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11-6-2020

The Impact of Type of High School Institution on University Retention of Undergraduate Students

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THE IMPACT OF TYPE OF HIGH SCHOOL INSTITUTION ON UNIVERSITY RETENTION OF UNDERGRADUATE STUDENTS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Agricultural and Extension Education and Evaluation

by
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December 2020

This work is dedicated to my husband, Matthew, for your patience, love, and support. To my children, Mallory and her future siblings, in the hopes that you will consider yourselves capable of tackling any task to which you set your mind. To my parents, Allen and Jeannemarie, for encouraging and enabling me on my path to an education. To my brother Bradley, for his invaluable logical and ideological evaluation and critique of my arguments. To my brother Chase, my grandparents Allen & Juanita, Ted & Jacquelyn, for the moral support, prayers, and encouragement.

This work is also dedicated to my mentor, Dr. Michael Burnett, without whom I would not have completed this degree. Your approach to supporting and enabling your students to learn and grow should be the standard to which all educators aspire.

ACKNOWLEDGMENTS

This undertaking would not have been possible without the involvement of some extraordinary people to whom I owe tremendous thanks. A truly complete acknowledgements section would undoubtedly exceed the length of my actual dissertation but there are a few people that I must mention by name.

To my suburb dissertation committee, Dr. Earl Johnson, Dr. Satish Verma, and Dr. April Chen, thank you. Thank you for your time, thoughtful questions, insightful critiques, recommendations and support throughout this entire process.

To my committee chair, Dr. Michael Burnett, for endless revisions, countless meetings, and for teaching me basically everything I know about research design; thank you for agreeing to be my major professor and for guiding me through my coursework and my dissertation.

To my parents, Allen and Jeannemarie, for always pushing me to finish my degree and enabling me in every possible way so that I had absolutely no excuse for giving up.

To my husband, Matthew, for keeping me as sane as it is possible to be during the completion of a dissertation. I could not possibly thank you for everything, suffice it to say that my life would be much harder without you.

To my daughter, Mallory, for taking some of the most perfectly timed naps and giving me the chance to finish what I was working on.

To Ann Harrington, for your expert formatting review of my final document and all of your assistance throughout my PhD journey, thank you.

To Clay Benton and Brian Antie in the Registrar's office, thank you for assisting me with the acquisition of my data set.

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ABSTRACT

The primary purpose of this study was to determine the impact of the type of high school completed and selected academic and demographic characteristics on university retention to degree completion at a research university – very high research (RU/VH) in the Southern Region of the United States.

The dependent variable of this study was persistence to graduation within six years of first enrollment. The target population was defined as traditional-age undergraduate students enrolled in a research university – very high research (RU/VH) in the Southern Region of the United States. The accessible population was defined as traditional-age undergraduate students enrolled in one selected research university - very high research (RU/VH) in the Southern Region of the United States who began as first semester freshmen during the Fall semester 2014 ($n = 5354$). Of the 5354 students, who completed a high school program in 2014 and entered the study institution in the Fall 2014 entering class, 3168 completed a public high school program, 2157 completed a private high school program, and 29 completed a home school program.

Students in each group were described on selected academic and demographic characteristics. Students in the three groups were found to be different on numerous characteristics. On most of the academic measures, public school graduates were different from private school graduates and home school graduates were not different from either of the other groups. On the personal demographic characteristics, especially race and gender, the home school graduates were very different from one or both of the other two groups. Additionally, a Multiple Discriminant analysis was utilized to identify a seven variable model explaining persistence to graduation.

The findings indicated that first semester GPA and attempted hours were the best predictors of a student's persistence to graduation. The researcher concluded that interventions designed to improve student retention should intentionally target first semester students. Consequently, the researcher recommends implementation of an early warning system designed to identify student issues prior to the semester midpoint and the initiation of intervention programs designed to address problems that are identified in this early warning system.

CHAPTER 1. INTRODUCTION

Rationale

Student enrollment is critical to the continued existence and success of universities. Without enrolled students, universities do not have the revenue to fund programs or hire faculty. A drop in enrollment can trigger a reduction in faculty positions, course offerings, and degree programs. These negative effects can be long standing and frequently lead to additional drops in enrollment. It is therefore a key goal of every university to maintain and grow enrollment.

According to the National Student Clearinghouse Research Center, enrollment has been declining at four-year public institutions, which is troubling for higher education institutions who rely on enrollment to function (2019). The competition for prospective students has consequentially increased. Existing institutions have increased distance education efforts in order to compete for students across state lines and new institutions have opened to target the same population of potential students. Potential students are often bombarded by recruitment activities from multiple universities. Members of younger generations are frequently opting for freelance employment opportunities over the traditional high school to college path. Whatever the combination of factors, the landscape for recruitment of prospective students has become more crowded and institutions must work harder to attract new applicants.

There are two key elements that impact enrollment: recruitment and retention. Recruitment of new students is the process by which individual universities reach potential students and attempt to persuade them to attend the institution. Recruitment can take the form of digital or physical marketing efforts, visits to high schools or other institutions, and campus open houses, among other methods. Retention is the process of maintaining existing students. Typically, universities face the most precipitous drop in retention from the freshman to

sophomore year often believed to be due to the comparatively lower engagement of freshman students (Murtaugh et. al. 1999). During the first year of enrollment at an institution, students have weaker ties to the institution than they will in subsequent years due to a sense of belonging, investment in the curriculum, development of friendships and professional connections at or near the university. Retention is generally regarded as the most cost-effective method of keeping up enrollment. Depending on the study, estimates for the value of retention indicate that retaining a single student is as effective as recruiting 25 students to apply for admission.

Retention is influenced by multiple factors, some of them are institutional, some are economic, and some relate to the personality of the student. A few of the most commonly referenced factors are socio-economic status, full-time vs. part-time enrollment, student engagement, and first year academic performance (Brown, 2012; Westrick et al. 2015).

Lastly, the type of institution that a student attends for high school: private, public, or homeschool, has a potential impact on retention rates. Universities frequently target out-of-state private schools for on-site recruitment. Part of the reason for this focus is likely due to the lucrative nature of nonresident students. It is also possible that this indicates an emphasis on recruiting students who historically perform well in a university program; whether this performance is due to superior college preparation during high school, coming from a family with a demonstrated willingness to invest financially in the student's academic success, or a combination of these and other factors is likely not relevant from a recruiting perspective. Students who are willing to pay higher tuition and fees are valuable to an institution.

Homeschooling refers to parents who choose to educate their children at home rather than enrolling them in a public or private school. There are a variety of approaches to homeschooling. Some parents utilize tutors or predefined curricula, other parents develop customized curricula to

fit the needs of their children. Many families will teach material from different grade levels depending on the subject and the proficiency of the learner in question. Homeschooling is also called home education, home study, home based education, or home school.

Parents choose homeschooling for a variety of reasons. Many families homeschool due to medical or religious reasons. Many families elect to homeschool their children in an attempt to impart their own values rather than allowing the school system to teach values with which the parents may not agree. Another common reason for choosing homeschooling is that it allows parents to personalize the education that their children receive by customizing the curriculum to the appropriate level for the student. This enables students to move forward when they have mastered certain content even if they are not quite ready to progress to the next grade in other subjects.

Homeschooling is growing in popularity at a rate of 2-8% annually. As homeschooling grows in popularity, or even if it were to simply remain constant, it would be to the advantage of universities to know the impact on university retention. Given the investment of time and resources required to recruit students, if the type of school can be shown to positively impact retention to degree completion, universities would be able to target populations of students who are more likely to graduate from their original institution.

Purpose of the Study

Therefore, the primary purpose of this study was to determine the impact of the type of high school completed and selected academic and demographic characteristics on university retention to degree completion at a research university – very high research (RU/VH) in the Southern Region of the United States.

Objectives

1. To describe undergraduate students at a research university (RU/VH) in the

Southern region of the United States who completed a public high school program on the

following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

2. To describe undergraduate students at a research university (RU/VH) in the

Southern region of the United States who completed a private high school program on the

following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

3. To describe undergraduate students at a research university (RU/VH) in the Southern region of the United States who completed a homeschool high school program on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

4. To compare undergraduate students at a research university (RU/VH) in the Southern region of the United States by type of high school completed (public, private, and homeschool) on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

5. To determine if a model exists that significantly increases the researcher's ability to correctly classify students on their retention in school and persistence to graduation among undergraduate students at a research university (RU/VH) in the Southern region of the United States from the following measures:

- Public High School Program Completion;

- Private High School Program Completion;

- Home High School Program Completion;

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA).

CHAPTER 2. REVIEW OF RELATED LITERATURE

The purpose of this review of related literature was to examine the existing base of knowledge as it relates to the successful retention of undergraduate students in the United States, the known differences between traditional students and homeschool students as well as to examine the reasons why parents choose homeschooling for their children's high school education.

University Enrollment: A Fundamental Concept

The idea of a university is built upon a foundation of having students. Regardless of the key focus of the institution, whether it is research or teaching, student enrollment is critical for the continued existence of a university. Without students, there would be no need for classes, no funding for faculty positions or research projects, and universities would be forced to cut academic programs or shutter the institution completely.

Tuition and fees from students make up a substantial portion of the operating budget for all universities. Over the last several years, many higher education institutions saw their budgets slashed by reductions in higher education spending at the state level and were forced to make up for the deficits by increasing the proportion of their budget that is funded by tuition and fees. There is no indication that there will be a reversal of this shift in the foreseeable future. As such, the competition for student enrollment has increased; particularly when it comes to attracting out of state students who pay higher tuition and fees than in-state residents.

Factors Influencing Enrollment

Enrollment management has two parts: Recruitment and Retention. Recruitment is the acquisition of new students including transfer students from other institutions. Strategies include

admission events held on campus or on-site at target high school institutions, digital marketing, traditional advertising, and targeted campaigns based on ACT/SAT performance.

Retention is the continued enrollment of a student; frequently measured as a year over year metric or a persistence to degree metric. Most universities measure first year retention as well as retention to degree within 4- and 6-year timeframes. Retention is largely agreed to be the most cost-effective method of maintaining enrollment.

Factors That Influence Retention and Graduation

The most commonly cited factors influencing retention fall into three main categories: academic performance, availability of financial resources, and the motivation of the student. (Westrick et al., 2015). Academic performance includes such factors as high school GPA, ACT/SAT scores, 1st term college GPA, 1st year college GPA, enrollment in remedial courses and continuous enrollment. Westrick et al. (2015) determined that ACT composite scores combined with high school GPA were the best predictors of 1st year GPA. Subsequently, 1st year GPA is the best predictor of retention in the second and third year of college. Financial resources includes such factors as parental aid and availability of financial aid in the form of scholarships, grants or loans. Motivation includes factors which are much harder to quantify, but encompass such factors as personality, socialization, stress management skills, and connectedness. Many colleges employ orientation and early intervention strategies designed to target these motivation factors. Most often, these strategies are implemented after the student has enrolled but almost always, they occur after the student has been admitted which would make them out of the scope of this study.

Westrick et al. (2015) found that ACT scores when combined with high school GPA (HSGPA) were better predictors of 1st year retention rates than either measure taken alone. 2nd

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and 3rd year retention were best predicted by 1st year academic performance (GPA). Westrick et al. (2015) also noted that "grades are measures of both academic and nonacademic characteristics" (p. 25) although this is applicable to private or publicly schooled students rather than homeschooled students. Willingham et al. (2002) noted that a student's HSGPA is likely to reflect their positive or negative contribution to the classroom environment including timely submission of assignments, participation, and extra credit. This suggests that high school GPA for homeschool students would be a weaker predictor than high school GPA for a traditionally educated student. In fact, this was the finding in Yu, Sackett & Kuncel (2016). SAT scores predicted first year GPA and retention just as well for homeschoolers as it did for traditional students but HSGPA was not as effective a predictor for the homeschool group.

Many of the factors that impact retention involve intervention after the student enrolls at a University. For example, participation in orientation courses has been shown to improve first year retention rates (Schnell, Seashore, & Doetkott, 2003). Other interventions such as academic support programs, peer support groups, student counseling, all occur after the student enrolls. These factors have a notable impact on retention but for this purposes of this study, the researcher is more interested in determining if there is a potential population of students that universities can target their recruiting efforts towards without factoring in interventions that are specifically designed to improve retention. The primary concern is not how to improve retention once they are enrolled but rather, since recruitment efforts are limited, does it make sense to target homeschoolers, private, or public school students?

Definition of Homeschooling

Homeschooling is a form of education where a child's education takes place primarily in the home under the supervision of the parents rather than through traditional public or private

school enrollment. It can take many forms, some parents choose to employ private tutors, others utilize existing curricula that are available to homeschool parents, still others create a curriculum of their own customized to the needs of their child(ren). The regulations surrounding homeschooling vary by state: some states require no notice, where others have imposed high regulation on the practice of homeschooling. The state of Louisiana is considered to have moderate regulation by the Home School Legal Defense Association. Parents have the option to homeschool as a home study program or to homeschool as a home-based private school. Each option has its own requirements. Homeschooling parents who choose the home-based private school option for the entirety of their child's high school education, will disqualify their student from receiving a TOPS award in college. The requirements for being an approved home study program include initial approval of the program and annual renewal, a minimum number of school days per year, inclusion of the same subjects taught in public schools, and evidence of immunization. The renewal process involves providing detailed information about the curriculum, materials, and progress of the student which can include copies of the student's work, a summary of the books and materials used, or passing grades on state approved standardized tests. The requirements for the home based private school option are less strict: providing notice to the student's prior public institution (if applicable), teach for the required number of days, provide annual notice of attendance to the Department of Education, and do not accept federal or state funds.

