to complete. We will be providing \$15 Amazon gift cards to the first 100 people who provide valid responses. This message has been sent to the family and member email addresses that were in 4HConnect at the time of the youth’s enrollment. If you are not the 4-H alumni, we respectfully ask you to forward this to your son or daughter so that he/she may complete the survey.

Thank you for considering assisting us with the survey and greater research endeavor. To complete the survey, please click here:

Sincerely,

Alexandra Skrocki  
Graduate Student and AgriLife Extension Research Assistant

Montza Williams  
Texas 4-H Program Director

David White  
Executive Director  
Texas 4-H Youth Development Foundation

## APPENDIX B

### SUPPLEMENTAL SURVEY

**Block: Basic Information (11 Questions)**  
**Standard: 60x30TX (4 Questions)**  
**Standard: Student Preparation (3 Questions)**  
**Standard: Elements of Participation (19 Questions)**  
**Standard: Texas 4-H Program Quality (6 Questions)**

**End Survey:**

---

Start of Block: Basic Information

Q1 This study looks at the '***Academic Motivation and Success of Texas High School Graduates***'. As a 2013 or 2014 high school graduate and an alumni of Texas 4-H, you were selected as a possible participant. Thank you again for your assistance in taking this survey.

---

Q2 To confirm, did you graduate high school in 2013 or 2014?

- Yes
- No

*Skip To: End of Survey If To confirm, did you graduate high school in 2013 or 2014? = No*

---

Q3 After high school, did you attend college?

- Yes
- No

*Skip To: End of Survey If After high school, did you attend college? = No*

---

Q4 What is your gender?

- Male
  - Female
  - Non-binary
  - Prefer to Self-Define
  - Prefer not to answer
- 

Q5 Are you Spanish, Hispanic, or Latino or none of these?

- Spanish
  - Hispanic
  - Latino
  - None of these
- 

Q6 Choose one or more races that you consider yourself to be:

- White
  - Black or African American
  - American Indian or Alaska Native
  - Asian
  - Native Hawaiian or Pacific Islander
  - Other \_\_\_\_\_
-

Q7 What is your Age?

▼ younger than 20 ... older than 28

---

Q8 Which Texas 4-H Foundation scholarship(s) did you receive, if any?

- I did not receive a Texas 4-H Foundation scholarship
  - HLSR - Houston Livestock Show and Rodeo (awarded at Texas 4-H Roundup)
  - SALE - San Antonio Livestock Exposition (awarded at Texas 4-H Roundup)
  - WALL - Richard Wallrath Education Foundation (awarded at Texas 4-H Roundup)
  - 4HFD - Texas 4-H Youth Development Foundation (awarded at Texas 4-H Roundup)
- 

Q9 Please select the option that best identifies your high school type.

- Public School
  - Private School
  - Charter School
  - Home School
  - Magnet or Specialized School (eg. School for the Arts, School for Math and Science)
  - Other: \_\_\_\_\_
-



Q12 What year did you first graduate college, with either a certificate or degree?

- 2017
- 2018
- 2019
- 2020
- 2021
- I have not yet graduated college or university, but I intend to.
- I do not intend to complete a college or university certificate or degree.

*Skip To: End of Block If What year did you first graduate college, with either a certificate or degree? = I do not intend to complete a college or university certificate or degree.*

*Skip To: End of Block If What year did you first graduate college, with either a certificate or degree? = I have not yet graduated college or university, but I intend to.*

Q13 In the year following graduation, were you either enrolled in higher education for an additional degree or certificate, working (full-time, part-time, self-employed), or both?

- Yes
- No

Q14 Upon graduating from college, approximately how much student loan debt did you have (in thousands)?

0 10 20 30 40 50 60 70 80 90 100



Q15 Upon graduating from college, what was your approximate first-year gross income (in thousands)?

0 10 20 30 40 50 60 70 80 90 100



Approximate First Year Gross Income  
( )



---

End of Block: 60x30TX

---

Start of Block: Student Preparation

Q16 Did you take the ACT before entering college?

Yes

No

*Skip To: Q18 If Did you take the ACT before entering college? = No*

---

Q17 **For 2013, the average composite score** (English, mathematics, reading, and science) **in the State of Texas was 21**; the range is 1-36. To the **best of your ability** to remember, what was your score?

1    7    13    19    24    30    36

My ACT Score ( )



---

Q18 Did you complete one or more dual credit courses? A dual credit course is when a high school student enrolls in college course(s) and receives credit for the course(s) from both the college and high school.

Yes

No

---

End of Block: Student Preparation

---

Start of Block: Elements of Participation

Q19 How many years were you a member of Texas 4-H?

