2015-2022 University System of Georgia Comprehensive University HOPE Scholarship Graduates, Their Majors, and Alignment with Georgia's Essential Workforce Needs

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ABSTRACT

The Helping Outstanding Pupils Educationally (HOPE) scholarship marked a significant advancement in education by offering expanded opportunities for Georgia students earning a high school GPA of 3.00 or higher to attend a University System of Georgia (USG) institution. This quantitative study examined individuals who earned a bachelor's degree from a USG comprehensive institution between 2015 and 2022 (N = 1500). The analysis concentrated on major selections of graduates who maintained the HOPE scholarship, those who lost the scholarship before completing their degree, and those who never received the HOPE scholarship. The findings suggest that a higher percentage of individuals who maintained the HOPE scholarship earned bachelor's degrees. Individuals earning bachelor's degrees in STEM and physical education/human services lost the HOPE scholarship in greater numbers than in all other majors. In addition, females earned degrees in nursing and education in higher numbers than men, while men earned degrees in business and STEM in greater numbers than women. The group with the lowest percentage of individuals earning a bachelor's degree while maintaining the HOPE scholarship were Black or African/American men. Increased attention on supporting students to maintain the HOPE scholarship and specific interventions connected to assisting students to fully understand potential career trajectories are recommended. Finally, recommendations for expanded research opportunities are outlined.

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Chapter I

INTRODUCTION

The Helping Outstanding Pupils Educationally (HOPE) scholarship represented a dramatic step forward in education by providing expanded opportunities for Georgia students who earn a grade point average (GPA) of 3.00 or higher in high school to attend a University System of Georgia (USG) institution. In 2021, Governor Brian Kemp announced that the HOPE Scholarship Program had helped over two million Georgia students pursue postsecondary education in Georgia (Office of the Governor, 2021). While the HOPE scholarship has dramatically expanded opportunities for students to enter a college or university, it is reported that less than 45% of those who enter a USG institution and first receive the scholarship maintain the HOPE scholarship through graduation (Buglar et al., 1999). Much research has focused on understanding this attrition, but there has been less focus on understanding students who complete their bachelor's degree connected to maintaining, losing and/or never earning the HOPE scholarship.

My study investigated individuals who earned a bachelor's degree from a University System of Georgia comprehensive institution between 2015 and 2022. USG comprehensive universities include Georgia Southern University (GSU), Kennesaw State University (KSU), University of West Georgia (UWG), and Valdosta State University (VSU). Analyses focused on major selections for those graduates who maintained

HOPE scholarship, those graduates who lost the scholarship prior to earning a degree and those graduates who never earned the HOPE scholarship. Primary emphasis was placed on major selections connected to identified workforce needs for the State of Georgia. In 2011, a tiered system for the HOPE scholarship was adopted creating the Zell Miller Scholars program for students who earn a 3.70 or above GPA in high school, that covers full tuition, and a general HOPE scholarship that provides funding at 70% of tuition for those who earn a 3.00 to a 3.69 GPA in high school (Sieder, 2023b). A student must attend a USG institution to qualify for either of these scholarships. This study did not distinguish between these tiers; individuals earning either scholarship were considered HOPE scholars.

Georgia's Investment in Creating an Educated Workforce

In the 1992 State of the State address, then Governor Zell Miller introduced the creation of a scholarship that would support the state's long-term success by developing expanded opportunities for citizens of the state to pursue a college degree. This program, named the HOPE scholarship, was identified by Governor Miller as a step toward creating a more educated citizenry that would lead to a "better workforce . . . and support the economic future of the State" (jecarter4, n.d.). From the program's onset, a priority of the HOPE scholarship has been to cultivate a workforce with college-prepared students (Lee & Allen, 2020).

The State of Georgia values education highly, acknowledging higher education institutions as vital for nurturing an informed population and driving societal advancement. Ray Khalfani (2024), Senior Analyst, Worker Justice and Criminal Legal Systems, at the Georgia Budget and Policy Institute, indicates that to build Georgia's

economy, cultivating good jobs and strengthening the workforce need to be the primary foci of educational policy in the state. When individuals have access to education, they can positively contribute and expand the workforce's capacity.