According to the National Center for Education Statistics, homeschooling accounts for approximately 3 percent of educational enrollment from ages 5-17 in the United States. The percentage of homeschoolers in 2016 was 3.3%, up from 1.7% in 1999. There has been steady growth in the number of homeschoolers. It is likely that this trend will continue. Further, it is

possible, although speculative, that there will be a large increase in the number of homeschooled students in the wake of the COVID-19 pandemic whether due to continued concerns about exposure to the virus or perhaps due to the fact that parents now consider homeschooling to be a viable option because they were forced to try it during the months of quarantine in 2020.

For the purposes of this study, a homeschool student is defined as a student that is educated within the home either by family members, caregivers, or privately employed individuals for their high school years. A traditional student is defined as a student who is educated within the public school system or at a private school. The U.S. Department of Education estimates that 1.773 Million students across the United States were homeschooled as of 2012 (Redford, Battle, Bielick, et al. 2017). Redford et al. 2017 defines homeschool as students whose "parents reported them as being schooled at home instead of at a public or private school for at least part of their education and if their part-time enrollment in public or private school did not exceed 25 hours a week" (Redford et al. 2017 p. i). This definition is consistent with the definition used by the National Center for Education Statistics. Children who are homeschooled due *only* to a temporary illness are not considered to be homeschooled.

Reasons That People Homeschool

The most recent survey conducted by the National Center for Educational Statistics on reasons that parents choose homeschooling showed that the top 3 reasons were: 1.) Concern about the environment of other schools: to include concerns such as physical safety, illicit drug usage, and/or peer pressure: 85.4% indicated this reason was applicable, 31.2% indicated it was the primary reason, 2.) Dissatisfaction with the quality of instruction at other schools: 68.2% indicated this reason was applicable, 16.5% indicated it was the primary reason, 3.) To provide religious or moral instruction: 72.3% indicated this reason was applicable, 29.8% indicated it

was the primary reason. Redford et al. (2017) uncovered similar findings in 2012. Notably, the most reported reason was concern about school environments at 91%. Other reasons for homeschooling include health (although students who are homeschooled exclusively due to a temporary illness are excluded from these statistics), flexibility, ability to deliver a personalized education, and personalization to accommodate a learning disability.

Comparison of Homeschool to Traditional Populations

Raymond Moore, who worked for the U.S. Department of Education and held a doctorate in education, noted that young children become bored with traditional schooling by the 3rd or 4th grade. (Lyman 1998). Approximately 89% of homeschooled students were classified as living above the poverty line (Redford et al. 2017) which suggests that socioeconomic status will likely be a mitigating factor. It was also noted in Redford et al. that the "The percentage of homeschooled students whose parents had less than a high school education was low (2 percent)" (2017). According to Cui & Hanson (2019), homeschooled students are majority female by a slight margin: 52% female in 2016 (p. 6).

Cogan (2010) noted that homeschool students admitted to college are primarily Roman Catholic, more likely to be male, less likely to identify as a person of color, less likely to live on campus, 2.5 times more likely to receive a Pell grant, and have higher ACT scores than traditionally educated students. Furthermore, according to Rudner (1999) "[a]lmost 25% of home school students are enrolled one or more grades above their age-level peers in public and private schools" (p. 27) and their "achievement test scores are exceptionally high. The median scores for every subtest at every grade (typically in the 70th to 80th percentile) are well above those of public and Catholic/Private school students" (Rudner 1999, p. 27). This finding is consistent with Galloway (1995), who determined that "[a]lmost without exception, home schooled students in

both elementary and secondary levels perform as well as, if not better than, their conventionally educated counterparts in both statewide and national comparisons" (p. 16). Other studies mirror these findings; homeschoolers perform at or above the level of their traditional counterparts during elementary and secondary school. The evidence that homeschoolers outperform their peers in a college setting is less definitive, although it does suggest a similar relationship. The primary reason that the relationship is less definitive is that studies typically control for 1st year GPA which is highly related to retention.

Yu et al. noted that homeschool students differ from traditional students on many facets such as standardized achievement tests, family income and education levels, and grades (2016). As part of their analysis, Yu et al. controlled for standardized test scores, HSGPA, and socioeconomic status. For the purposes of this study, controlling for such variables would not provide the information needed to determine if homeschool students are a more target rich environment for universities to recruit from. To a recruiter, it hardly matters if the student is more likely to succeed because they were homeschooled or if they were homeschooled because they were more likely to succeed. Ultimately, the university need only be concerned with whether homeschoolers are easier to retain.

Homeschool Differences at the College Level

Many colleges employ homeschool specific admissions criteria. LSU however, applies the same admissions criteria to homeschool applicants. It is worth noting that homeschool students wishing to qualify for TOPS, must have an ACT/SAT score that is 2 points higher than the standard for traditional students. The standard to receive the TOPS Opportunity award for traditional students is a minimum ACT score of 20, meaning that homeschool students must have at least a 22 to qualify for the same award. The highest award, the TOPS Honors, requires a 26

from traditional students and a 28 from a homeschool student. There is an additional avenue to qualify for TOPS for students who did not graduate from high school (which can include homeschool students) that does not require the student to meet the higher ACT requirements. For this, the student must meet the same citizenship, residence, FAFSA application, and ACT requirements as traditional students, achieve results on the Wechsler Intelligence Scale for Children that fall into the superior range, be categorized in the 90th percentile for twelfth grade performance on the Wechsler Individual Achievement Test, complete 12 college credit hours at an eligible college or university, and enroll full time in college by your 19th birthday. This method of qualifying circumvents the increased score requirements for the ACT/SAT.

Cogan noted that "homeschooled students (72.4 percent) were less likely to live on campus when compared to the entire freshman cohort (92.7 percent)" (2010, p. 23). Since living on campus is a factor in retention, this may influence the study findings. Cogan also noted that homeschooled students earned higher first year GPAs and higher fourth year GPAs than traditional students (2010). When the homeschool variable was isolated in Cogan (2010), there was no significant relationship to retention rates or four year graduation rates, however homeschoolers did have higher graduation and retention rates when compared to the traditional population. This suggests that the homeschooling itself is not the important variable but also suggests that homeschoolers are a self-selected population of more easily retained students. Controlling for the 1st year GPA seems counterintuitive considering that 1st year GPA is highly correlated with retention; it is possible that Cogan overcontrolled.

Overwhelmingly, the literature suggests that, homeschoolers attend college at the same rate as their traditional peers, and, once in college, homeschool graduation rates, retention rates, and academic performance is consistent with or superior to traditional students.

CHAPTER 3. METHODOLOGY

Purpose of the Study

The primary purpose of this study was to determine the impact of the type of high school completed and selected academic and demographic characteristics on university retention to degree completion at a research university – very high research (RU/VH) in the Southern Region of the United States.

Objectives

1. To describe undergraduate students at a research university (RU/VH) in the Southern region of the United States who completed a public high school program on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

2. To describe undergraduate students at a research university (RU/VH) in the

Southern region of the United States who completed a private high school program on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

3. To describe undergraduate students at a research university (RU/VH) in the Southern region of the United States who completed a homeschool high school program on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

4. To compare undergraduate students at a research university (RU/VH) in the Southern region of the United States by type of high school completed (public, private, and homeschool) on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

5. To determine if a model exists that significantly increases the researcher's ability to correctly classify students on their retention in school and persistence to graduation among

undergraduate students at a research university (RU/VH) in the Southern region of the United States from the following measures:

- Public High School Program Completion;

- Private High School Program Completion;

- Home High School Program Completion;

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA).

Population and Sample

The target population for this study was defined as traditional-age undergraduate students enrolled in a research university – very high research (RU/VH) in the Southern Region of the United States. The accessible population was defined as traditional-age undergraduate students enrolled in one selected research university - very high research (RU/VH) in the Southern Region of the United States who began as first semester freshmen during the Fall semester 2014. The sample was 100% of the defined accessible population. The sampling plan for this study consisted of the following steps:

a. The accessible population was defined as all traditional-age, undergraduate students enrolled in one selected research university-very high research activity (RU/VH) in the South during the Fall 2014 semester and were identified following the 14th class-day statistics from the database of the study institution's Office of the University Registrar.

b. This accessible population was divided into three groups of students: those who completed a public high school in 2014, those who completed a private high school program in 2014, and those who completed a homeschool program in 2014. This data was obtained from the University's Office of the Registrar.

c. The sample was defined as 100 percent of the accessible population.

Instrumentation

The researcher designed a computerized recording form to collect and store data from the Office of the University Registrar. The specific variables to be measured were determined from the review of literature, the University's Office of the Registrar, and from the study institution's Office of Undergraduate Admissions. The information was downloaded into a file that served as the research instrument. The variables that were downloaded include:

a. Whether or not the student received one of the university's five major scholarships as financial aid;

b. GPA: semester for first term enrolled and cumulative institution;

c. Number of credit hours enrolled and number of credit hours completed for first term enrolled;

d. Major: first term enrolled and final term enrolled (defined as in a STEM field or not in a STEM field);

e. High school code (used to classify the institution as private, public, or home school);

f. High school graduation date (used to confirm eligibility for inclusion in the sample);

g. High school GPA;

h. LSU graduation date;

i. ACT composite score

j. SAT composite score (converted to ACT composite equivalent);

k. Gender;

l. Race;

m. Whether or not the student was housed in one of the institution's content based residential colleges during the first term.

Data Collection

The researcher applied for Exemption from Institutional Oversight because the accessible population and sample did not include a vulnerable population and because none of the participants can be identified from the data received. The IRB granted the exemption (See Appendix A). Upon approval from the dissertation advisory committee, the researcher designed a computerized recording form to be utilized to store the data received. Next, the researcher contacted the Office of the University Registrar to provide a copy of the Exemption for Institutional Oversight and requested assistance to collect data regarding the academic and demographic variables outlined above. The Office of the University Registrar utilized the Mainframe computer program to access the database, extract the necessary data points, and store them for the data analysis process. The researcher concluded the data collection process by transferring the data into the researcher-designed computerized recording form. In accordance

with the Exemption from Institutional Oversight, no individually identifiable information was

extracted from the database.

CHAPTER 4. RESULTS

The primary purpose of this study was to determine the impact of the type of high school completed and selected academic and demographic characteristics on university retention to degree completion at a research university – very high research (RU/VH) in the Southern Region of the United States. The dependent variable of this study was persistence to graduation within six years of entering the university.

The following specific objectives were formulated to guide this research:

1. To describe undergraduate students at a research university (RU/VH) in the Southern region of the United States who completed a public high school program on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

2. To describe undergraduate students at a research university (RU/VH) in the

Southern region of the United States who completed a private high school program on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

3. To describe undergraduate students at a research university (RU/VH) in the

Southern region of the United States who completed a homeschool high school program on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

4. To compare undergraduate students at a research university (RU/VH) in the

Southern region of the United States by type of high school completed (public, private, and

homeschool) on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

5. To determine if a model exists that significantly increases the researcher's ability

to correctly classify students on their retention in school and persistence to graduation among

undergraduate students at a research university (RU/VH) in the Southern region of the United

States from the following measures:

- Public High School Program Completion;

- Private High School Program Completion;

- Home High School Program Completion;

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA).

Objective One Results

The first objective of this study was to describe undergraduate students at a research

university (RU/VH) in the Southern region of the United States who completed a public high

school program on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

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- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

There were 3168 students who completed a public high school program in 2014 and entered the study institution in the Fall 2014 entering class. The results for each of these variables are presented in the following section.

Gender

The first variable on which the undergraduate students who completed a public high school program were described was Gender. Of the 3168 students, 1769 (55.8%) were female and 1399 (44.2%) were male.

Race

The second variable on which the undergraduate students who completed a public high school program were described was race. Of the 3168 students who completed a public high school program in 2014 and entered the study institution in the Fall 2014 entering class, nine did not provide their race. Of the remaining 3159, the group with the largest number of students was White with 2219 students (67.1%) and the group with the second largest number of students was Black or African American with 526 students (16.6%). The full summary of racial data is reported in Table 4.1.

Table 4.1. Race of Undergraduate Students at a Research University (RU/VH) in the Southern
Region of the United States Who Completed a Public High School Program

Race	n [a]	%
White	2119	67.1
Black or African American	526	16.6
Hispanic	209	6.6
Asian	178	5.6
Multi-Racial	116	3.7
American Indian or Alaskan Native	9	0.3
Native Hawaiian or Other Pacific Islander	2	0.1
Total	3159	100.0

[a] Nine study participants did not provide information regarding their race.

Overall High School Grade Point Average (GPA)

The third variable on which the undergraduate students who completed a public high

school program were described was overall high school grade point average. The mean high

school GPA for these students was 3.51 (SD = 0.337). High school GPA ranged from a

minimum of 2.30 to a maximum of 4.00.

High school GPA was aggregated into ranges as shown in Table 4.2. The GPA range

with the largest number of students was 3.50-3.74.

Table 4.2. High School Grade Point Average of Undergraduate Students at a Research
University (RU/VH) in the Southern Region of the United States Who Completed a Public High
School Program

GPA Range	n	%
4.00	203	6.4
3.75-3.99	742	23.4
3.50-3.74	774	24.4
3.25-3.49	730	23.0
3.00-3.24	505	16.0
2.75-2.99	157	5.0
2.50-2.74	45	1.4
Less than 2.50	12	0.4
Total	3168	100

Note. Mean High School GPA = 3.51 (SD = 0.337) with values ranging from 2.30 to 4.00.