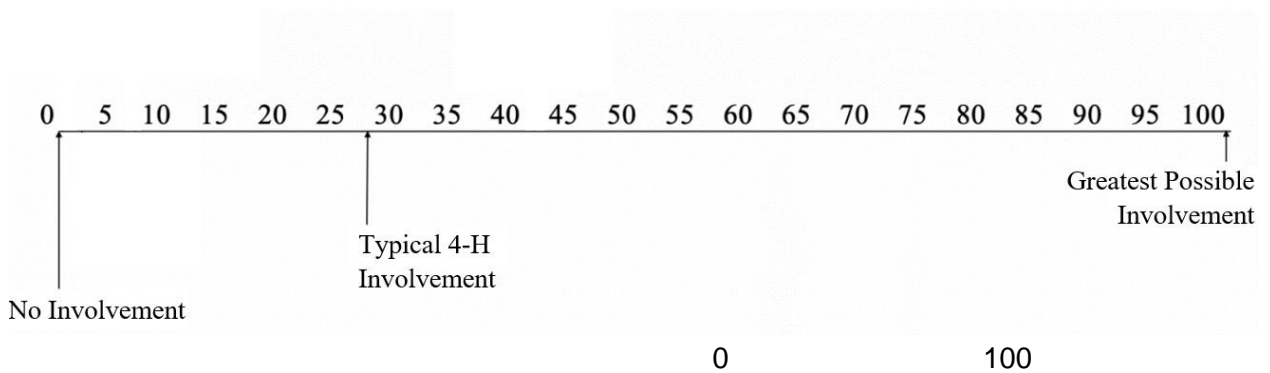
0    1    2    4    5    6    7    8    10    11    12

Years Enrolled ( )	
--------------------	--

Q20 Select the project(s) you were involved in during your 4-H membership.

- Agriculture and Livestock (beef cattle, dairy cattle, dog care & training, goats, horses, horticulture, meat science, poultry, rabbits, sheep, swine, or veterinary science)
- Family and Community Health (consumer education, fashion & interior design, foods & nutrition, or health & personal safety)
- Leadership and Citizenship (workforce & career prep, citizenship, community service, global citizenship, leadership, public speaking, theater & performance arts, or youth entrepreneurship)
- Natural Resources (entomology, forestry, outdoor education & living skills, range science, shooting sports, sportfishing, water, or wildlife & fisheries)
- STEM (photography & video, robotics, rocketry & aerospace, or science, technology, engineering, & math)

Q21 Please use the slider scale to represent your depth of involvement in each of the five content areas for the year of greatest involvement. Depth relates to the level of concentration in a specific content area.



Agriculture and Livestock ()	
Family and Community Health ()	
Leadership and Citizenship ()	
Natural Resources ()	
STEM ()	

Q22 Please identify your primary project.

▼ Beef Cattle ... Science, Technology, Engineering, & Math

Q23 For your primary project indicate the level in which you participated.

	Project Group Level	County Level	District Level	State Level
Project Meetings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project Workshops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project Related Tours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Virtual Learning Experiences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Educational Demonstrations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Career Shadowing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q24 On average, how many days per month did your community club meet?

0 3 6 9 12 16 19 22 25 28 31

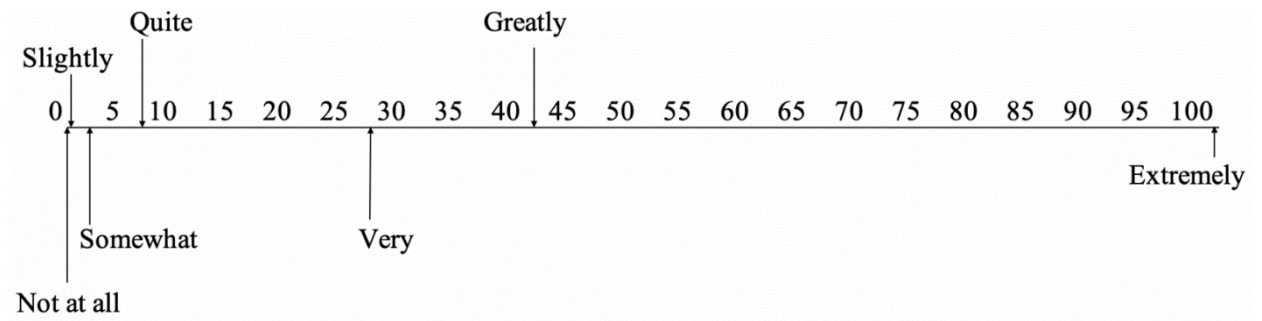
Number of meetings () 

Q25 What percentage of community club meetings were you able to attend?