Human Capital Theory and Economic Growth

The idea of connecting education with community economic growth was first introduced by Theodore Shultz (1960) in his publication, "Capital Formation by Education." This paper established the idea that just like other resources, human capital is essential for the growth of industry. Walter Heller, one of Schultz's students, expanded this idea, integrating models of human behavior and social processes, which resulted in the creation of human capital theory (Holden & Biddle, 2017). Heller significantly advanced the idea that human capital is essential to the development of economies and was later recognized by Alan Greenspan as a "major contributor if not the father of modern economic policymaking" (Holden & Biddle, 2017, p. 538). Heller's work solidified the belief that "a rising level of education . . . [is] a key generator of long-term economic advancement" (Blinder & Reis, 2005, p. 9).

Labor productivity expansion is an essential element when seeking to strengthen and expand an economy. Developing labor productivity is often accomplished through one or more of the following initiatives (Isham et al., 2021):

- expansion of the physical capital of workers through the purchase of better machines, tools, and infrastructure,
- improvement of the knowledge capital of the workforce through education and training,

- the fostering of a new economy by introducing modern technologies to improve the productivity of all workers, and
- the strengthening of relations between public and private sectors to facilitate the working of the labor market and limit economic distortions caused by taxes and passive labor market policies (p. 65).

Thus, labor productivity is dependent partly on the development of an educated workforce that has the knowledge and skills to keep pace with various industry areas' needs. Human capital is not just about having workers available but having workers with the appropriate education to complete specific tasks. Human capital theory advances the idea that human beings can increase their productive capacity through greater education and training. This focus evolved to include an emphasis not only on the existing labor market but on determining strategies to support society's need for effective future workers (Isham et al., 2021).

Workforce Development Theory

Jacobs and Hawley (2009) sought to bring some continuity to the term "workforce development" by developing a comprehensive definition of the concept. They stated that "workforce development [is] the coordination of public and private-sector policies and programs that provides individuals with the opportunity for a sustainable livelihood and helps organizations achieve goals, consistent with the societal context" (p. 2542). They further defined workforce development as "not just about training but involving a deep employer and community involvement in networks that support both integrated human services as well as industry" (p. 2537).

Their focus on workforce development revolves around four key societal challenges:

- equipping individuals with the skills to enter or re-enter the workforce,
- providing learning avenues within organizations to enhance workforce performance,
- adapting to dynamic changes impacting workforce effectiveness, and
- assisting individuals through life transitions associated with employment.

The definition suggested by Jacobs and Hawley (2009) underscores the importance of workforce development programs being responsive to broader economic and societal objectives. Consequently, such programs should transcend organizational boundaries and avoid exclusivity to ensure collective success. Ultimately, workforce development endeavors to harmonize individual, organizational, and societal interests for mutual benefit, although implementing this vision often presents practical challenges.

It is important to recognize that both human capital theory and workforce development theory place economic value on education for those in the workforce and the need for policies supporting educational attainment. These theories provide a clear understanding of the role higher education plays in a state's success. It is important to place increased attention not only on advancing individuals' educational attainment but also promoting major selections that support workforce needs.

Understanding College Majors and the USG Priority

Jacob and Hawley (2009) suggest that individuals need to seek appropriate degrees that will clearly support the economy and contribute to an effective workforce. The appropriate education is primarily defined as the major that an individual pursues at

an institution of higher learning. Staff Writers (2023) at BestColleges define a major as a specific area of study in which students choose to specialize. They contend that popular disciplines for college majors include business, health, engineering, biology, and education. College students often declare a major after completing prerequisite courses and general education courses (Staff Writers, 2023).

In 2023, the USG re-defined the general education curriculum as IMPACTS. The acronym "IMPACTS" stands for courses connected to the following category areas: Institutional Priority; Mathematics and Quantitative Skills; Political Science and U.S. History; Arts, Humanities and Ethics; Communicating in Writing; Technology, Mathematics, and Sciences; and Social Sciences (Monga, 2023). These courses are intended to provide students with understanding of various fields to ensure their later success. For each of these areas, the USG has further added a requirement that all courses must contain a direct learning outcome connected to meeting the workforce needs of the State of Georgia. This step was an attempt by the Board of Regents to show how each course contributes to the state's workforce needs (Monga, 2023).