Act Composite Score

The fourth variable on which the undergraduate students who completed a public high

school program were described was ACT composite score. At the University analyzed in this

study, prospective students are required to submit either an ACT score or an SAT score as part of

their application packet. The Office of Undergraduate Admissions converts SAT composite

scores to their ACT equivalent using the conversion chart from the Princeton Review (see

Appendix B). If an applicant provides more than one standardized test score, the highest test

score is stored in the database.

The mean ACT score for these students was 25.30 (SD = 3.616). ACT Composite Scores

ranged from a minimum of 16 to a maximum of 36.

To further examine ACT scores, ACT Composite Score was aggregated into ranges as

shown in Table 4.3. The ACT Composite Score range with the largest number of students was

24-25 (n = 629, 19.9%).

Table 4.3. ACT Composite Scores of Undergraduate Students at a Research University (RU/VH) in the Southern Region of the United States Who Completed a Public High School Program

ACT Composite Score	n	%
36	3	0.1
34-35	42	1.3
32-33	118	3.7
30-31	286	9.0
28-29	431	13.6
26-27	555	17.5
24-25	629	19.9
22-23	609	19.2
20-21	385	12.2
18-19	97	3.1
17 or less	13	0.4
Total	3168	100

Note. Mean ACT Composite Score was 25.30 (SD = 3.616) with values ranging from 16 to 36.

Whether or Not Student Lived in a Residential College

The fifth variable on which the undergraduate students who completed a public high school program were described was whether or not the student lived in a residential college during their first semester. Of the 3168 students, 803 (25.3%) lived in a residential college during their first semester and 2365 (74.7%) did not.

Whether or Not Student Had A Major Scholarship

The sixth variable on which the undergraduate students who completed a public high school program were described was whether or not the student received one of the university's five major scholarships. The study institution offers five major scholarships to highly qualified applicants. These scholarships are (1) Chancellor's Alumni Scholarship, (2) Alumni Association Top 100 Scholarship, (3) Distinguished Freshman Award, (4) Centennial Award, and (5) Golden Oaks Award. The criteria for these scholarships includes some combination of minimum high school grade point average, minimum ACT or SAT composite score, and designation as a National Merit Finalist or Semi-finalist.

Of the 3168 students, 879 (27.7%) received one of the university's five major scholarships and 2289 (72.3%) did not.

First Semester Declared Major: STEM or Not STEM

The seventh variable on which the undergraduate students who completed a public high school program were described was whether or not the student declared a major during their first semester of enrollment that was classified as in one of the STEM field. There were seven students who did not have a declared major listed in the database. Of the 3161 remaining students, 2014 (63.7%) declared a STEM major during their first semester of enrollment and 1147 (36.3%) did not.

First Semester Attempted Hours

The eighth variable on which the undergraduate students who completed a public high school program were described was number of hours attempted during the student's first semester of enrollment. The mean number of attempted hours for these students was 13.66 (SD = 2.106). First semester attempted hours ranged from a minimum of 3 to a maximum of 19.

First Semester Earned Hours

The ninth variable on which the undergraduate students who completed a public high school program were described was number of hours earned during the student's first semester of enrollment. The mean number of earned hours for these students was 12.40 (SD = 3.760). First semester earned hours ranged from a minimum of 0 to a maximum of 19.

First Semester Grade Point Average (GPA)

The tenth variable on which the undergraduate students who completed a public high school program were described was the GPA earned during the first semester of enrollment. The mean first semester GPA for these students was 2.75 (SD = 0.982). First semester GPA ranged from a minimum of 0.0 to a maximum of 4.0.

First semester GPA was aggregated into ranges as shown in Table 4.4. The GPA range with the largest number of students was Less than 1.75 (n = 480, 15.1%). The range with the second largest number of students was 3.00-3.24 (n = 473, 14.9%).

Table 4.4. First Semester Grade Point Averages of Undergraduate Students at a Research University (RU/VH) in the Southern Region of the United States Who Completed a Public High School Program

GPA Range	n	%
4.00	266	8.4
3.75-3.99	252	8.0
3.50-3.74	316	10.0
3.25-3.49	338	10.7

(table cont'd.)

GPA Range	n	%
3.00-3.24	473	14.9
2.75-2.99	240	7.6
2.50-2.74	270	8.5
2.25-2.49	223	7.0
2.00-2.24	203	6.4
1.75-1.99	107	3.4
Less than 1.75	480	15.1
Total	3168	100

Note. The mean first semester GPA was 2.75 (SD = 0.982) with values ranging from 0.0 to 4.0.

Final Semester Declared Major: STEM or Not STEM

The eleventh variable on which the undergraduate students who completed a public high school program were described was whether or not the student declared a STEM major during their final semester of enrollment. There were 28 students who did not have a major listed in the database for their final semester. Of the remaining 3140 students, 1579 (50.3%) declared a STEM major and 1561 (49.7%) declared a major that was not in a STEM field.

Final Semester Cumulative Grade Point Average (GPA)

The twelfth variable on which the undergraduate students who completed a public high school program were described was cumulative GPA for their final semester of enrollment. The mean final semester cumulative GPA for these students was 2.74 (SD = 0.892). Final semester GPA ranged from a minimum of 0.0 to a maximum of 4.165.

Final semester cumulative GPA was aggregated into ranges as shown in Table 4.5. The GPA range with the largest number of students was 3.00-3.24.

Table 4.5. Final Semester Cumulative Grade Point Averages of Undergraduate Students at a Research University (RU/VH) in the Southern Region of the United States Who Completed a Public High School Program

GPA Range	n	%
4.00	79	2.5
3.75-3.99	217	6.8

(table cont'd.)

GPA Range	n	%
3.50-3.74	325	10.3
3.25-3.49	391	12.3
3.00-3.24	477	15.2
2.75-2.99	374	11.8
2.50-2.74	318	10.0
2.25-2.49	261	8.2
2.00-2.24	174	5.5
1.75-1.99	125	3.9
Less than 1.75	427	13.5
Total	3168	100

Objective Two Results

The second objective of this study was to describe undergraduate students at a research university (RU/VH) in the Southern region of the United States who completed a private high school program on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

There were 2157 students who completed a private high school program in 2014 and entered the study institution in the Fall 2014 entering class. The results for each of these variables are presented in the following section:

Gender

The first variable on which the undergraduate students who completed a private high school program were described was Gender. Of the 2157 students, 1143 (53.0%) were female and 1014 (47.0%) were male.

Race

The second variable on which the undergraduate students who completed a private high school program were described was race. Of the 2157 students who completed a private high school program in 2014 and entered the study institution in the Fall 2014 entering class, six did not provide their race. Of the remaining 2151, the largest group was White with 1836 students (85.4%) and the second largest group was Hispanic with 135 students (6.3%). The full summary of racial data is reported in Table 4.6.

Table 4.6. Race of Undergraduate Students at a Research University (RU/VH) in the Southern Region of the United States Who Completed a Private High School Program

Race	n [a]	%
White	1836	85.4
Hispanic	135	6.3
Black or African American	86	4.0
Asian	60	2.8
Multi-Racial	26	1.2
American Indian or Alaskan Native	5	0.2
Native Hawaiian or Other Pacific Islander	3	0.1
Total	2151	100

[a] Six study participants did not provide information regarding their race.

Overall high school grade point average (GPA)

The third variable on which the undergraduate students who completed a private high

school program were described was overall high school grade point average. The mean high

school GPA for these students was 3.50 (SD = 0.334). High school GPA ranged from a

minimum of 1.97 to a maximum of 4.0.

High school GPA was aggregated into ranges as shown in Table 4.7. The GPA range

with the largest number of students was 3.25-3.49.

Table 4.7. High School Grade Point Average of Undergraduate Students at a Research
University (RU/VH) in the Southern Region of the United States Who Completed a Private High
School Program

GPA Range	n	%
4.00	104	4.8
3.75-3.99	498	23.1
3.50-3.74	514	23.8
3.25-3.49	515	23.9
3.00-3.24	366	17.0
2.75-2.99	132	6.1
2.50-2.74	23	1.1
Less than 2.50	5	0.2
Total	2157	100

Note. Mean High School GPA = 3.50 (SD = 0.334) with values ranging from 1.97 to 4.00.

ACT Composite Score

The fourth variable on which the undergraduate students who completed a private high

school program were described was ACT composite score. At the University analyzed in this

study, prospective students are required to submit either an ACT score or an SAT score as part of

their application packet. The Office of Undergraduate Admissions converts SAT composite

scores to their ACT equivalent using the conversion chart from the Princeton Review (see

Appendix B). If an applicant provides more than one standardized test score, the highest test

score is stored in the database. One study participant did not provide a standardized test score.

The mean ACT score for these students was 25.93 (SD = 3.362). ACT Composite Score ranged from a minimum of 17 to a maximum of 36.

To further examine ACT scores, ACT Composite Score was aggregated into ranges as shown in Table 4.8. The ACT Composite Score range with the largest number of students was 24-25 (n = 484, 22.4%).

Table 4.8. ACT Composite Scores of Undergraduate Students at a Research University (RU/VH) in the Southern Region of the United States Who Completed a Private High School Program

ACT Composite Score	n [a]	%
36	1	0.0
34-35	31	1.4
32-33	96	4.5
30-31	220	10.2
28-29	355	16.5
26-27	399	18.5
24-25	484	22.4
22-23	389	18.0
20-21	158	7.3
18-19	20	0.9
17 or less	3	0.1
Total	2156	100

Note. Mean ACT Composite Score was 25.93 (SD = 3.362) with values ranging from 17 to 36.
[a] One study participant did not provide a standardized test score.

Whether or Not Student Lived in a Residential College

The fifth variable on which the undergraduate students who completed a private high school program were described was whether or not the student lived in a residential college during their first semester. Of the 2157 students, 528 (24.5%) lived in a residential college during their first semester and 1629 (75.5%) did not.

Whether or Not Student Had a Major Scholarship

The sixth variable on which the undergraduate students who completed a private high school program were described was whether or not the student received one of the university's five major scholarships. The study institution offers five major scholarships to highly qualified

applicants. These scholarships are (1) Chancellor's Alumni Scholarship, (2) Alumni Association Top 100 Scholarship, (3) Distinguished Freshman Award, (4) Centennial Award, and (5) Golden Oaks Award. The criteria for these scholarships includes some combination of minimum high school grade point average, minimum ACT or SAT composite score, and designation as a National Merit Finalist or Semi-finalist. Of the 2157 students, 672 (31.2%) received one of the university's five major scholarships and 1485 (68.8%) did not.

First Semester Declared Major: STEM or Not STEM

The seventh variable on which the undergraduate students who completed a private high school program were described was whether or not the student declared a major during their first semester of enrollment that was classified as in one of the STEM field. There were two students who did not have a declared major listed in the database. Of the 2155 remaining students, 1310 (60.8%) declared a STEM major during their first semester of enrollment and 845 (39.2%) did not.

First Semester Attempted Hours

The eighth variable on which the undergraduate students who completed a private high school program were described was number of hours attempted during the student's first semester of enrollment. The mean number of attempted hours for these students was 14.04 (SD = 1.900). First semester attempted hours ranged from a minimum of 6 to a maximum of 18.

First Semester Earned Hours

The ninth variable on which the undergraduate students who completed a private high school program were described was number of hours earned during the student's first semester of enrollment. The mean number of earned hours for these students was 13.36 (SD = 2.943). First semester earned hours ranged from a minimum of 0 to a maximum of 18.

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First Semester Grade Point Average (GPA)

The tenth variable on which the undergraduate students who completed a private high school program were described was the GPA earned during the first semester of enrollment. The mean first semester GPA for these students was 3.06 (SD = 0.782). First semester GPA ranged from a minimum of 0.0 to a maximum of 4.0.

First semester GPA was aggregated into ranges as shown in Table 4.9. The GPA range with the largest number of students was 3.00-3.24.

Table 4.9. First Semester Grade Point Averages of Undergraduate Students at a Research University (RU/VH) in the Southern Region of the United States Who Completed a Private High School Program

GPA Range	n	%
4.00	242	11.2
3.75-3.99	248	11.5
3.50-3.74	272	12.6
3.25-3.49	242	11.2
3.00-3.24	378	17.5
2.75-2.99	219	10.2
2.50-2.74	174	8.1
2.25-2.49	101	4.7
2.00-2.24	107	5.0
1.75-1.99	40	1.9
Less than 1.75	134	6.2
Total	2157	100

Note. The mean first semester GPA was 3.06 (SD = 0.782) with values ranging from 0.0 to 4.0.

Final Semester Declared Major: STEM or Not STEM

The eleventh variable on which the undergraduate students who completed a private high school program were described was whether or not the student declared a STEM major during their final semester of enrollment. There were 3 students who did not have a major listed in the database for their final semester. Of the remaining 2154 students, 1060 (49.2%) declared a STEM major and 1094 (50.8%) declared a major that was not in a STEM field.

Final semester cumulative grade point average (GPA)

The twelfth variable on which the undergraduate students who completed a private high school program were described was cumulative GPA for their final semester of enrollment. The mean final semester cumulative GPA for these students was 3.05 (SD = 0.709). Final semester GPA ranged from a minimum of 0.0 to a maximum of 4.22.

Final semester cumulative GPA was aggregated into ranges as shown in Table 4.10. The GPA range with the largest number of students was 3.00-3.24.