0 10 20 30 40 50 60 70 80 90 100

Percentage of attendance () 

Q26 Please use the slider below to rate your overall degree of engagement during community club experiences.



0 100  
( ) 

Q27 Who coordinated your community club?

- County Extension Agent
- Adult Volunteer
- My Parent/Guardian
- Other \_\_\_\_\_

Q28 On average, how many days per month did your primary project meet?

0 3 6 9 12 16 19 22 25 28 31

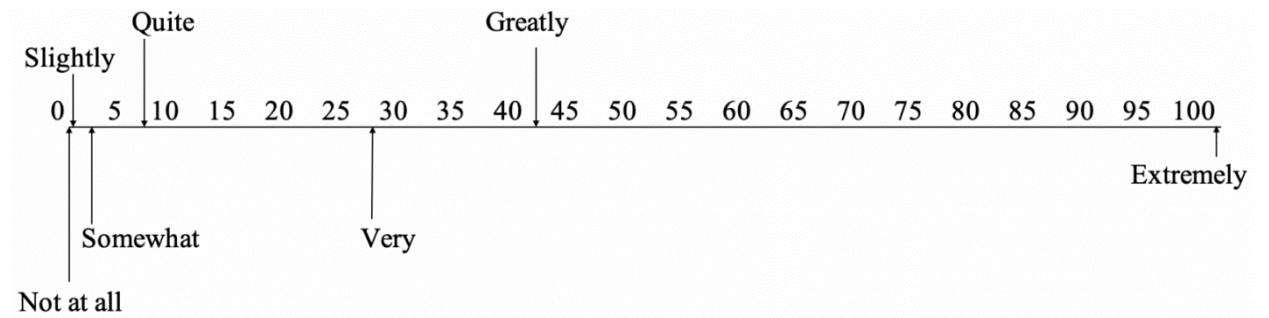


Q29 What percentage of primary project meetings were you able to attend?

0 10 20 30 40 50 60 70 80 90 100



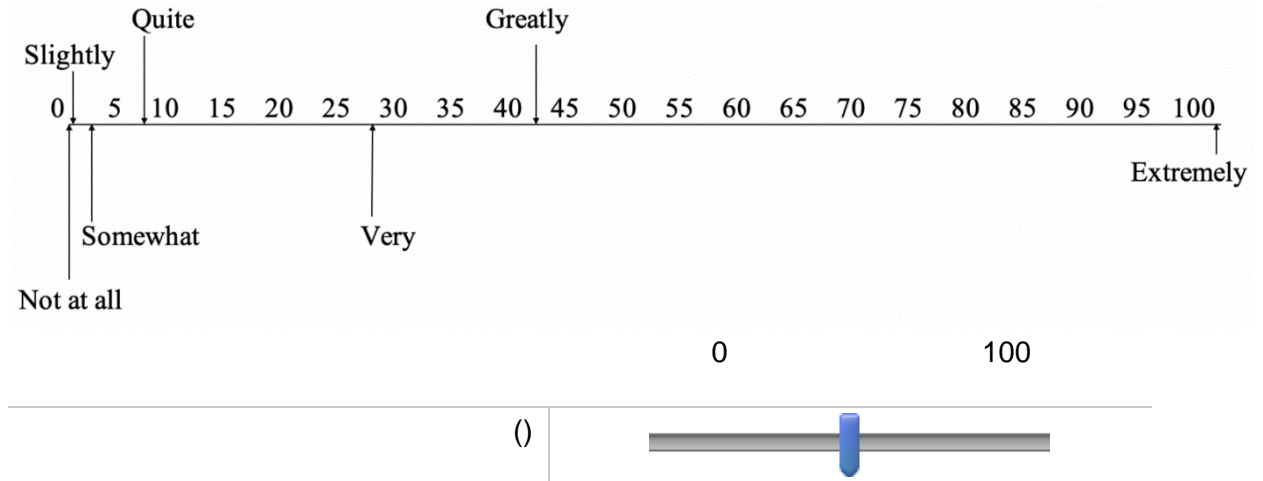
Q30 Please use the slider below to rate your overall degree of engagement during primary project experiences.