Major Selection Process

It is important to understand how the four factors of current financial status, potential earnings, academic preparation, and student gender impact major and career choice. First, students are often motivated by the perceived status or earning potential connected to a specific degree field. Hossain and Robinson (2012), in their article, "How to Motivate US Students to Pursue STEM (Science, Technology, Engineering and Mathematics) Careers" point out that earning potential continues to be a strong motivator of major selection. Georgetown University's (2021) Center on Education and the

Workforce has created an interactive web site to provide students with a clear understanding of the earning potential of various career paths.

The USG has also adopted a new program called Steppenblock, which is similar to Georgetown University's initiative. When the program was adopted in 2023, USG Chancellor Sonny Purdue indicated that the Career Resource Planning Platform (i.e., Steppenblock) was the most comprehensive career tool the USG had ever offered and that it would be the "foundation for future career and workforce development initiatives being created within the university system and across Georgia" (Mawn, 2023, para. 3). Moreover, Purdue said, "as we prioritize affordability, efficiency and degree attainment, our ongoing work to serve workforce development needs furthers our goals and sets the stage for our graduates' prosperity and success" (Mawn, 2023, para. 3). While potential long-range earnings are a powerful incentive for some students, those who lack financial resources while in college must make decisions that support their current reality (Hossain & Robinson, 2012). Specifically, if students must perform well academically to maintain their financial assistance, they may be more likely to choose a path that is perceived to be less difficult.

Another factor impacting major selection is academic preparation. Students who have access to resources such as social support, financial support, and tutoring in high school often have the chance for greater success as compared to those with limited access to these resources (Edmonds, 2012). The HOPE scholarship is strictly determined by high school grades earned and course requirements fulfilled. Students across the state do not have equal access to resources when in high school so level of academic preparation across the state is inconsistent.

Gender remains a significant determinant in choosing majors. Despite progress in various initiatives, certain fields remain heavily skewed towards either males or females. According to the Pew Research Center, the STEM sectors still face challenges in attracting female participation, while teaching remains predominantly female-dominated (Fry et al., 2021). In Georgia, while school administration roles are largely occupied by males, the teaching profession is overwhelmingly female (Downey, 2019). However, it is crucial to maintain a consistent influx of dedicated, capable gender diverse educators to meet the educational needs of Georgia's diverse student population.

Carnevale et al. (2017) found that students choose their major for many reasons. Some students face both economic and peer pressure when selecting their major. Some students seek majors that are perceived to be easier to complete. Other students are motivated by the promise of a high income and upward social mobility. It is also important to recognize that major selection can also be impacted by the experiences of an individual based on their race or gender identity. For many graduates, the common motivators for major selection are financial security, desire to create social change, and distinct childhood experiences (Bleemer et al., 2023). The economic risks and returns from bachelor's degrees vary greatly across majors. For most people pursuing a bachelor's degree, choosing a major can have significant long-term economic consequences.

HOPE Scholarship

The HOPE scholarship is a program that was established in 1992 to support Georgians in their pursuit of an advanced degree. Funded by the Georgia Lottery, the HOPE scholarship provides Georgia residents who meet basic requirements (e.g., earning

a B average in college preparatory courses) funding to attend a USG institution of higher education. This program has dramatically expanded the number of students entering a USG institution. To retain the HOPE scholarship, individuals must have a college grade point average (GPA) of at least 3.00. Students are evaluated at various intervals: after a student attempts 30, 60, 90 and 120 academic credit hours.

Over time, lawmakers have modified eligibility requirements, award amounts and rules that affect who can access the scholarship. Georgia's HOPE scholarship has become a national model for supporting students seeking a college degree and has resulted in awards of over $14 billion (about $43 per person in the US) to more than 2.1 million Georgia students seeking a higher education degree (Lee, 2021). The program has enticed many Georgians to stay in-state for college and promoted college preparation in high school, but it has also shown patterns of unequal acquisition, related to gender, race, ethnicity, income, and geography (Lee, 2021).

HOPE Scholarship Impact

The HOPE scholarship has provided many citizens in Georgia the opportunity to pursue an advanced degree. However, because earning a 3.0 GPA is required to maintain the scholarship, some contend that this requirement serves to deter students from pursuing majors that are considered more challenging (e.g., science, technology, engineering, and mathematics [STEM] majors). Sjoquist and Winters (2014), in their study "The Effects of Georgia's HOPE Scholarship on College Major: A Focus on STEM," state that concern over earning or keeping the HOPE scholarship deters students from choosing a major in STEM fields. Gaining greater understanding of major selections of students connected to their HOPE status was the focus of this study.