Table 4.10. Final Semester Cumulative Grade Point Averages of Undergraduate Students at a Research University (RU/VH) in the Southern Region of the United States Who Completed a Private High School Program

GPA Range	n	%
4.00	92	4.3
3.75-3.99	223	10.3
3.50-3.74	310	14.4
3.25-3.49	304	14.1
3.00-3.24	375	17.4
2.75-2.99	295	13.7
2.50-2.74	193	8.9
2.25-2.49	119	5.5
2.00-2.24	75	3.5
1.75-1.99	44	2.0
Less than 1.75	127	5.9
Total	2157	100

Objective Three Results

The third objective of this study was to describe undergraduate students at a research university (RU/VH) in the Southern region of the United States who completed a home high school program on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

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- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

There were 29 students who completed a home high school program in 2014 and entered the study institution in the Fall 2014 entering class. The results for each of these variables are presented in the following section:

Gender

The first variable on which the undergraduate students who completed a home high school program were described was Gender. Of the 29 students, 7 (24.1%) were female and 22 (75.9%) were male.

Race

The second variable on which the undergraduate students who completed a home high school program were described was race. Of the 29 students who completed a home high school program in 2014 and entered the study institution in the Fall 2014 entering class, two did not provide their race. Of the remaining 27, 25 (92.6%) were White and 2 (7.4%) were Hispanic.

Overall high school grade point average (GPA)

The third variable on which the undergraduate students who completed a home high school program were described was overall high school grade point average. The mean high

school GPA for these students was 3.63 (SD = 0.273). High school GPA ranged from a

minimum of 3.07 to a maximum of 4.0.

High school GPA was aggregated into ranges as shown in Table 4.11. The GPA range

with the largest number of students was 3.75-3.99.

Table 4.11. High School Grade Point Average of Undergraduate Students at a Research
University (RU/VH) in the Southern Region of the United States Who Completed a Home High
School Program

GPA Range	n	%
4.00	2	6.9
3.75-3.99	10	34.5
3.50-3.74	9	31.0
3.25-3.49	4	13.8
3.00-3.24	4	13.8
2.75-2.99	0	0
2.50-2.74	0	0
Less than 2.50	0	0
Total	29	100

Note. Mean High School GPA = 3.63 (SD = 0.273) with values ranging from 3.07 to 4.00.

ACT Composite Score

The fourth variable on which the undergraduate students who completed a home high

school program were described was ACT composite score. At the University analyzed in this

study, prospective students are required to submit either an ACT score or an SAT score as part of

their application packet. The Office of Undergraduate Admissions converts SAT composite

scores to their ACT equivalent using the conversion chart from the Princeton Review (see

Appendix B). If an applicant provides more than one standardized test score, the highest test

score is stored in the database. One study participant did not provide a standardized test score.

The mean ACT score for these students was 26.00 (SD = 3.576). ACT Composite Score

ranged from a minimum of 19 to a maximum of 32.

To further examine ACT scores, ACT Composite Score was aggregated into ranges as shown in Table 4.12. The ACT Composite Score range with the largest number of students was 28-29 (n = 9, 31.0%).

Table 4.12. ACT Composite Scores of Undergraduate Students at a Research University (RU/VH) in the Southern Region of the United States Who Completed a Home High School Program

ACT Composite Score	n	%
36	0	0
34-35	0	0
32-33	1	3.4
30-31	3	10.3
28-29	9	31.0
26-27	3	10.3
24-25	3	10.3
22-23	7	24.1
20-21	2	6.9
18-19	1	3.4
17 or less	0	0
Total	29	100

Note. Mean ACT Composite Score was 26.00 (SD = 3.576) with values ranging from 19 to 32.

Whether or Not Student Lived in a Residential College

The fifth variable on which the undergraduate students who completed a home high school program were described was whether or not the student lived in a residential college during their first semester. Of the 29 students, 1 (3.4%) lived in a residential college during their first semester and 28 (96.6%) did not.

Whether or Not Student Had A Major Scholarship

The sixth variable on which the undergraduate students who completed a home high school program were described was whether or not the student received one of the university's five major scholarships. The study institution offers five major scholarships to highly qualified applicants. These scholarships are (1) Chancellor's Alumni Scholarship, (2) Alumni Association Top 100 Scholarship, (3) Distinguished Freshman Award, (4) Centennial Award, and (5) Golden

Oaks Award. The criteria for these scholarships includes some combination of minimum high school grade point average, minimum ACT or SAT composite score, and designation as a National Merit Finalist or Semi-finalist. Of the 29 students, 13 (44.8%) received one of the university's five major scholarships and 16 (55.2%) did not.

First Semester Declared Major: STEM or Not STEM

The seventh variable on which the undergraduate students who completed a home high school program were described was whether or not the student declared a major during their first semester of enrollment that was classified as in one of the STEM field. Of the 29 students, 18 (62.1%) declared a STEM major during their first semester of enrollment and 11 (37.9%) did not.

First Semester Attempted Hours

The eighth variable on which the undergraduate students who completed a home high school program were described was number of hours attempted during the student's first semester of enrollment. The mean number of attempted hours for these students was 13.66 (SD = 1.653). First semester attempted hours ranged from a minimum of 10 to a maximum of 17.

First Semester Earned Hours

The ninth variable on which the undergraduate students who completed a home high school program were described was number of hours earned during the student's first semester of enrollment. The mean number of earned hours for these students was 12.21 (SD = 4.279). First semester earned hours ranged from a minimum of 0 to a maximum of 17.

First Semester Grade Point Average (GPA)

The tenth variable on which the undergraduate students who completed a home high school program were described was the GPA earned during the first semester of enrollment. The

mean first semester GPA for these students was 2.82 (SD = 1.191). First semester GPA ranged

from a minimum of 0.0 to a maximum of 4.0.

First semester GPA was aggregated into ranges as shown in Table 4.13. The GPA range

with the largest number of students was Less than 1.75.

Table 4.13. First Semester Grade Point Averages of Undergraduate Students at a Research
University (RU/VH) in the Southern Region of the United States Who Completed a Home High
School Program

GPA Range	n	%
4.00	4	13.8
3.75-3.99	3	10.3
3.50-3.74	4	13.8
3.25-3.49	3	10.3
3.00-3.24	4	13.8
2.75-2.99	1	3.4
2.50-2.74	1	3.4
2.25-2.49	3	10.3
2.00-2.24	0	0
1.75-1.99	1	3.4
Less than 1.75	5	17.2
Total	29	100

Note. The mean first semester GPA was 2.82 (SD = 1.191) with values ranging from 0.0 to 4.0.

Final Semester Declared Major: STEM or Not STEM

The eleventh variable on which the undergraduate students who completed a home high

school program were described was whether or not the student declared a STEM major during

their final semester of enrollment. Of the 29 students, 14 (48.3%) declared a STEM major and 15

(51.7%) declared a major that was not in a STEM field.

Final Semester Cumulative Grade Point Average (GPA)

The twelfth variable on which the undergraduate students who completed a home high

school program were described was cumulative GPA for their final semester of enrollment. The

mean final semester cumulative GPA for these students was 2.92 (SD = 0.813). Final semester

GPA ranged from a minimum of 0.733 to a maximum of 4.137.

Final semester cumulative GPA was aggregated into ranges as shown in Table 4.14. The

GPA range with the largest number of students was 3.00-3.249.

Table 4.14. Final Semester Cumulative Grade Point Averages of Undergraduate Students at a
Research University (RU/VH) in the Southern Region of the United States Who Completed a
Home High School Program

GPA Range	n	%
4.00	3	10.4
3.75-3.99	1	3.4
3.50-3.74	2	6.9
3.25-3.49	3	10.4
3.00-3.24	6	20.7
2.75-2.99	4	13.8
2.50-2.74	4	13.8
2.25-2.49	1	3.4
2.00-2.24	2	6.9
1.75-1.99	1	3.4
Less than 1.75	2	6.9
Total	29	100

Objective Four Results

The fourth objective of this study was to compare undergraduate students at a research

university (RU/VH) in the Southern region of the United States by type of high school completed

(public, private, and homeschool) on the following selected academic and demographic

characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

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- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

Gender

The first variable on which on which students who completed different types of high

schools were compared was gender. To accomplish this comparison, the chi-square test of

independence was selected as the most appropriate statistical procedure. The chi-square test is

used to determine if the variables being investigated are independent. The results of the chi-

square test ($\chi^2_{(df=2)}$ = 15.056, p < 0.001), which is statistically significant, indicated that the

variables gender and type of high school completed were not independent. The nature of the

association between the two variables was such that the majority of public and private school

graduates were female while the majority of homeschool graduates were male (see Table 4.15).

Table 4.15. Comparison of Gender of Students Who Entered a Research University (RU/VH) in the Southern Region of the United States by Type of High School Completed

	Total			
	Public $\underline{n}$ $\underline{\%}$	Private $\underline{n}$ $\underline{\%}$	Homeschool $\underline{n}$ $\underline{\%}$	Total $\underline{n}$ $\underline{\%}$
Female	1769 55.8%	1143 53.0%	7 24.1%	2919 54.5%
Male	1399 44.2%	1014 47.0%	22 75.9%	2435 45.5%
Total	3168 100.0%	2157 100.0%	29 100.0%	5354 100.0%

Note. χ^2 = 15.056, p < .001.

Race

The second variable on which students who completed different types of high schools

were compared was race. To accomplish this comparison, the chi-square test of independence

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was selected as the most appropriate statistical procedure. Chi-square tests are used to determine

if the variables being investigated are independent. The initial test had an excessive number of

inefficient cells which have expected frequencies of less than five. Therefore, selected categories

of the variable race which had lower numbers of students represented in the study had to be

eliminated from this analysis. The race groups that were eliminated from the analysis were

American Indian or Alaskan Native, Multi-Racial, and Native Hawaiian or Other Pacific

Islander. After categories were eliminated to facilitate the analysis, the race groups included in

the analysis were African-American, Asian, Hispanic, and White. The results of this chi-square

test (χ^2 (df=6) = 262.914, p < 0.001), which is statistically significant, indicated that the variables

race and type of high school completed were not independent. The nature of the association

between the two variables was such that there is a higher representation of White students who

completed home and private high school programs and a lower representation of African-

American students who completed home and private high school programs (see Table 4.16).

Table 4.16. Comparison of Race of Students Who Entered a Research University (RU/VH) in
the Southern Region of the United States by Type of High School Completed

	Total			
	Public $\underline{n}$ %	Private $\underline{n}$ %	Homeschool $\underline{n}$ %	Total $\underline{n}$ %
White	2119 69.9%	1836 86.7%	25 92.6%	3980 76.9%
Black or African-American	526 17.3%	86 4.1%	0 0.0%	612 11.8%
Hispanic	209 6.9%	135 6.4%	2 7.4%	346 6.7%
Asian	178 5.9%	60 2.8%	0 0.0%	238 4.6%
Total	3032 100.0%	2117 100.0%	27 100.0%	5176 100.0%

Note. χ^2 = 262.914, p < .001.

Overall High School Grade Point Average (GPA)

The third variable on which students who completed different types of high schools were compared was overall high school GPA. To accomplish this comparison, a one-way ANOVA was conducted to compare the students' overall high school GPA by type of high school completed. Based on the significant ANOVA ($F_{(2,5351)} = 3.428$, p=0.033), there was at least one significant difference among the three groups examined in the study. To identify the specific groups that were significantly different on overall high school GPA, the Tukey post hoc multiple comparison test was used. Results of the Tukey's test revealed that students who completed a homeschool high school program (mean = 3.63) had a significantly higher GPA than students who completed a private high school program (mean = 3.50). The public school group was not found to be significantly different from either the homeschool or the private school groups (see Table 4.17).

Table 4.17. Comparison of Overall High School Grade-Point Average of Students Who Entered a Research University (RU/VH) in the Southern Region of the United States by Type of High School Completed

Source	df	MS	F	p
Between Groups	2	.386	3.428	.033
Within Groups	5351	.113		
Total	5353			
Group		n	M	Tukey [a]
Public School Program		3168	3.51	A
Private School Program		2157	3.50	AB
Homeschool Program		29	3.63	BC

[a]Groups that do not have a common letter are significantly different.

Act Composite Score

The fourth variable on which students who completed different types of high schools were compared was ACT composite score. To accomplish this comparison, one-way ANOVA was selected as the most appropriate statistical procedure. A one-way ANOVA was conducted to

compare the students' ACT composite score by type of high school completed. There was a significant difference by type of high school completed in ACT composite score ($F_{(2,5350)} = 21.025$, $p < 0.001$). The Tukey post hoc multiple comparison test was used to determine specifically which groups were significantly different. Results of the Tukey's test revealed that students who completed a private high school program had a significantly higher ACT composite score than students who completed a public high school program. The homeschool group was not found to be significantly different from either the public or the private school groups (see Table 4.18).

Table 4.18. Comparison of Composite ACT Score of Students Who Entered a Research University (RU/VH) in the Southern Region of the United States by Type of High School Completed

Source	df	MS	F	p
Between Groups	2	259.849	21.025	<.001
Within Groups	5350	12.359		
Total	5352			
Group		n	M	Tukey [a]
Public School Program		3168	25.30	A
Private School Program		2156	25.93	B
Homeschool Program		29	26.00	AB

[a]Groups that do not have a common letter are significantly different.