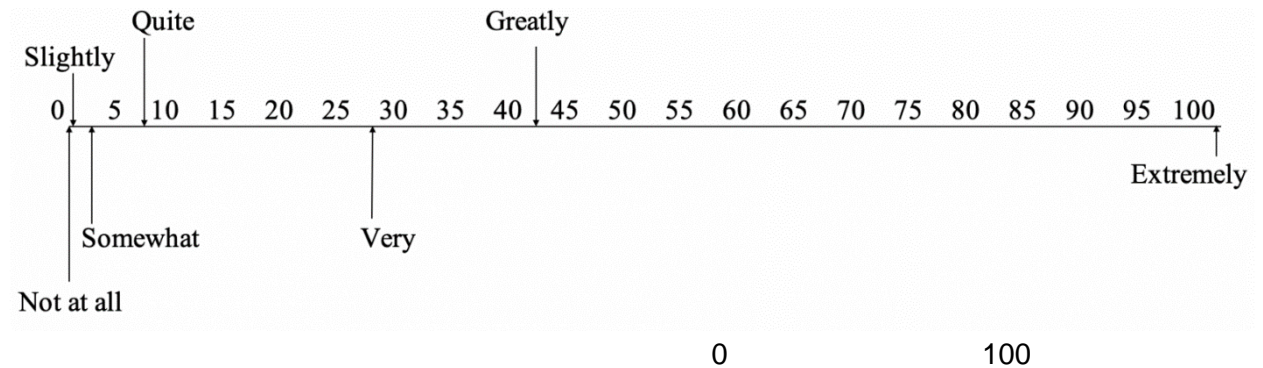
Q31 Who coordinated your primary project?

- County Extension Agent
- Adult Volunteer
- My Parent/Guardian
- Other \_\_\_\_\_

Q32 In general, how passionate were you about the things you did in Texas 4-H?

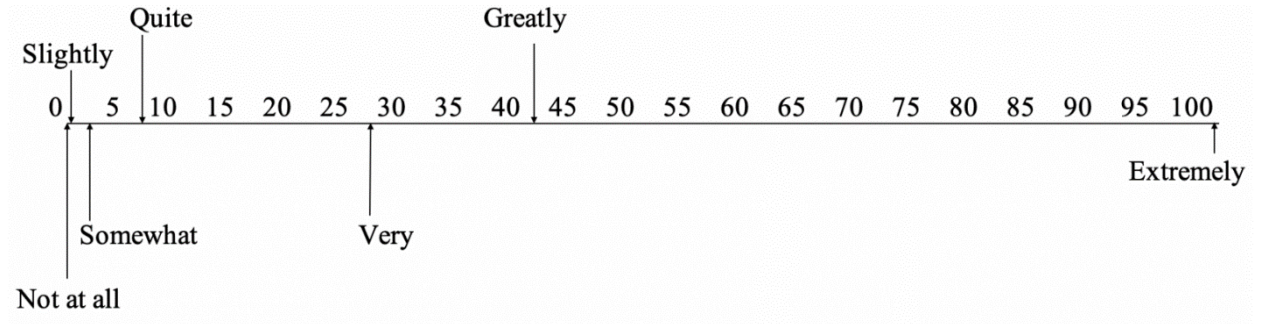


Q33 How strong was your desire to learn all you could about your Texas 4-H project?