Intersection of Government, Industry and Education

Scholars generally agree that workforce development entails aligning educational institutions, businesses, and government initiatives to empower individuals to secure sustainable livelihoods, while also enabling organizations to attain objectives that align with the societal context's history, culture, and goals (e.g., Jacobs & Hawley, 2009). It is important that individuals have a college education, but it is becoming increasingly important to many stakeholders that individuals have the specific education required to support the economic growth of the state. The U.S. Economic Development Administration indicates that effective workforce development initiatives must successfully blend government, education, and industry partnerships (U.S. Department of Commerce, 2023).

These partnerships are formed when a critical mass of employees from the same industry joins with other strategic partners to train and place workers in good, high-quality jobs that meet the needs of the targeted industry. Education entities such as K-12 schools, community colleges, and universities must work together with community-based organizations, workforce boards, unions, industry associations, and employer-serving organizations to bolster the area's economy and growth. These partnerships are highly effective in building regional resilience by breaking down silos between industry and other key stakeholders, ensuring that workforce systems – including strong talent pipelines – are developed that meet the needs of a local economy (U.S. Department of Commerce, 2023).

The business consulting firm Venture Smarter analyzed data from the U.S Bureau of Labor Statistics and found that Georgia had the highest business growth rate in the

United States between December 2021 and December 2022 (Grice Connect, 2023). Despite this growth, the Georgia Student Finance Commission forecasts there still will be future state shortages in the areas of education, business, nursing, and STEM fields (Wilson et al., 2014). For Georgia to continue to excel, higher education must not only produce graduates but produce graduates with the appropriate education to meet these shortages.

Statement of the Problem

Extensive research has been conducted on various aspects of the HOPE scholarship. For example, there has been much attention placed on students who lose the HOPE scholarship. These studies have offered insight into interventions that might support these students in completing their degree. However, there has been less attention placed on understanding those students who maintain the HOPE scholarship through graduation. As one of the most significant policies supporting education, it is important to understand its impact on developing the workforce for the State.

The HOPE scholarship represents a significant investment in the students in Georgia. For the State of Georgia to be competitive and grow its economy, it is crucial that the state not only have an educated citizenry but a citizenry with the appropriate education that will move the state forward, in line with arguments made by the U.S. Department of Commerce (2023). This study included individuals who earned a bachelor's degree from a USG comprehensive university between 2015 and 2022. Analyses focused on the majors of individuals who earned a bachelor's degree and were categorized as: (a) maintained the HOPE scholarship through earning a degree, (b) lost

the HOPE scholarship prior to earning a degree, and (c) never earned the HOPE scholarship.

A primary focus of the study was examining the major selections of these three groups of college graduates connected to the State of Georgia's essential and non-essential workforce needs. Workforce needs and college majors were categorized and analyzed using the U.S. Department of Education's Classification of Instructional Programs (CIP) coding (National Center for Education Statistics, 2020).

Specific Data Evaluated

While all entities within the USG play a role in fostering a skilled workforce, Georgia's comprehensive institutions are recognized for their dedication to public service, enhancing quality of life, and advancing economic development initiatives that uplift the educational attainment of its populace (University System of Georgia, 2012). USG Chancellor Sonny Perdue emphasized that a key objective of USG institutions is to furnish students with a clear trajectory for career progression (Oliver, 2022), underscoring the importance of enhancing educational attainment. This study seeks to gain greater understanding of the HOPE scholarship's potential impact on major selections for graduates at these comprehensive institutions.

Currently, GSU, KSU, UWG and VSU are the USG comprehensive universities. In 2011, the Georgia Board of Regents approved a consolidation plan to save money for the USG. Initially proposed by Chancellor Hank Huckaby, the plan aimed for eight institutions to merge into four. However, the consolidation process in Georgia unfolded across four phases, occurring in 2013, 2015, 2017, and 2018, combining 18 higher education institutions into nine (Millsaps, 2003). The Board of Regents' decision to

pursue consolidation was influenced by many factors. These factors were broadly categorized into four primary areas:

(a) responding to shifting demographics and a decrease in high school graduates, both locally and nationally,

(b) leveraging the state's diverse population growth,

(c) enhancing enrollment and addressing financial challenges within specific institutions, and

(d) streamlining programs to eliminate duplication among USG institutions serving similar communities (Jones, 2021).