Whether or Not Student Lived in a Residential College

The fifth variable on which students who completed different types of high schools were compared was whether or not the student lived in a residential college during their first semester. To accomplish this comparison, the chi-square test of independence was selected as the most appropriate statistical procedure. Chi-square tests are used to determine if the variables being investigated are independent. The results of the chi-square test ($\chi^2_{(df=2)} = 7.683$, $p = 0.021$) indicated that the variables whether or not the student lived in a residential college and type of high school completed were not independent. The nature of the association between the two

variables was such that there is a higher representation of participation in a residential college among public school graduates and private school graduates and a lower representation of participation in a residential college among homeschool graduates (see Table 4.19).

Table 4.19. Comparison of Whether or not Students Who Entered a Research University (RU/VH) in the Southern Region of the United States Lived in a Content-Based Residential College during Their First Semester by Type of High School Completed

| | Total | | | |
	Public $\underline{n}$ %	Private $\underline{n}$ %	Homeschool $\underline{n}$ %	Total $\underline{n}$ %
Did Not Live in Residential College	2365 74.7%	1629 75.5%	28 96.6%	4022 75.1%
Lived in a Residential College	803 25.3%	528 24.5%	1 3.4%	1332 24.9%
Total	3168 100.0%	2157 100.0%	29 100.0%	5354 100.0%

Note. $\chi^2 = 7.683$, p = .021.

Whether or Not Student Had a Major Scholarship

The sixth variable on which students who completed different types of high schools were compared was whether or not the student had a major scholarship. To accomplish this comparison, the chi-square test of independence was selected as the most appropriate statistical procedure. The chi-square test is used to determine if the variables being investigated are independent. The results of the chi-square test ($\chi^2_{(df=2)} = 10.647$, p = 0.005), which is statistically significant, indicated that the variables whether or not the student had a major scholarship and type of high school completed were not independent. The nature of the association between the two variables was such that there was a higher representation of private school and homeschool graduates among scholarship recipients and there was a lower representation of public school graduates among scholarship recipients (see Table 4.20).

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Table 4.20. Comparison of Whether or Not Students Who Entered a Research University (RU/VH) in the Southern Region of the United States Were the Recipient of One of the University's Major Scholarships by Type of High School Completed

	Total			
	Public	Private	Homeschool	Total
	$\underline{n}$ %	$\underline{n}$ %	$\underline{n}$ %	$\underline{n}$ %
Non-Recipient	2289 72.3%	1485 68.8%	16 55.2%	3790 70.8%
Recipient	879 27.7%	672 31.2%	13 44.8%	1564 29.2%
Total	3168 100.0%	2157 100.0%	29 100.0%	5354 100.0%

Note. $\chi^2 = 10.647$, p = .005.

First Semester Declared Major: STEM or Not STEM

The seventh variable on which students who completed different types of high schools were compared was whether or not the student declared a major during their first semester of enrollment that was classified as in one of the STEM fields. To accomplish this comparison, the chi-square test of independence was selected as the most appropriate statistical procedure. The chi-square test is used to determine if the variables being investigated are independent. The results of the chi-square test ($\chi^2_{(df=2)} = 4.682$, p = 0.096) were not statistically significant. This indicates that whether or not the student declared a major during their first semester of enrollment that was classified as in one of the STEM fields is independent of type of high school completed.

First Semester Attempted Hours

The eighth variable on which students who completed different types of high schools were compared was first semester attempted hours. To accomplish this comparison, one-way ANOVA was selected as the most appropriate statistical procedure. A one-way ANOVA was conducted to compare the students' number of first semester attempted hours by type of high school completed. There was a significant difference by type of high school completed on

number of first semester attempted hours ($F_{(2,5351)} = 22.145$, $p < 0.001$). The Tukey post hoc

multiple comparison test was used to determine specifically which groups were significantly

different. Results of the Tukey's test revealed that students who completed a private high school

program had a significantly higher number of first semester attempted hours than students who

completed a public high school program. The homeschool group was not found to be

significantly different from either the public or the private school groups (see Table 4.21).

Table 4.21. Comparison of Semester Credit Hours Attempted During the First Semester of Enrollment of Students Who Entered a Research University (RU/VH) in the Southern Region of the United States by Type of High School Completed

Source	df	MS	F	p
Between Groups	2	90.679	22.145	<.001
Within Groups	5351	4.095		
Total	5353			
Group		n	M	Tukey [a]
Public School Program		3168	13.66	A
Private School Program		2156	14.04	B
Homeschool Program		29	13.66	AB

[a]Groups that do not have a common letter are significantly different.

First Semester Earned Hours

The ninth variable on which students who completed different types of high schools were

compared was first semester earned hours. To accomplish this comparison, one-way ANOVA

was selected as the most appropriate statistical procedure. A one-way ANOVA was conducted to

compare the students' number of first semester earned hours by type of high school completed.

There was a significant difference by type of high school completed on number of first semester

earned hours ($F_{(2,5351)} = 49.781$, $p < 0.001$). The Tukey post hoc multiple comparison test was

used to determine specifically which groups were significantly different. Results of the Tukey's

test revealed that students who completed a private high school program had a significantly

higher number of first semester earned hours than students who completed a public high school

program. The homeschool group was not found to be significantly different from either the public or the private school groups (see Table 4.22).

Table 4.22. Comparison of Semester Credit Hours Earned During the First Semester of Enrollment of Students Who Entered a Research University (RU/VH) in the Southern Region of the United States by Type of High School Completed

Source	df	MS	F	p
Between Groups	2	595.023	49.781	<.001
Within Groups	5351	11.953		
Total	5353			
Group		n	M	Tukey [a]
Public School Program		3168	12.40	A
Private School Program		2157	13.36	B
Homeschool Program		29	12.21	AB

[a]Groups that do not have a common letter are significantly different.

First Semester Grade Point Average (GPA)

The tenth variable on which students who completed different types of high schools were compared was first semester GPA. To accomplish this comparison, one-way ANOVA was selected as the most appropriate statistical procedure. A one-way ANOVA was conducted to compare the students' first semester GPA by type of high school completed. There was a significant difference by type of high school completed on first semester GPA ($F_{(2,5351)} = 77.991$, $p < 0.001$). The Tukey post hoc multiple comparison test was used to determine specifically which groups were significantly different. Results of the Tukey's test revealed that students who completed a private high school program had a significantly higher first semester GPA than students who completed a public high school program. The homeschool group was not found to be significantly different from either the public or the private school groups (see Table 4.23).

Table 4.23. Comparison of Grade-Point Average during the First Semester of Enrollment of Students Who Entered a Research University (RU/VH) in the Southern Region of the United States by Type of High School Completed

Source	df	MS	F	p
Between Groups	2	64.355	77.991	<.001
Within Groups	5351	.825		
Total	5353			
Group		n	M	Tukey [a]
Public School Program		3168	2.75	A
Private School Program		2157	2.82	B
Homeschool Program		29	3.06	AB

[a]Groups that do not have a common letter are significantly different.

Final Semester Declared Major: STEM or Not STEM

The eleventh variable on which students who completed different types of high schools were described was whether or not the student declared a STEM major during their final semester of enrollment. To accomplish this comparison, the chi-square test of independence was selected as the most appropriate statistical procedure. Chi-square tests to determine if the variables being investigated are independent. The results of the chi-square test ($\chi^2_{(df=2)} = 0.620$, p = 0.733) were not statistically significant. This indicates that whether or not the student declared a STEM major during their final semester of enrollment is independent of type of high school completed.

Final Semester Cumulative Grade Point Average (GPA)

The twelfth variable on which students who completed different types of high schools were compared was cumulative GPA for their final semester of enrollment. To accomplish this comparison, one-way ANOVA was selected as the most appropriate statistical procedure. A one-way ANOVA was conducted to compare the students' final cumulative GPA by type of high school completed. There was a significant difference by type of high school completed on final cumulative GPA ($F_{(2,5351)} = 89.926$, p < 0.001). The Tukey post hoc multiple comparison test

was used to determine specifically which groups were significantly different. Results of the

Tukey's test revealed that students who completed a private high school program had a

significantly higher final cumulative GPA than students who completed a public high school

program. The homeschool group was not found to be significantly different from either the

public or the private school groups (see Table 4.24).

Table 4.24. Comparison of Cumulative Grade-Point Average at the End of the Final Semester of
Enrollment of Students Who Entered a Research University (RU/VH) in the Southern Region of
the United States by Type of High School Completed

Source	df	MS	F	p
Between Groups	2	60.872	89.926	<.001
Within Groups	5351	.677		
Total	5353			
Group		n	M	Tukey [a]
Public School Program		3168	2.75	A
Private School Program		2157	3.05	B
Homeschool Program		29	2.92	AB

[a]Groups that do not have a common letter are significantly different.

Objective Five Results

The fifth objective of this study was to determine if a model exists that significantly

increases the researcher's ability to correctly classify students on their retention in school and

persistence to graduation among undergraduate students at a research university (RU/VH) in the

Southern region of the United States from the following measures:

- Public High School Program Completion;

- Private High School Program Completion;

- Home High School Program Completion;

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA).

To accomplish this objective, the multiple discriminant analysis procedure was used. The multiple discriminant analysis procedure requires that all independent variables entered into the model must be on a continuous scale of measurement (interval or ratio) or must be coded as a dichotomous variable. All independent variables for this study were entered into the model as either continuous variables or as binary-coded (dichotomous) variables. The independent variables in this category were coded for the analysis as outlined below:

- Public High School Program Completion: This was a dichotomous variable coded as 1 if the student completed a public high school program and 0 if the student did not complete a public school program;

- Private High School Program Completion: This was a dichotomous variable coded as 1 if the student completed a private high school program and 0 if the student did not complete a private school program;

- Home High School Program Completion: This was a dichotomous variable coded as 1 if the student completed a home high school program and 0 if the student did not complete a home school program;

- Gender: This was a dichotomous variable coded as 1 if the student was female, 2 if the student was male;

- Race: This was a series of dichotomous variables coded as 1 if the student is a member of the specified race or 0 if they are not a member of the specified race. For example, if a subject is identified as African American, on the variable African American status, they were coded "1" whereas on each of the other race categories (such as Hispanic) they were coded "0";

- Overall high school grade point average (GPA): This was measured as a continuous variable;

- ACT composite score: This was measured as a continuous variable;

- Whether or not student lived in a residential college: This was a dichotomous variable coded as 1 if the student lived in a residential college during their first semester and 0 if the student did not live in a residential college during their first semester;

- Whether or not student had a major scholarship: This was a dichotomous variable coded as 1 if the student had a major scholarship and 0 if the student did not have a major scholarship;

- First semester declared major: STEM or Not STEM: This was a dichotomous variable coded as 1 if the student declared a major during their first semester of enrollment that was classified as being in one of the STEM fields and 0 if the student declared a major during their first semester of enrollment that was not classified as in one of the STEM fields;

- First semester attempted hours: This was measured as a continuous variable;

- First semester earned hours: This was measured as a continuous variable;

- First semester grade point average (GPA): This was measured as a continuous variable.

Step One of Discriminant Analysis

The first step in conducting the discriminant analysis was to examine the independent variables for the existence of multicollinearity. Multicollinearity occurs when two or more independent variables are highly linearly related. The existence of such correlations can require the researcher to modify the list of independent variables.

The multicollinearity analysis showed no excess multicollinearity in the data.

Step Two of Discriminant Analysis

The second step in conducting the discriminant analysis was to compare the group of students who persisted to graduation to the group of students who did not persist to graduation. This was accomplished by comparing the means of each independent variable by the category of the dependent variable, whether or not the student persisted to graduation.

Using an *a priori* significance level of 0.05, 14 of the independent variables had statistically significant group means. Of these 14 variables, there were 10 variables where the group of students who persisted to graduation was found to have a higher mean than the group of students who did not persist to graduation. These variables were: (1) Whether or not student had a major scholarship, (2) Private High School Program Completion, (3) Overall high school grade point average (GPA), (4) ACT composite score, (5) Race – White, (6) First semester attempted hours, (7) First semester earned hours, (8) First semester grade point average (GPA), (9) Whether or not student lived in a residential college, and (10) Race – Asian. The four variables that yielded a statistically significant result with a group mean that was not higher for students who persisted to graduation were: (1) Public High School Program Completion, (2) Race – Black or African American, (3) First semester major: STEM or Not STEM, and (4) Gender. The means of the groups for the remaining three variables: (1) Race – Multi-racial,

(2) Race – Hispanic, and (3) Home High School Program Completion, were not statistically

significant. The means and standard deviations, including F-ratio values and p-values are listed

in Table 4.25.

Table 4.25. Comparison of Discriminating Values, Variable Means, Standard Deviations, and F-ratios in the Derived Exploratory Discriminant Model by Persistence to Graduation for Students Who Attended a Research University-Very High Research (RU/VH) in the Southern Region of the United States

Discriminating Variable	Group Persisted to Graduation n = 3551 M SD	Group Did Not Persist to Graduation n = 1793 M SD	F- ratio	df1	df2	p
First semester GPA	3.18 .660	2.29 1.064	1402.689	1	5342	<.001
First semester earned hours	13.77 2.420	10.86 4.343	992.750	1	5342	<.001
First semester attempted hours	14.20 1.809	13.05 2.225	409.744	1	5342	<.001
Overall High School GPA	3.57 .316	3.39 .344	336.092	1	5342	<.001
ACT composite score	25.99 3.531	24.73 3.364	156.038	1	5342	<.001
Whether or not student had a major scholarship	.34 .474	.20 .400	114.693	1	5342	<.001
Public High School Program Completion	.55 .498	.68 .468	79.753	1	5342	<.001
Private High School Program Completion	.45 .497	.32 .467	78.238	1	5342	<.001
Race – Black or African American	.09 .285	.16 .368	62.854	1	5342	<.001
Race – White	.77 .421	.70 .461	34.625	1	5342	<.001
First semester major: STEM or Not STEM	.60 .490	.68 .467	32.314	1	5342	<.001
Whether or not student lived in a residential college	.26 .441	.22 .413	13.236	1	5342	<.001

(table cont'd.)