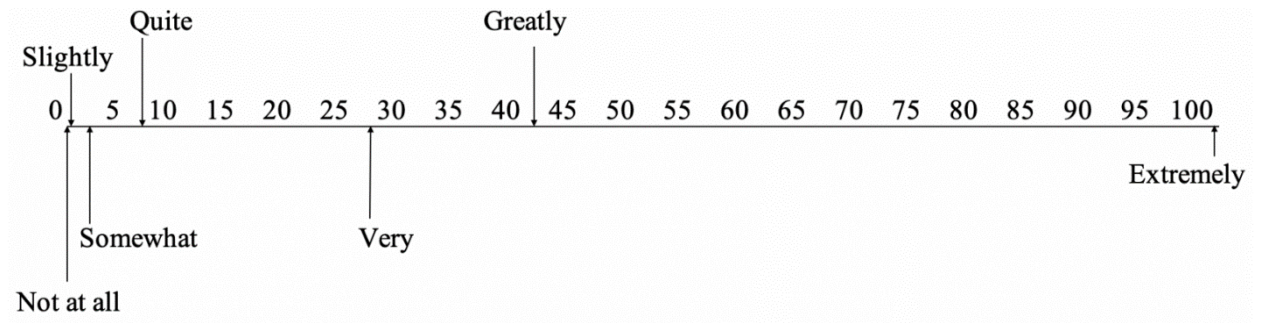




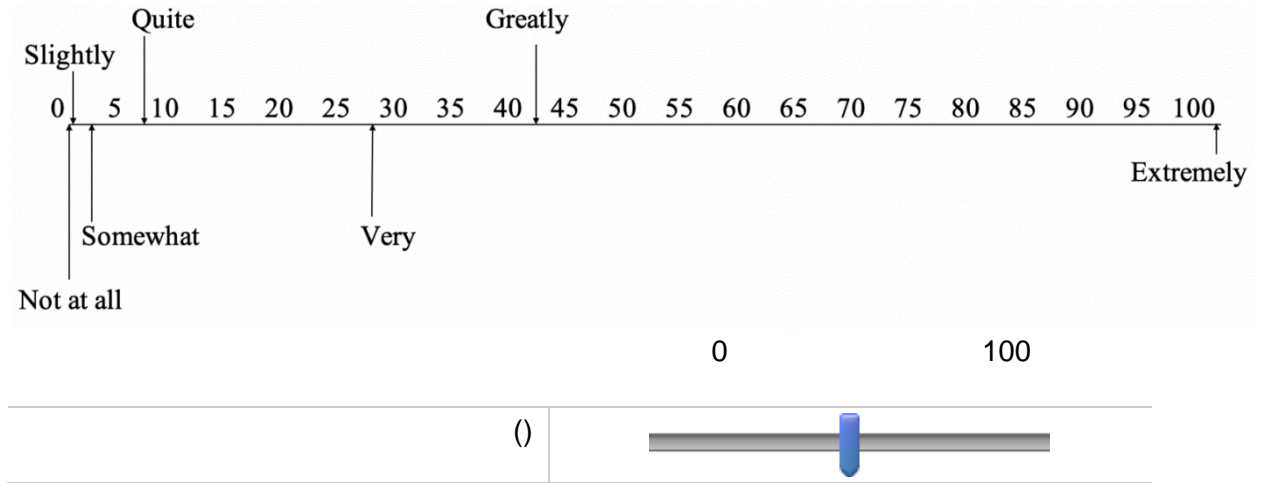
Q34 To what extent was Texas 4-H important to who you were?



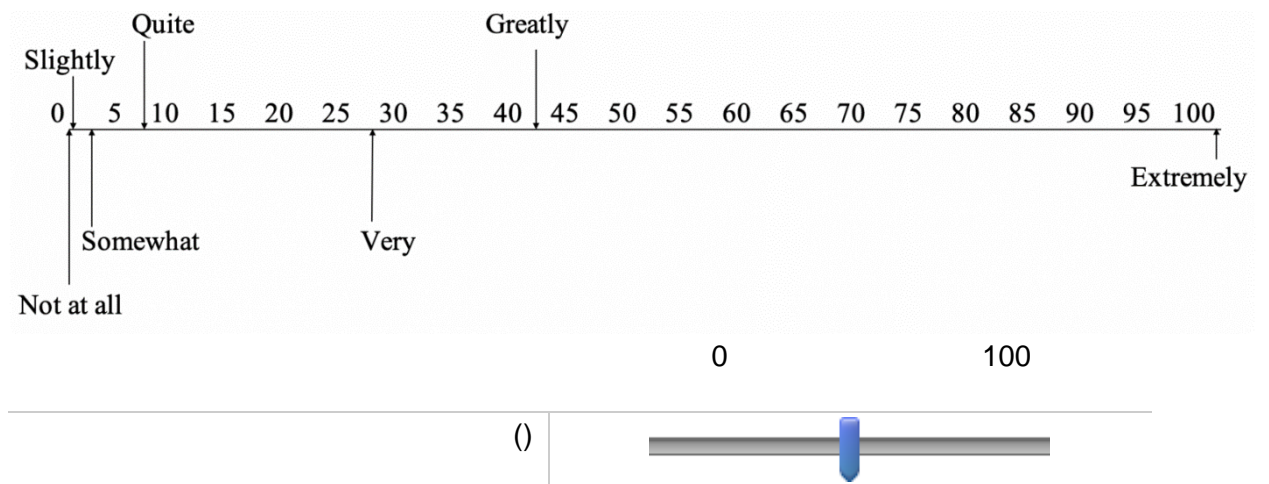
Q35 How enthusiastic were you about your Texas 4-H projects?



Q36 How enthusiastic were you about everything you did in Texas 4-H?



Q37 How impactful was Texas 4-H in helping you discover what you have to offer the world?