While these areas represent the overarching reasons for the consolidations within the USG, it is important to point out that motivations varied across the system. Factors such as changing demographics, declining operational budgets, and escalating costs emerged as the primary catalysts driving the consolidation efforts (Jones, 2021). As part of this initiative, Kennesaw State University was consolidated with Southern Polytechnic State University in 2015, and Georgia Southern University was consolidated with Armstrong Atlantic University in 2018. Because of these consolidations, this study included graduates from Southern Polytechnic State University and Armstrong Atlantic University prior to the consolidation.

Rationale for Timeline of Investigation Period

There have been significant changes in the policies connected to the HOPE scholarship since its inception in 1992. The most significant changes occurred in 2011 with the development of a new tiered system — a step that was taken to preserve the HOPE scholarship. This change created two different HOPE grants: the Zell Miller

Scholars program for students who earn a 3.70 or above GPA in high school, that covers full tuition, and a general HOPE scholarship that provides funding at 70% of tuition for those who earn a 3.00 to a 3.69 GPA in high school (Sieder, 2023b). This policy was changed in May 2023 to expand the amount of award given to students. In this study, the sample included only individuals who matriculated in Fall 2011 or after and graduated from a USG comprehensive university between 2015 and 2022. These inclusion criteria were used to ensure that all graduates entered under the same HOPE eligibility requirements.

Research Goals

The focus of this research study was to examine the HOPE scholarship status of 2015-2022 USG comprehensive university graduates, their majors, and the majors' alignment with Georgia's essential workforce needs. Data from the three following groups were analyzed:

1. graduates from a comprehensive USG institution between 2015 and 2022 who maintained the HOPE scholarship through graduation,
2. graduates from a comprehensive USG institution between 2015 and 2022 who entered with the HOPE scholarship but lost it prior to graduation, and
3. graduates from a comprehensive USG institution between 2015 and 2022 who never earned the HOPE scholarship.

Data Framework

Data from two specific sources were used. First, national data for student graduation were retrieved from the Integrated Postsecondary Education Data System's (IPEDS) Completion Survey (National Center for Education Statistics, n.d.). This

national database records the various degrees awarded by every post-secondary institution in the United States. This data set was reviewed using the Classification of Instructional Programs (CIP) codes (National Center for Education Statistics, 2020). A student's major was defined as the university major associated with the degree conferred, using the CIP coding. The dissertation chair and I conducted a qualitative analysis of all CIP codes to define the degree major earned. A key was created using the CIP major coding definitions that divided majors into categories of workforce needs and non-workforce needs. The definition of workforce needs was generated through an analysis of various speeches and reports developed by the Chancellor of the University System of Georgia as well as from Governor Brian Kemp (e.g., Georgia Department of Economic Development, 2023; Womack, 2024).

The University System of Georgia provided a data set that included the following information:

(a) unique student identification number (de-identified)

(b) institution name (comprehensive institutions only)

(c) student's age at enrollment

(d) student's age at matriculation

(e) gender (defined using the USG definitions)

(f) race/ethnicity (defined using the USG definitions)

(g) USG cumulative GPA

(h) USG cumulative credit hours earned

(i) degree awarded (i.e., used to verify that only individuals who earned a bachelor's degree were part of the study)

(j) year of graduation (i.e., 2015, 2016, 2017, 2018, 2019, 2020, 2021, or 2022; the graduate must have entered a USG institution in Fall 2011 or after)

(k) year HOPE awarded (i.e., variable included all semesters an individual earned the HOPE scholarship)

Research Questions

The primary focus for this research study was to gain greater understanding of the major selections for USG comprehensive institution graduates earning a bachelor's degree, connected to their HOPE status. The overarching research question was: Is there a relationship between HOPE scholarship status (i.e., maintained, lost, and never earned) and students' university majors associated with Georgia's essential workforce needs? To narrow the focus for the analyses that were conducted, the above question was further operationalized to include the following specific questions:

1. Among USG comprehensive institution graduates, is there a difference in prevalence of selection of critical workforce majors for the State of Georgia connected to HOPE status?
2. Among USG comprehensive institution graduates, is there a difference in the pattern of major selection between individuals who maintained the scholarship, those who lost the HOPE scholarship and those that never earned the HOPE scholarship?
3. Among USG comprehensive institution graduates, is there a difference in the pattern of major selection as a function of gender?
4. Among USG comprehensive institution graduates, is there a difference in the pattern of major selection across racial groups?