Discriminating Variable	Group Persisted to Graduation n = 3551 M SD	Group Did Not Persist to Graduation n = 1793 M SD	F- ratio	df1	df2	p
Gender	1.44 .497	1.48 .500	5.520	1	5342	.019
Race – Asian	.05 .216	.04 .186	4.960	1	5342	.026
Race – Multi-racial	.03 .155	.03 .171	1.311	1	5342	.252
Race – Hispanic	.06 .241	.07 .255	1.279	1	5342	.258
Home High School Program Completion	.01 .077	.004 .067	.465	1	5342	.495

Step Three of Discriminant Analysis

In the third step of the discriminant analysis, the researcher examined the computed standardized canonical discriminant function coefficients. The centroids for the groups were determined to be .385 for students who persisted to graduation and -.762 for students who did not persist to graduation. A total of seven independent variables entered the discriminant model yielding an overall canonical correlation of $\underline{Rc}$ = .476. These seven variables were:

1. First semester grade point average (GPA);

2. First semester attempted hours;

3. First semester declared major: STEM or Not STEM;

4. Whether or not student lived in a residential college;

5. Public High School Program Completion;

6. ACT composite score;

7. Overall high school grade point average (GPA).

The variable that entered the discriminant model first and had the strongest influence on the dependent variable, whether or not the student persisted to graduation, was first semester GPA. This variable had the highest standardized discriminant function coefficient ($\beta = .812$). The nature of the influence between first semester GPA and whether or not the student persisted to graduation was such that a higher first semester GPA increased the likelihood of the student persisting to graduation.

The variable that entered the discriminant model second was first semester attempted hours. This variable has a standardized canonical discriminant function coefficient of $\beta = .210$. The nature of the influence between first semester attempted hours and whether or not the student persisted to graduation was such that a higher number of first semester attempted hours increased the likelihood of the student persisting to graduation.

The variable that entered the discriminant model third was first semester declared major: STEM or not STEM. This variable has a standardized canonical discriminant function coefficient of $\beta = -.168$. The nature of the influence between first semester declared major: STEM or Not STEM and whether or not the student persisted to graduation was such that a student who declared a major during their first semester of enrollment that was classified as in one of the STEM fields was less likely to persist to graduation.

The variable that entered the discriminant model fourth was whether or not student lived in a residential college during their first semester of enrollment. This variable had a standardized canonical discriminant function coefficient of $\beta = .131$. The nature of the influence between whether or not student lived in a residential college and whether or not the student persisted to graduation was such that residing in a residential college increased the likelihood of the student persisting to graduation.

The variable that entered the discriminant model fifth was public high school program completion. This variable has a standardized canonical discriminant function coefficient of β = -.109. The nature of the influence between public high school program completion and whether or not the student persisted to graduation was such that a student who completed a public high school program was less likely to persist to graduation.

The variable that entered the discriminant model sixth was ACT composite score. This variable has a standardized canonical discriminant function coefficient of β = .081. The nature of the influence between ACT composite score and whether or not the student persisted to graduation was such that a higher ACT composite score increased the likelihood of the student persisting to graduation.

The variable that entered the discriminant model seventh was cumulative high school GPA. This variable has a standardized canonical discriminant function coefficient of β = .082. The nature of the influence between cumulative high school GPA and whether or not the student persisted to graduation was such that a higher cumulative high school GPA increased the likelihood of the student persisting to graduation.

In addition to the computed standardized canonical discriminant function coefficients, the researcher examined the within-group structure coefficients to determine which of the seven variables were most substantively significant.

There were two independent variables from the discriminant model that had structure correlations that met the criteria for substantive significance. These variables were:

1. First semester grade point average (GPA);
2. First semester attempted hours.

The remaining five independent variables from the discriminant model were determined to have structure correlations that were insufficient to be considered substantively significant. These variables were:

1. First semester declared major: STEM or Not STEM;

2. Whether or not student lived in a residential college;

3. Public High School Program Completion;

4. ACT composite score;

5. Overall high school grade point average (GPA).

A summary of the discriminant analysis data for the derived model can be found in Table 4.26.

Table 4.26. Summary Data for Stepwise Multiple Discriminant Analysis of the Exploratory Model for Persistence to Graduation of Students at a Research University-Very High Research (RU/VH) in the Southern Region of the United States

Discriminating Variables	β [a]	s [b]	Discriminant Functions	
			Group	Centroids
First semester GPA	.812	.946	Persisted to Graduation	.385
First semester attempted hours	.210	.512	Did Not Persist to Graduation	-.762
First semester major: STEM or Not STEM	-.168	-.144		
Whether or not student lived in a residential college	.131	.092		
Public High School Program Completion	-.109	-.226		
Overall High School GPA	.082	.463		
ACT composite score	.081	.316		
First semester earned hours	[c]	.773		
Whether or not student had a major scholarship	[c]	.277		
Private High School Program Completion	[c]	.277		
Race – Black or African American	[c]	-.174		
Race – White	[c]	.149		
Gender	[c]	-.109		
Race – Hispanic	[c]	-.029		
Race – Multi-racial	[c]	-.021		

(table cont'd.)

Discriminating Variables	β [a]	s [b]	Discriminant Functions	
			Group	Centroids
Race – Asian	[c]	.010		
Home High School Program Completion	[c]	-.003		
Eigenvalue .293	Rc[d] .476	Wilk's Lambda .773	p <.001	

Note. n = 5344

[a] β = standardized discriminant function coefficient

[b] s = within group structure coefficient

[c] Did not enter the discriminant model as a significant predictor

[d] Rc = canonical correlation coefficient

Step Four of Discriminant Analysis

In the final step of the discriminant analysis, the researcher examined the actual versus predicted cases to determine the accuracy of the model. The model correctly classified 75.1% of the original group cases. The Tau statistic is used to determine the substantive significance of the percent of correctly classified cases. To be considered a valuable predictive model, the model should show at least a 25% improvement over chance. For a study with a two-category dependent variable, a 25% improvement over chance would be a model that correctly classifies at least 62.5% of cases. The predictive model produced by this discriminant analysis yielded a 75.1% correct classification rate which yields a tau value of 50.2% and surpasses the minimum standard to be considered both statistically significant and substantively important (see Table 4.27).

Table 4.27. Persistence to Graduation of Students Who Entered a Research University (RU/VH) in the Southern Region of the United States

Predicted Group	Actual Group		Total
	Persisted to Graduation n %	Did Not Persist to Graduation n %	
Persisted to Graduation	3220 90.7	999 55.7	4219 78.9

(table cont'd.)

Predicted Group	Actual Group		Total
	Persisted to Graduation <u>n</u> <u>%</u>	Did Not Persist to Graduation <u>n</u> <u>%</u>	
Did Not Persist to Graduation	331 9.3	794 44.3	1125 21.1
Total	3551 100.0	1793 100	5344 100

Note. Percent of cases correctly classified: 75.1%, n = 5344

CHAPTER 5. SUMMARY

Summary of Purpose and Objectives

The primary purpose of this study was to determine the impact of the type of high school completed and selected academic and demographic characteristics on university retention to degree completion at a research university – very high research (RU/VH) in the Southern Region of the United States. The dependent variable of this study was persistence to graduation at 6 years.

1. To describe undergraduate students at a research university (RU/VH) in the Southern region of the United States who completed a public high school program on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

2. To describe undergraduate students at a research university (RU/VH) in the Southern

region of the United States who completed a private high school program on the following

selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

3. To describe undergraduate students at a research university (RU/VH) in the Southern

region of the United States who completed a homeschool high school program on the following

selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

4. To compare undergraduate students at a research university (RU/VH) in the Southern region of the United States by type of high school completed (public, private, and homeschool) on the following selected academic and demographic characteristics:

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA);

- Final semester declared major: STEM or Not STEM;

- Final semester cumulative grade point average (GPA).

5. To determine if a model exists that significantly increases the researcher's ability to

correctly classify students on their retention in school and persistence to graduation among undergraduate students at a research university (RU/VH) in the Southern region of the United States from the following measures:

- Public High School Program Completion;

- Private High School Program Completion;

- Home High School Program Completion;

- Gender;

- Race;

- Overall high school grade point average (GPA);

- ACT composite score;

- Whether or not student lived in a residential college;

- Whether or not student had a major scholarship;

- First semester declared major: STEM or Not STEM;

- First semester attempted hours;

- First semester earned hours;

- First semester grade point average (GPA).

Summary of Methodology

The target population for this study was defined as traditional-age undergraduate students enrolled in a research university – very high research (RU/VH) in the Southern Region of the United States. The accessible population was defined as traditional-age undergraduate students enrolled in one selected research university - very high research (RU/VH) in the Southern Region of the United States who began as first semester freshmen during the Fall semester 2014. The sample was defined as 100% of the defined accessible population.

The researcher designed a computerized recording form to collect and store data from the Office of the University Registrar. The specific variables to be measured were determined from the review of literature, the University's Office of the Registrar, and from the study institution's Office of Undergraduate Admissions. The information was downloaded into a file that served as the research instrument.

The researcher applied for Exemption from Institutional Oversight because the accessible population and sample did not include a vulnerable population and because none of the participants can be identified from the data received. The IRB granted the exemption. The Office of the University Registrar utilized the Mainframe computer program to access the database, extract the necessary data points, and store them for the data analysis process.

Summary of Major Findings

The first objective of this study was to describe undergraduate students at a research university (RU/VH) in the Southern region of the United States who completed a public high school program on selected academic and demographic characteristics.

Of the 3168 students who completed a public high school program in 2014 and entered the study institution in the Fall 2014 entering class the majority (n=1769 55.8%) were female and the majority (n=2119, 67.1%) identified as White with the second largest group (n=526, 16.6%) identifying as Black or African-American.

These students had a mean high school GPA of 3.51 (SD =0.337) and a mean ACT composite score of 25.30 (SD = 3.616). Of the 3168 students, 803 (25.3%) lived in a residential college during their first semester and 2365 (74.7%) did not. Additionally, 879 (27.7%) received one of the university's five major scholarships and 2289 (72.3%) did not.

During their first semester of enrollment, the majority of public high school graduates declared a STEM major (n=2014, 63.7%, Note: 7 students had no major listed). The mean number of attempted for public high school graduates was 13.66 (SD= 2.106) with a mean number of earned hours of 12.40 (SD= 3.760). The mean first semester GPA for these students was 2.75 (SD= 0.982).

During their final semester of enrollment, the majority of public high school graduates (n=1579, 50.3%, Note: 28 students had no major listed) declared a STEM major and the mean final semester cumulative GPA for these students was 2.74 (SD= 0.892).

The second objective of this study was to describe undergraduate students at a research university (RU/VH) in the Southern region of the United States who completed a private high school program on selected academic and demographic characteristics.

Of the 2157 students who completed a private high school program in 2014 and entered the study institution in the Fall 2014 entering class the majority (n=1143, 53.0%) were female and the majority (n=1836, 85.4%) identified as White with the second largest group (n=135, 6.3%) identifying as Hispanic.

These students had a mean high school GPA of 3.50 (SD = 0.334) and a mean ACT composite score of 25.93 (SD = 3.362). Of the 2157 students, 528 (24.5%) lived in a residential college during their first semester and 1629 (75.5%) did not. Additionally, 672 (31.2%) received one of the university's five major scholarships and 1485 (68.8%) did not.

During their first semester of enrollment, the majority of public high school graduates declared a STEM major (n=1310, 60.8%, Note: 2 students had no major listed). The mean number of attempted for public high school graduates was 14.04 (SD=1.900) with a mean

number of earned hours of 13.36 (SD= 2.943). The mean first semester GPA for these students was 3.06 (SD= 0.782).

During their final semester of enrollment, a minority of private high school graduates (n=1060, 49.2%, Note: 3 students had no major listed) declared a STEM major and the mean final semester cumulative GPA for these students was 3.05 (SD= 0.709).

The third objective of this study was to describe undergraduate students at a research university (RU/VH) in the Southern region of the United States who completed a home high school program on selected academic and demographic characteristics.

Of the 29 students who completed a home high school program in 2014 and entered the study institution in the Fall 2014 entering class the majority (n=22, 75.9%) were male and the majority (n=27, 92.6%) identified as White with the remainder (n=2, 7.4%) identifying as Hispanic (Note: Two students did not provide their race.)

These students had a mean high school GPA of 3.63 (SD = 0.273) and a mean ACT composite score of 26.00 (SD = 3.576). Of the 29 students, 1 (3.4%) lived in a residential college during their first semester and 28 (96.6%) did not. Additionally, 13 (44.8%) received one of the university's five major scholarships and 16 (55.2%) did not.

During their first semester of enrollment, the majority of home high school graduates declared a STEM major (n=18, 62.1%). The mean number of attempted for home high school graduates was 13.66 (SD=1.653) with a mean number of earned hours of 12.21 (SD= 4.279). The mean first semester GPA for these students was 2.82 (SD= 1.191).

During their final semester of enrollment, a minority of home high school graduates (n=14, 48.3%) declared a STEM major and the mean final semester cumulative GPA for these students was 2.92 (SD= 0.813).