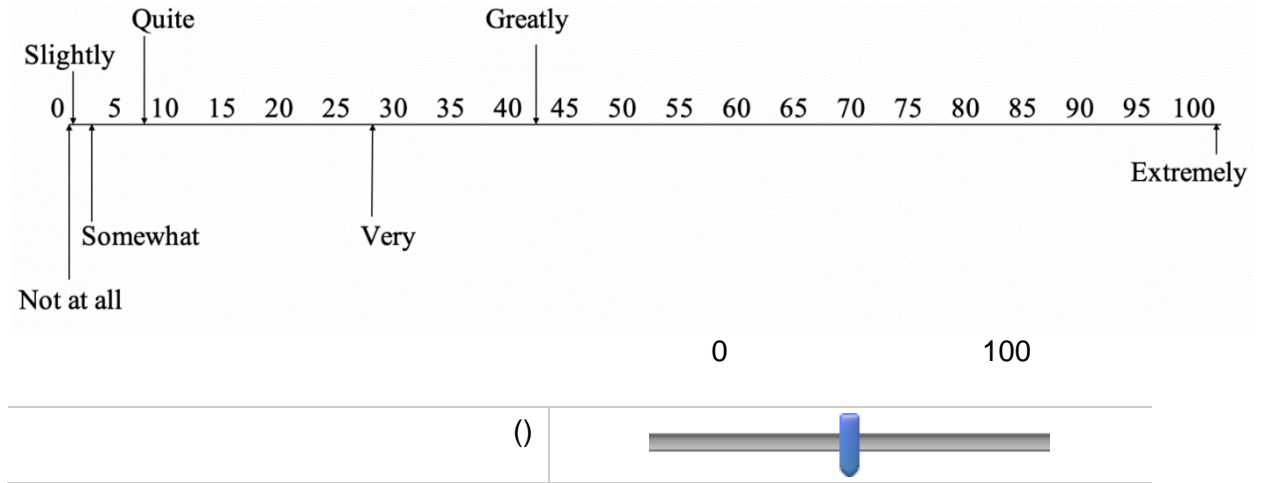


End of Block: Elements of Participation

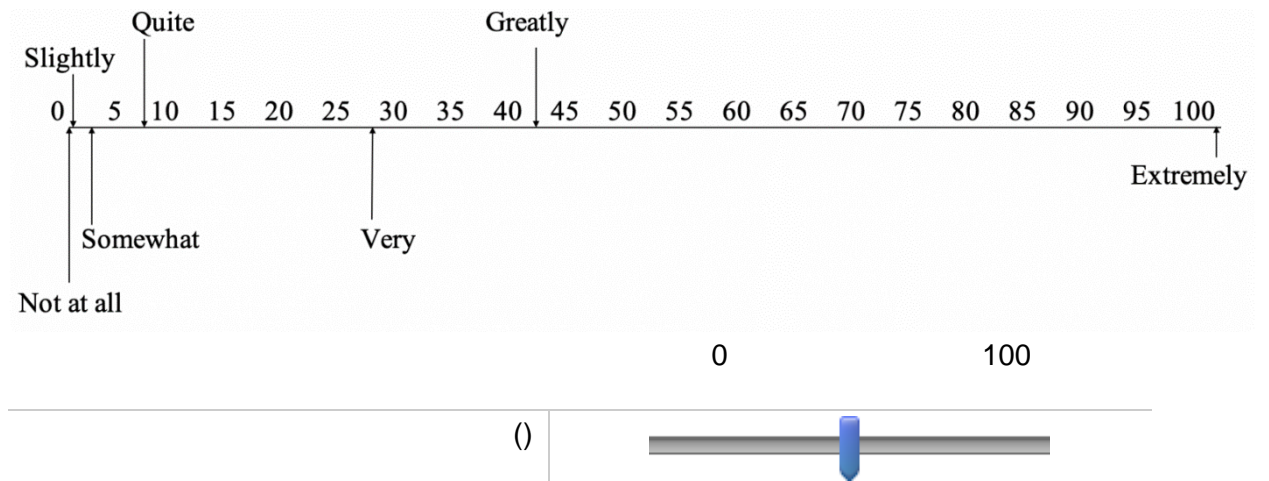
Start of Block: Texas 4-H Program Quality



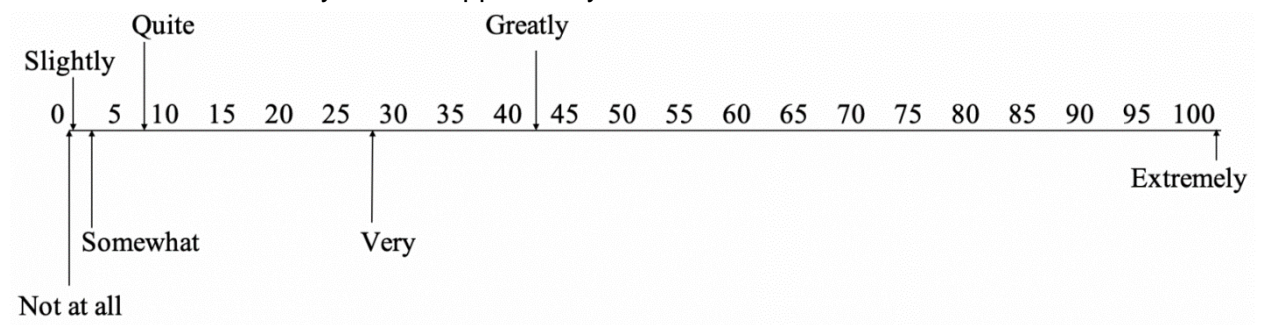
Q38 To what extent did you feel welcome in Texas 4-H?