Data Categorization

First, a new variable was created separating the data set into three separate groups using the following definitions:

1. HOPE GRAD: Category included all individuals whose graduation year and last semester HOPE awarded were the same,
2. LOST HOPE GRAD: Category included all individuals whose graduation year and last semester HOPE awarded were not the same, and
3. NO HOPE GRAD: Category included all individuals who graduated without ever earning the HOPE scholarship.

Second, data were coded using the Classification of Instructional Programs (CIP) taxonomic scheme developed by the U.S. Department of Education's National Center for Education Statistics (2020). A qualitative analysis was conducted of CIP codes that grouped the data into major categories. Initial categories included Arts, Business, Education, Human Services, Humanities, Nursing, Physical Education, Social Sciences, STEM (Science, Technology, Engineering and Mathematics), and Multidisciplinary degrees. Due to the small number of graduates in some majors, the categories of Arts, Humanities, and Multidisciplinary were consolidated into one major category and Human Services and Physical Education were also merged into one category. While the major categories combined together in the study are different from one another, they are often included within the same academic college.

Third, data were categorized into majors critical for Georgia's workforce based on data from the Georgia Department of Labor and analyses of reports from both Governor Brian Kemp and Chancellor Sonny Perdue (Georgia Department of Economic

Development, 2023; Womack, 2024). Majors connected to Business, Education, Nursing, and STEM were identified as related to Georgia critical workforce needs. Arts, Human Services, Humanities, Physical Education, Social Sciences, and Multidisciplinary program degrees were identified as related to non-essential Georgia workforce needs. While these latter disciplines are important for the growth and development of a community, these majors were not identified as critical to the State's workforce needs as defined by these reports (Georgia Department of Economic Development, 2023; Womack, 2024).

The result from this analysis produced the following groupings:

1. Dichotomous Workforce Groups: (a) Needed Workforce: This category included majors in the following areas: Business, Education, Nursing, and STEM, and (b) Non-Essential Workforce: This category included majors in the following areas: Arts, Human Services, Humanities, Physical Education, Social Sciences, and Multidisciplinary programs.
2. Nominal Workforce Groups: (a) Needed Workforce: This category further delineated the workforce groups into their specific major category. Individual categories were created for Business, Education, Nursing, and STEM, and (b) Non-Essential Workforce: This category further delineated the non-workforce groups into their specific major category. Categories were created for Arts, Humanities, & Multidisciplinary, Social Sciences, and Physical Education/Human Services programs.

Descriptive Analyses

Using the definitions above, I compared student gender and race/ethnicity across the following categories: HOPE GRAD, LOST HOPE GRAD and NO HOPE GRAD. Similar analyses were conducted for student gender and race/ethnicity in the majors connected to Georgia's critical workforce needs. In addition, an examination was conducted on both HOPE status and workforce groups, aiming to determine the ratio of students' majors categorized as non-essential versus essential within each of the three HOPE status classifications. While these analyses could not demonstrate causal effects, it was thought that information gleaned from this study would be important.

Regression Analyses

Regression analyses were conducted focusing on relationships between HOPE status, student majors associated with workforce needs, and student demographic characteristics.

Independent Variables

Gender served as an independent variable in the study. Gender was used because prior research has suggested that gender impacts a student's decision on major selection. For example, Corbett (2015) contends that girls and women are "systematically tracked away from science and math throughout their education, limiting their access, preparation and opportunities to go into these fields as adults" (p. 4). Women make up only 34% of the workforce in STEM, and men outnumber women majoring in most STEM fields in college (Corbett, 2015). STEM is one of the fastest growing workforce needs and offers among the highest-paid jobs, yet women continue to be less represented.

In addition, race/ethnicity was used as an independent variable. Prior studies demonstrate that race/ethnicity continues to be a factor in major selection (Hinrichs, 2015). Black students are the most underrepresented in Zell Miller Scholars (6%) particularly compared to Black students' representation (29%) among undergraduate students in Georgia (Lee, 2022). Latinx students are proportionately represented among HOPE Scholars but underrepresented among Zell Miller Scholars (Lee & Allen, 2020). Gaining a greater understanding of characteristics (i.e., gender, race/ethnicity) of graduates associated with HOPE status was a primary motivation for this study. In addition, further understanding of the nature of major selections connected to the workforce needs for the State of Georgia was a goal of this work.