The fourth objective of this study was to compare undergraduate students at a research university (RU/VH) in the Southern region of the United States by type of high school completed (public, private, and homeschool) on selected academic and demographic characteristics.

The chi-square test of independence yielded a significant result ($\chi^2_{(df=2)}$ = 15.056, p < 0.001) when gender was tested for independence from the variable, type of high school completed. The nature of the association between the two variables was such that the majority of public and private school graduates were female while the majority of homeschool graduates were male.

The chi-square test of independence yielded a significant result ($\chi^2_{(df=6)}$ = 262.914, p < 0.001) when race was tested for independence from the variable, type of high school completed. The nature of the association between the two variables was such that there is a higher representation of White students who completed home and private high school programs and a lower representation of African-American students who completed home and private high school programs.

Students who completed a public high school program, students who completed a private high school program, and students who completed a home high school program, were compared on the variable, overall high school GPA. The significant one-way ANOVA ($F_{(2,5351)}$ = 3.428, p=0.033) indicated that there was at least one significant difference between the three groups. Results of the Tukey's test revealed that students who completed a home high school program (mean = 3.63) had a significantly higher high school GPA than students who completed a private high school program (mean = 3.50). The public school group was not found to be significantly different from either the home or private school groups.

Students who completed a public high school program, students who completed a private high school program, and students who completed a home high school program, were compared on the variable, ACT composite score. The significant one-way ANOVA ($F_{(2,5350)} = 21.025$, $p < 0.001$) indicated that there was at least one significant difference between the three groups. Results of the Tukey's test revealed that students who completed a private high school program had a significantly higher ACT composite score than students who completed a public high school program. The homeschool group was not found to be significantly different from either the public or the private school groups.

The chi-square test of independence yielded a significant result ($\chi^2_{(df=2)} = 7.683$, $p = 0.021$) when whether or not the student lived in a residential college during their first semester was tested for independence from the variable, type of high school completed. The nature of the association between the two variables was such that there is a higher representation of participation in a residential college among public school graduates and private school graduates and a lower representation of participation in a residential college among homeschool graduates.

The chi-square test of independence yielded a significant result ($\chi^2_{(df=2)} = 10.647$, $p = 0.005$) when whether or not the student received a major scholarship was tested for independence from the variable, type of high school completed. The nature of the association between the two variables was such that there was a higher representation of private school and homeschool graduates among scholarship recipients and there was a lower representation of public school graduates among scholarship recipients.

Students who completed a public high school program, students who completed a private high school program, and students who completed a home high school program, were compared on the variable, first semester attempted hours. The significant one-way ANOVA ($F_{(2,5351)} =$

22.145, p < 0.001) indicated that there was at least one significant difference between the three groups. Results of the Tukey's test revealed that students who completed a private high school program had a significantly higher number of first semester attempted hours than students who completed a public high school program. The homeschool group was not found to be significantly different from either the public or the private school groups.

Students who completed a public high school program, students who completed a private high school program, and students who completed a home high school program, were compared on the variable, first semester earned hours. The significant one-way ANOVA ($F_{(2,5351)} = 49.781$, $p < 0.001$) indicated that there was at least one significant difference between the three groups. Results of the Tukey's test revealed that students who completed a private high school program had a significantly higher number of first semester earned hours than students who completed a public high school program. The homeschool group was not found to be significantly different from either the public or the private school groups.

Students who completed a public high school program, students who completed a private high school program, and students who completed a home high school program, were compared on the variable, first semester GPA. The significant one-way ANOVA ($F_{(2,5351)} = 77.991$, $p < 0.001$) indicated that there was at least one significant difference between the three groups. Results of the Tukey's test revealed that students who completed a private high school program had a significantly higher first semester GPA than students who completed a public high school program. The homeschool group was not found to be significantly different from either the public or the private school groups.

Students who completed a public high school program, students who completed a private high school program, and students who completed a home high school program, were compared

on the variable, cumulative GPA for their final semester of enrollment. The significant one-way ANOVA ($F_{(2,5351)}$ = 89.926, p < 0.001) indicated that there was at least one significant difference between the three groups. Results of the Tukey's test revealed that students who completed a private high school program had a significantly higher final cumulative GPA than students who completed a public high school program. The homeschool group was not found to be significantly different from either the public or the private school groups.

Two of the variables tested for independence from the variable, type of high school completed, yielded statistically insignificant chi-square results. These two variables were (1) whether or not the student declared a major during their first semester of enrollment that was classified as in one of the STEM fields and (2) whether or not the student declared a STEM major during their final semester of enrollment. These two variables are independent of type of high school completed.

The fifth objective of this study was to determine if a model exists that significantly increases the researcher's ability to correctly classify students on their retention in school and persistence to graduation among undergraduate students at a research university (RU/VH) in the Southern region of the United States. The analysis produced a discriminant model that correctly classified 75.1% of cases. A total of seven independent variables entered the discriminant model yielding an overall canonical correlation of $\underline{Rc}$ = .476. The seven discriminating variables that entered into the model were:

1. First semester grade point average (GPA);

2. First semester attempted hours;

3. First semester declared major: STEM or Not STEM;

4. Whether or not student lived in a residential college;

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5. Public High School Program Completion;

6. Overall high school grade point average (GPA);

7. ACT composite score.

Conclusions, Implications, and Recommendations

Conclusion One

1. University students who completed a public high school program performed less well academically than those who completed other types of programs.

This conclusion is based on the following findings from the study: public high school program completion entered into the discriminant model as a negative predictor of persistence to graduation and that the one-way ANOVA and Tukey's post hoc test revealed that students who completed a public high school program had a significantly lower final cumulative GPA than students who completed a private high school program (the homeschool group was not found to be significantly different from either the public or the private school groups).

The review of related literature revealed that many institutions of higher education allocate disproportionate funding to recruitment of private school students over public school students. From a purely economic standpoint, universities must consider the allocation of limited recruitment monies on the audiences that they anticipate will produce the highest return on investment. This study revealed evidence to suggest that universities should target private and home school graduates over public school graduates for recruitment due to their increased rates of persistence to graduation and the importance of retention in the current enrollment climate.

Based on the findings from this study and in concurrence with conclusion one, the researcher recommends to recruitment policy decision makers that home school students and private school students should be specifically targeted when it comes to allocation of recruitment

dollars. It is possible that given the recent spike in home schooling due to the coronavirus pandemic, there may be a larger pool of home school graduates over the next few years than would otherwise have been expected. If this is the case, the researcher recommends that recruitment policy decision makers increase efforts to recruit home school students if for no other reason than that they will represent a larger pool of potential students and that their past performance is equivalent to that of private school graduates.

Conclusion Two

2. Members of the entering freshman class who completed a home school program were very different from the other groups in the class on the characteristic of gender.

This conclusion is based on the following findings of the study: more than three-fourths of admitted students who completed a home high school program (n = 22, 75.9%) were male. This is in an entering class that was majority female overall (n = 2919, 54.5%).

While this result is consistent with the literature which suggests that the majority of homeschool students who attend college are male, the extreme disparity in college admission is interesting because the breakdown of homeschool students by gender is much more equal with a slight majority of female students (Cui & Hanson, 2019).

Based on the findings from this study and in concurrence with conclusion two, the researcher recommends additional research in the form of a survey of female home high school graduates to determine if they are attending college, which institution they selected and what factors influenced their decision.

Conclusion Three

3. Members of the entering freshman class who completed a home school program were very different from the other groups in the class on the characteristic of race.

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This conclusion is based on the following findings from the study: there were no Black/African-American (n=0, 0.0%) homeschool graduates admitted in Fall 2014, the majority of homeschool admits were White (n=25, 92.6%).

While this result is partially consistent with the literature which suggests that the majority of homeschools graduates who attend college are white, there was nothing in the review of related literature to suggest that a complete lack of Black/African-American representation should be expected. It is worth noting that there is a university within 15 miles of the study institution that is designated as a HBCU. It is possible that the nearby HBCU utilizes specific recruiting strategies to target Black/African-American home school graduates who might otherwise have attended the study institution. Alternatively, it is possible that the entering class of Fall 2014 was an anomaly.

Based on the findings from this study and in concurrence with conclusion three, the researcher recommends additional research at this same institution across a broader time period to determine if the racial disparities are representative of the admissions at this institution or if the entering class of Fall 2014 was an anomaly. Additionally, the researcher recommends further research at the nearby HBCU to determine if the Black or African-American home school graduates who ultimately attended the HBCU considered attending the institution from this study as well as the factors that influenced their decision on which university to attend. The researcher further recommends that recruitment policy decision makers consider employing specific recruitment strategies that target Black/African-American homeschool graduates to encourage them to apply for and accept admission to the study institution.

Conclusion Four

4. The number of home school graduates who attended the study institution is very low.

This conclusion is based on the following findings from the study: there were only 29 students who completed a home high school program in 2014 and entered the study institution in the Fall 2014 entering class. This is compared to 3159 public school graduates and 2157 private school graduates.

Absent additional information, the most likely explanation for this conclusion appears to be that the entering class of Fall 2014 was an anomaly.

Based on the findings from this study and in concurrence with conclusion four, the researcher recommends supplementary research at this same institution across a broader time period to determine if the disparity in number of homeschool admits is representative of the admissions at this institution or if the entering class of Fall 2014 was an anomaly. The researcher further recommends that additional research be conducted to determine if the lack of an emergent difference between homeschool and either private or public school graduates was a result of the limited data set in this study or if the results of this study can be confirmed in other research. This follow up research should be conducted at the same or similar type of research institution to determine if the findings can be confirmed in the same type of institution. The researcher also recommends expanded research at this same institution to determine what the percentage of admitted applicants who actually attend the institution was across years for homeschool graduates.

Additionally, further research should be done in other types of institution to determine if smaller institutions with a differential research focus might be more appealing to homeschool graduates.

Conclusion Five

5. The strongest predictor of retention is first semester GPA.

This conclusion is based on the following finding from the study: first semester GPA was the variable that entered the discriminant model first and had the strongest influence on whether or not the student persisted to graduation.

This is consistent with the review of literature which suggested that first semester GPA was the strongest predictor of retention (Westrick et al., 2015). The literature also suggested that many universities utilize first year intervention strategies, particularly for high risk students, in order to influence retention through development of campus citizenship and improved student time management skills (Brown, 2012).

Based on the findings from this study and in concurrence with conclusion five and the review of literature which indicated that interventions during the first semester have the greatest impact on retention, the researcher recommends to university officials and faculty serving as advisors to undergraduate students to consider the development of an early warning system for students who are struggling during their first semester of enrollment. Such a system could integrate check-ins that are designed to identify academic struggles early enough in the semester that interventions can be successfully implemented before the student passes the semester mid-point.

Conclusion Six

6. Declaration of a STEM major at college entrance was negatively related to retention.

This conclusion is based on the following finding from the study: first semester declared major: STEM or not STEM was the variable that entered the discriminant model third and had a standardized canonical discriminant function coefficient of $\beta = -.168$ which indicates that a student who declared a major during their first semester of enrollment that was classified as in one of the STEM fields was less likely to persist to graduation.

Based on the findings from this study and in concurrence with conclusion six, the researcher recommends additional research to determine if certain STEM majors or colleges have more or less success in retention and for what potential reasons. Depending on the findings of such a study, heads of STEM departments should closely examine the support systems that they have for their students and determine if departmental initiatives could be implemented to increase student access to resources such as mentoring or tutoring, particularly during their first semester of enrollment.

APPENDIX A. INSTITUTIONAL REVIEW BOARD APPROVAL

Application for Exemption from Institutional Oversight

LSU

Institutional Review Board
Dr. Dennis Landin, Chair
130 David Boyd Hall
Baton Rouge, LA 70803.
P: 225.578.8692
F: 225.578.5983
irb@lsu.edu
lsu.edu/research

Unless qualified as meeting the specific criteria for exemption from Institutional Review Board (IRB) oversight, All LSU research/ projects using living humans as subjects, or samples, or data obtained from humans, directly or indirectly, with or without their consent, must be approved or exempted in advance by the LSU IRB. This form helps the PI determine if a project may be exempted, and is used to request an exemption.

– Applicant, Please fill out the application in its entirety and include the completed application as well as parts B–F, listed below, when submitting to the IRB. Once the application is completed, please submit the completed application to the IRB Office by e-mail (irb@lsu.edu) for review. If you would like to have your application reviewed by a member of the Human Subjects Screening Committee before submitting it to the IRB office, you can find the list of committee members at http://sites01.lsu.edu/wp/ored/human-subjects-screening-committee-members/.

– A Complete Application Includes All of the Following:
  (A) This completed form
  (B) A brief project description (adequate to evaluate risks to subjects and to explain your responses to Parts 1&2)
  (C) Copies of all instruments to be used.
    *If this proposal is part of a grant proposal, include a copy of the proposal and all recruitment material.
  (D) The consent form that you will use in the study (see part 3 for more information.)
  (E) Certificate of Completion of Human Subjects Protection Training for all personnel involved in the project, including students who are involved with testing or handling data, unless already on file with the IRB. Training link: https://about.citiprogram.org/en/homepage/
  (F) Signed copy of the IRB Security of Data Agreement: http://www.lsu.edu/research/downloads/IRB-Security-of-Data-Agreement-Form.pdf

1) Principal Investigator: **Rachel Pierson Gill**   Rank: **Student**

Dept: **AEEE**   Ph: **985-981-2437**   E-mail: **rpierson@lsu.edu**

2) Co-Investigator(s): please include department, rank, phone and e-mail for each. If the co-investigator resides in the EU, a GDPR consent form must be signed by the co-investigator prior to study submission for IRB approval.
  *If the Principal Investigator is a student, identify and name supervising professor in this space.