Q39 To what extent did you feel safe in Texas 4-H?

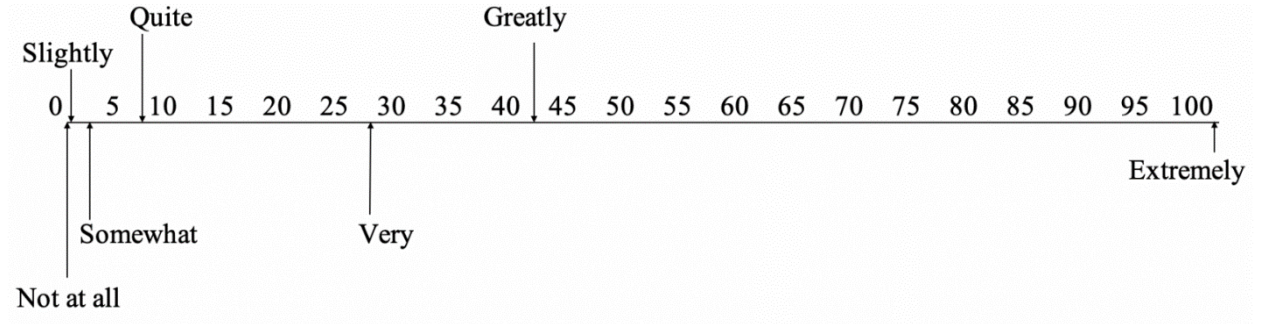


Q40 To what extent did you feel supported by adults in Texas 4-H?

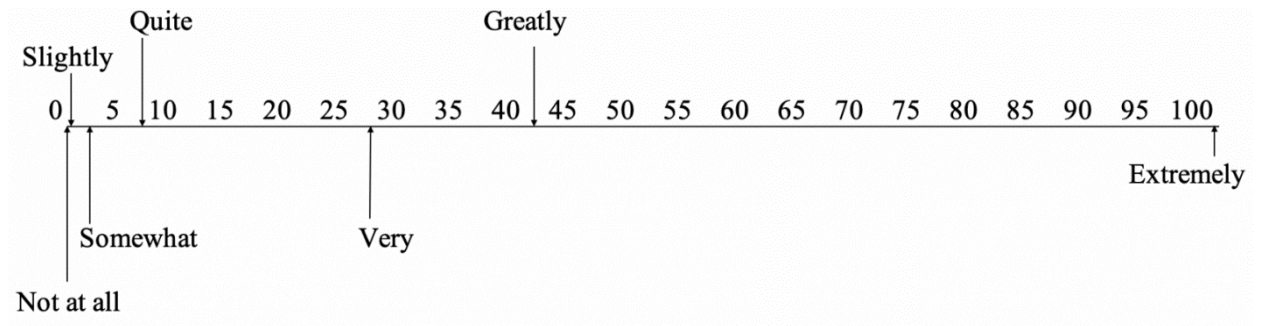




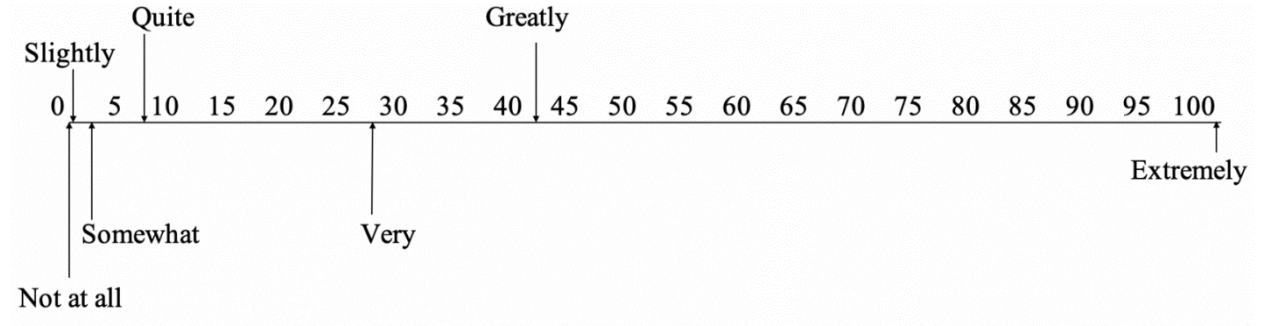
Q41 To what extent did you feel supported by other youth in Texas 4-H?