Independent/Dependent Variable

The variable of HOPE status served as both an independent and dependent variable in the study. Initial analyses sought to predict HOPE status from demographic variables (i.e., gender and race/ethnicity). In these analyses, HOPE status was a dependent variable. HOPE status was also used as an independent variable to understand the relationship between the scholarship and workforce designation and major selection.

Dependent Variables

This study utilized student major categorization (i.e., dichotomous and nominal workforce groupings) as a key dependent variable. Majors were identified using CIP codes (National Center for Education Statistics, 2020). The federal CIP code taxonomy facilitates the monitoring and reporting of enrollment and completion activities at U.S. colleges and universities. Each academic program in these institutions is designated with a CIP code that outlines its curriculum and, sometimes, its associated degree. This system

allows for a more equitable comparison of programs across different institutions, ensuring consistency that goes beyond relying solely on the program's name. All codes were analyzed using this classification system. Once degrees were defined, they were sorted into major categories. Majors were defined as degree earned at graduation. As students often change their major choice, the degree at completion served as the standard by which this variable was defined.

Analysis Tool

SPSS, a data analysis software, was utilized for its advanced statistical functions, vast array of machine learning algorithms, text analysis capabilities, adaptability to open-source frameworks, smooth integration with large datasets, and easy deployment in various applications. It served as the primary tool for conducting all quantitative analyses.

Expected Outcomes

While a great deal of research has been completed focused on the characteristics of students who have not maintained the HOPE scholarship (e.g., Carruthers & Özek, 2016), there is not as much focus on those students who have maintained the scholarship through graduation. Many students depend on the HOPE scholarship to complete a degree. In addition, because the HOPE scholarship does not provide funding for books and other non-tuition costs connected to degree completion, the Georgia Budget and Policy Institute reports that many students are forced to have jobs outside of just being a student (Suggs, 2016).

Financial dependency on the HOPE scholarship may have a significant impact on the student's major decision. This can cause a student to choose a degree that offers a higher probability of success, as defined by GPA earned, over pursuing a degree that

might be seen as more difficult. This study was primarily driven by the aim to delve deeper into the characteristics of individuals who maintained, lost, or never earned the HOPE scholarship.

Chapter II

REVIEW OF LITERATURE

Tawana (Derricotte) Miller, one of the first Black women to graduate with a bachelor's degree in a four-year program at Georgia Tech, stated that when she came to the institution the common belief was much different than it is today. She indicated the faculty's role was to weed out those not academically inclined. She recalled that they said during orientation to: “Look to your left. Look to your right. Only one of you will graduate” (Freund, 2023). At one point, leaders in higher education took immense pride in “weeding out” students; however, times have changed. Institutions of higher education are under pressure like never before to ensure student success, which is often defined as graduation. However, high tuition costs, low graduation rates, and unprepared graduates entering the work force have compromised community support for higher education. This lack of support has created a new reality where colleges and universities are held to increased scrutiny for ensuring that students graduate in a timely manner with the skills and knowledge to lead in a global economy.

An emphasis on student success has inspired the development and implementation of new and innovative programs and activities that support student persistence and degree completion (Rutter & Mintz, 2019). Despite these focused efforts on student success, the U.S. Department of Education reports that nearly half of all students who begin college still do not earn a degree over a 6-year time span (Palmer, 2024). For Georgia to maintain a competitive edge, the state must think creatively about ways to retain

university students and ensure their readiness to enter the workforce ready, willing, and able to lead (CHIPS Program Office, 2023). Reaching this goal of meeting workforce needs requires strong collaborations between government, education, and industry.

As shown in Figure 1, effective workforce initiatives seek to integrate government, education, and industry. When these areas are working in tandem, regions have the potential for greater growth and development (Elsdon & Erickson, 2010).