Michael F. Burnett, Professor and Head
Department of Agricultural and Extension Education and Evaluation
Phone-578-2977
Email - vocbur@lsu.edu

3) Project Title:
The impact of high school institution type on university retention of undergraduate students

4) Proposal? (yes or no) **No**   If Yes, LSU Proposal Number **n/a**

Also, if YES, either ☐ This application completely matches the scope of work in the grant
       OR ☐ More IRB Applications will be filed later

5) Subject pool (e.g. Psychology students) **LSU Undergraduate Students**
  *Indicate any "vulnerable populations" to be used: (children <18 the mentally impaired, the aged, other).
  *Projects with incarcerated persons cannot be exempted.

6) Does your study include participants (counting MTurk) in the 28 member states of the EU or the three additional countries? ☐ Yes ⦿ No
(Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, UK, Norway, Iceland, Lichtenstein)

7) PI Signature _[signature]_   Date **5/28/2020**
(no per signatures)

** I certify my responses are accurate and complete. If the project scope or design later changes, I will resubmit for review. I will obtain written approval from the Authorized Representative of all non-LSU institutions in which the study is conducted. I also understand that it is my responsibility to maintain copies of all consent forms at LSU for three years after completion of the study. If I leave LSU before that time, the consent forms should be preserved in the Departmental Office.

Screening Committee Action: ☒ Exempted ☐ Not Exempted   Category/Paragraph **HE20—R6**

Signed Consent Waived?: ☒ Yes or ☐ No

Reviewer **Michael Keenan**   Signature **Michael Keenan**   Date **6-1-2020**

ACT to SAT Conversion Table

SAT	ACT	SAT	ACT	SAT	ACT
1600	36	1250	26	900	17
1590	35	1240	26	890	16
1580	35	1230	25	880	16
1570	35	1220	25	870	16
1560	35	1210	25	860	16
1550	34	1200	25	850	15
1540	34	1190	24	840	15
1530	34	1180	24	830	15
1520	34	1170	24	820	15
1510	33	1160	24	810	15
1500	33	1150	23	800	14
1490	33	1140	23	790	14
1480	32	1130	23	780	14
1470	32	1120	22	770	14
1460	32	1110	22	760	14
1450	32	1100	22	750	13
1440	31	1090	21	740	13
1430	31	1080	21	730	13
1420	31	1070	21	720	13
1410	30	1060	21	710	12
1400	30	1050	20	700	12
1390	30	1040	20	690	12
1380	29	1030	20	680	12
1370	29	1020	20	670	12

SAT	ACT	SAT	ACT	SAT	ACT
1360	29	1010	19	660	12
1350	29	1000	19	650	12
1340	28	990	19	640	12
1330	28	980	19	630	12
1320	28	970	18	620	11
1310	28	960	18	610	11
1300	27	950	18	600	11
1290	27	940	18	590	11
1280	27	930	17	580	11
1270	26	920	17	570	11
1260	26	910	17	560	11

REFERENCES

Allen, J., & Robbins, S. (2010). Effects of interest–major congruence, motivation, and academic performance on timely degree attainment. *Journal of Counseling Psychology*, 57, 23–35.

Allen, J., Robbins, S. B., Casillas, A., & Oh, I.-S. (2008). Third-Year College Retention and Transfer: Effects of Academic Performance, Motivation, and Social Connectedness. *Research in Higher Education*, 49(7), 647–664.

Bielick, S., Chandler, K., Broughman, S. P., & National Center for Education Statistics, E. W. D. (2001). Homeschooling in the United States: 1999. Retrieved from http://search.ebscohost.com.libezp.lib.lsu.edu/login.aspx?direct=true&db=eric&AN=ED455926&site=ehost-live&scope=site.

Brooks, Jr., Roy Cleveland, "Factors that influence traditional-age, high-achieving students to enroll at a research-extensive university in the Southern region of the United States" (2006). *LSU Doctoral Dissertations*. 23. https://digitalcommons.lsu.edu/gradschool_dissertations/23.

Cui, J., Hanson, R., American Institutes for Research. (2019). Homeschooling in the United States: Results from the 2012 and 2016 Parent and Family Involvement Survey. Retrieved from: https://nces.ed.gov/pubs2020/2020001.pdf.

Digest of Education Statistics, 2018. (n.d.). Retrieved June 08, 2020, from https://nces.ed.gov/programs/digest/d18/tables/dt18_206.10.asp?current=yes.

Galloway, R. A. S. (1995). Home Schooled Adults: Are They Ready for College? Retrieved from http://search.ebscohost.com.libezp.lib.lsu.edu/login.aspx?direct=true&db=eric&AN=ED384297&site=ehost-live&scope=site.

Gloeckner, G. W., & Jones, P. (2013). Reflections on a Decade of Changes in Homeschooling and the Homeschooled Into Higher Education. *Peabody Journal of Education*, *88*(3), 309–323. https://doi.org/10.1080/0161956X.2013.796837.

Hemelt, S., & Marcotte, D. (2011). The Impact of Tuition Increases on Enrollment at Public Colleges and Universities. *Educational Evaluation and Policy Analysis, 33*(4), 435-457. Retrieved June 24, 2020, from www.jstor.org/stable/41413066.

Jaschik, S. (2019, April 1). Where Do Colleges Recruit? Wealthy and White High Schools. Retrieved July 08, 2020, from https://www.insidehighered.com/admissions/article/2019/04/01/study-finds-public-universities-focus-out-state-recruitment-high.

Kreager Jr., R. (2010). Homeschooling: The Future of Education's Most Basic Institution. *University of Toledo Law Review*, *42*(1), 227–253. Retrieved from http://0search.ebscohost.com.library.regent.edu/login.aspx?direct=true&db=lgh&AN=60145854&site=eds-live.

Louisiana Homeschool Laws. (n.d.). Retrieved June 08, 2020, from https://hslda.org/legal/louisiana.

Louisiana Office of Student Financial Assistance (LOSFA). 2020, January 17. *TOPS Questions and Answers for High School Students and Counselors.* https://mylosfa.la.gov/wp-content/uploads/2020/03/TOPS_Q_and_A-2020.pdf.

McIntyre, Loren S., "The Influence of Student Housing and Selected Academic and Personal Demographic Characteristics on the Retention of Students from the Second to Third Year at a Research University (RU/VH)" (2017). *LSU Doctoral Dissertations*. 4154. https://digitalcommons.lsu.edu/gradschool_dissertations/4154.

Medlin, R. G. (2013). Homeschooling and the Question of Socialization Revisited. Peabody Journal of Education, 88(3), 284–297. https://doi.org/10.1080/0161956X.2013.796825.

Murtaugh, P. A., Burns, L. D., & Schuster, J. (1999). Predicting the retention of university students. *Research in Higher Education*, *40*(3), 355–371. https://doi.org/10.1023/A:1018755201899.

Nafukho, Fredrick Muyia, "Factors Determining University Enrollment Status: The Case of High School Students Recruited to Attend Louisiana State University College of Agriculture." (1998). LSU Historical Dissertations and Theses. 6854. https://digitalcommons.lsu.edu/gradschool_disstheses/6854.

National Student Clearinghouse Research Center. (2019). *Current Term Enrollment Estimates: Spring 2019.* Retrieved from: https://nscresearchcenter.org/wp-content/uploads/CurrentTermEnrollmentReport-Spring-2019.pdf.

Noble, J. P., & Sawyer, R. L. (2004). Is high school GPA better than admission test scores for predicting academic success in college? *College and University*, *79*(4), 17–22.

Noel, A., Stark, P., Redford, J., & Zukerberg, A. (2016). Parent and Family Involvement in Education, from the National Household Education Surveys Program of 2012. *National Center for Education Statistics*, (June), 53. Retrieved from https://nces.ed.gov/pubs2013/2013028rev.pdf.

Noel-Levitz. (2008). Student success, retention, and graduation: Definitions, theories, practices, patterns, and trends. Retrieved from http://www.stetson.edu/law/conferences/highered/archive/media/Student%20Success,%2 0Retention,%20and%20Graduation-%20Definitions,%20Theories,%20Practices,%20Patterns,%20and%20Trends.pdf.

Ray, B. D. (2004). Homeschoolers on to College: What Research Shows Us. *Journal of College Admission*, (185), 5–11. Retrieved from http://search.ebscohost.com.libezp.lib.lsu.edu/login.aspx?direct=true&db=eric&AN=EJ682480&site=ehost-live&scope=site.

Ray, B. D. (2013). Homeschooling Associated with Beneficial Learner and Societal Outcomes but Educators Do Not Promote It. Peabody Journal of Education, 88(3), 324–341. https://doi.org/10.1080/0161956X.2013.798508.

Redford, J., Battle, D., Bielick, S., Institutes for Research, A., Grady, S., & Center for Education Statistics, N. (2017). *Homeschool in the United States: 2012*. Retrieved from https://nces.ed.gov/pubs2016/2016096rev.pdf.

Robbins, S. B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin*, 130, 261–288.

Robbins, S. B., Oh, I. S., Le, H., & Button, C. (2009). Intervention Effects on College Performance and Retention as Mediated by Motivational, Emotional, and Social Control Factors: Integrated Meta-Analytic Path Analyses. *Journal of Applied Psychology*, *94*(5), 1163–1184. https://doi.org/10.1037/a0015738.

Rudner, L. M., & Home School Legal Defense Association, P. (1999). Scholastic Achievement and Demographic Characteristics of Home School Students in 1998. *Education Policy Analysis Archives*, 7(8). Retrieved from http://search.ebscohost.com.libezp.lib.lsu.edu/login.aspx?direct=true&db=eric&AN=ED424309&site=ehost-live&scope=site.

Ruffalo Noel Levitz (2018). 2018 Cost of recruiting an undergraduate student report. Cedar Rapids, IA: Ruffalo Noel Levitz.

Schnell, C. A., Louis, K. S., & Doetkott, C. (2003). The First-Year Seminar as a Means of Improving College Graduation Rates. *Journal of the First-Year Experience & Students in Transition*, *15*(1), 53–75.

Schroeder, C. C. (2013). Reframing Retention Strategy: A Focus on Process. New *Directions for Higher Education*, (161), 39–47. Retrieved from http://search.ebscohost.com.libezp.lib.lsu.edu/login.aspx?direct=true&db=eric&AN=EJ996468&site=ehost-live&scope=site.

Skomsvold, P., Walton Radford, A., & Berkner, L. (2003). Web tables: Six-year attainment, persistence, transfer, retention, and withdrawal rates of students who began postsecondary education in 2003–04, (July), 1–381. Retrieved from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2011152.

Snyder, M. (2013). An Evaluative Study of the Academic Achievement of Homeschooled Students versus Traditionally Schooled Students Attending a Catholic University. *Catholic Education: A Journal of Inquiry and Practice*, 16(2), 288–308.

Sutton, J. P., & de Oliveira, P. C. M. (1995). Differences in Critical Thinking Skills among Students Educated in Public Schools, Christian Schools, and Home Schools. Retrieved from http://search.ebscohost.com.libezp.lib.lsu.edu/login.aspx?direct=true&db=eric&AN=ED390147&site=ehost-live&scope=site.

The Truth About ACT to SAT Conversion. (n.d.). Retrieved September 22, 2020, from https://www.princetonreview.com/college-advice/act-to-sat-conversion.

Twijukye, Reuben, "The Influence of Housing in a Content-Based Residential College and Selected Demographic Characteristics on the Retention of Students Enrolled in a College of Business at a Research University (RU/VH) in the Southern Region of the United States" (2020). *LSU Doctoral Dissertations*. 5241. https://digitalcommons.lsu.edu/gradschool_dissertations/5241.

U.S. Department of Education, National Center for Education Statistics, Parent and Family Involvement in Education Survey of the 2003 National Household Education Surveys Program (NHES).

Walsdorf, Shannon Kuehne, "The influence of selected perceptual and demographic characteristics on the attitude toward mental health of students among faculty a public universities in the Southeastern United States" (2013). *LSU Doctoral Dissertations*. 1361. https://digitalcommons.lsu.edu/gradschool_dissertations/1361.

Wilhelm, G., & Firmin, M. (2009). Historical and Contemporary Developments in Home School Education. *Journal of Research on Christian Education, 18*(3), 303–315. https://doi-org.libezp.lib.lsu.edu/10.1080/10656210903333442.

Willingham, W. W., Pollack, J. M., & Lewis, C. (2002). Grades and Test Scores: Accounting for Observed Differences. *Journal of Educational Measurement, 39*(1), 1–37.

Wood, P., & ERIC Clearinghouse on Higher Education, W. D. (2003). Homeschooling and Higher Education. ERIC Digest. Retrieved from http://search.ebscohost.com.libezp.lib.lsu.edu/login.aspx?direct=true&db=eric&AN=ED480468&site=ehost-live&scope=site.

VITA

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During her tenure with the Flores MBA Program, Rachel began her doctoral program at LSU. In 2018, Rachel joined the Center for Faculty Excellence at Southeastern Louisiana University as an Instructional Design Specialist. In 2020, she began teaching in the department of Marketing and Supply Chain Management.

Rachel is a lifelong member of the Phi Kappa Phi honors society, a volunteer for Creole Poodle Rescue, and a proud wife and mother.

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