Q42 To what extent did Texas 4-H enforce rules for all members to follow?



Q43 To what extent did you feel like you mattered in Texas 4-H?



End of Block: Texas 4-H Program Quality

APPENDIX C

TABLE OF MEASURES

<i>Metric/Item</i>	<b>Data Source</b>	<b>Survey Questions</b>
<b>60x30TX</b>		
<b>Educated Population</b>		
Four-year completion rate of a certificate or degree	THECB, Survey	
Five-year completion rate of a certificate or degree	THECB, Survey	
<b>Marketable Skills</b>		
Gainfully employed and/or enrolled in higher education	THECB, Survey	In the year following graduation from college, were you working (full-time, part-time, self-employed) or enrolled in higher education for an additional degree or certificate?
<b>Student Debt</b>		
Debt as a ratio to first-year income	THECB, Survey	Upon graduating from college, approximately how much student loan debt did you have (in thousands)?  Upon graduating from college, what was your approximate first-year gross income (in thousands)?
<b>Student Preparation</b>		
<b>ACT Scores</b>	American College Testing, Survey	For 2013, the average composite score (English, mathematics, reading, and science) in the State of Texas was 21; the range is 1-36. To the best of your ability to remember, what was your score?

<i>Metric/Item</i>	<b>Data Source</b>	<b>Survey Questions</b>
<b>Dual Credit Enrollment</b>	THECB, Survey	Did you complete one or more dual credit courses? A dual credit course is when a high school student enrolls in college course(s) and receives credit for the course(s) from both the college and high school.
<i>Elements of Participation</i>		
<b>Duration</b>	Survey	How many years were you a member of Texas 4-H?
<b>Breadth</b>	Survey	Select the project(s) you were involved in during your 4-H membership.  Please identify your primary project. If you feel that you had more than one primary project, please choose the one to which you devoted the most hours.
<b>Depth</b>	Survey	Please use the slider scale to represent your depth of involvement in each of the five content areas for the year of greatest involvement. Depth relates to the level of concentration in a specific area.  For your primary project indicate the level in which you participated.
<b>Attendance</b>	Survey	On average, how many days per month did your community club meet?  What percentage of community club meetings were you able to attend?

<i>Metric/Item</i>	<i>Data Source</i>	<i>Survey Questions</i>
		On average, how many days per month did your primary project meet?
		What percentage of primary project meetings were you able to attend?
<b>Engagement</b>	Survey	Please use the slider below to rate your overall degree of engagement during community club experiences.
		Please use the slider below to rate your overall degree of engagement during primary project experiences.
<b>Sparks</b> (Arnold & Gagnon, 2020b)	Survey	In general, how passionate were you about the things you did in Texas 4-H?
		How strong was your desire to learn all you could about your Texas 4-H project?
		To what extent was Texas 4-H important to who you were?
		How enthusiastic were you about your Texas 4-H projects?
		How enthusiastic were you about everything you did in Texas 4-H?
(Original Item)		How impactful was Texas 4-H in helping you discover what you have to offer the world?
<b><i>Texas 4-H Program Quality</i></b>		

<i>Metric/Item</i>	<b>Data Source</b>	<b>Survey Questions</b>
<b>Program Quality</b> (Arnold & Gagnon, 2020b)	Survey	<p>To what extent did you feel welcome in Texas 4-H?</p> <p>To what extent did you feel safe in Texas 4-H?</p> <p>To what extent did you feel supported by adults in Texas 4-H?</p> <p>To what extent did you feel supported by other youth in Texas 4-H?</p> <p>To what extent did Texas 4-H enforce rules for all members to follow?</p> <p>To what extent did you feel like you mattered in Texas 4-H?</p>

APPENDIX D  
IRB EXEMPTION

DIVISION OF RESEARCH



**Exemption Determination**  
(Common Rule – Effective January 2018)

July 15, 2021

Title: Academic Motivation and Success Outcomes  
Investigator: Darlene Locke  
IRB: IRB2021-0814M  
Submission Type: Submission Response for Initial Review Submission Form  
Funding:  
Reference Number: 127613

Dear Darlene Locke:

The HRPP determined on July 15, 2021 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. Please use the reviewed, stamped study documents (available in iRIS and outlined below in the Appendix) for applicable study procedures (e.g. recruitment, consent, data collection, etc...). If changes are needed to stamped study documents or study procedures, 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 (07/15/2021). 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.

If you have any questions, please contact the IRB Administrative Office at 1-979-458-4067, toll free at 1-855-795-8636.

Sincerely,

IRB Administration

Appendix: Reviewed Study Documents. Of note, all "forward-facing documents" that will be viewed or completed by participants should be