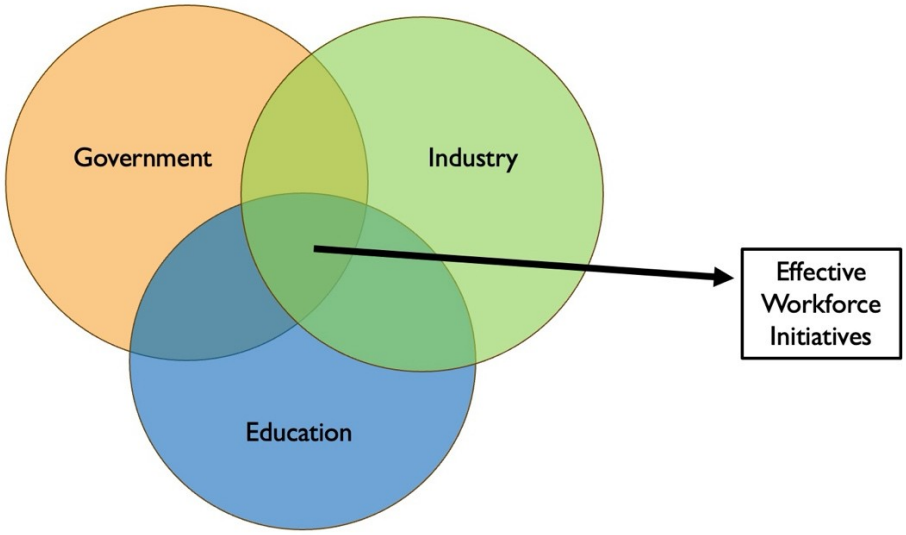

Figure 1. *Workforce Model: Intersection of Education, Government and Industry*

Education is a critical partner in this work. According to Leavitt and Leigh (2023), education is the component supporting the advancement of state-specific workforce goals.

Supporting Students Seeking a Degree

Providing support for individuals to attain an advanced degree initially began with the Servicemen's Readjustment Act or GI Bill (The U.S. National Archives and Records Administration, n.d). The GI Bill provided World War II veterans with funds for college education, unemployment insurance, and housing. It put higher education within the reach of millions of veterans. This program provides funding to cover all or a portion of

the costs of school or training (U.S. Department of Veterans Affairs, 2023). This initiative was seen as an investment in those individuals that served the country and supported the development of an educated populous to lead our country.

Since the implementation of the GI Bill, many other programs have been developed to support creating an educated citizenry. For example, in 1993, Georgia implemented the HOPE Scholarship. This lottery-funded program was a step to mitigate the problem of "brain drain" while assisting students in the state to earn a degree. Brain drain is a term used to define the migration of individuals leaving an area in search of a better situation and/or quality of life (Dodani & LaPorte, 2005). Individuals often seek opportunities in other regions to gain higher salaries, access to advanced technology, and more stable political conditions (Dodani & LaPorte, 2005).

The HOPE scholarship placed Georgia at the forefront in retaining the state's best and brightest. The HOPE scholarship was also considered a policy for enticing students to attend a Georgia public institution of higher learning rather than leaving the state. When first developed, the HOPE scholarship was considered one of the most significant policies providing merit aid in the United States (Henry et al., 2004) and was seen as a step for ensuring greater accessibility for students to earn an advanced degree (Doyle, 2010).

The HOPE Scholarship Policies and Overview

The HOPE scholarship is the largest merit-based aid program in the country and changed the nature of funding support for students entering a college/university in Georgia (Campbell & Finney, 2005). It is important to understand the program requirements to receive this financial support. Unlike many scholarships, the HOPE

program is not competitive, meaning students do not have to apply for this support like other merit scholarships (Doyle, 2010). Instead, the HOPE scholarship requires students to meet basic requirements to be awarded the funding. To be eligible initially a student must meet U.S. citizenship or eligible non-citizen requirements, meet the postsecondary institution's Georgia residency requirements, and fall within the timeline for eligibility.

Limits and Expiration of Eligibility

The HOPE and Zell Miller scholarships have limits to how long students can receive the scholarship payment based on a few factors (Georgia Student Finance Commission, 2024). The expiration of eligibility is based upon a student's total attempted hours, total combined-paid hours and/or degrees earned. HOPE and Zell Miller scholarship eligibility expires when any one of the following occurs:

- the combined-paid hours limit of 127 semester or 190 quarter hours is met. These combined credit hours are defined as payment from the HOPE Scholarship, Zell Miller Scholarship, HOPE Grant, or Zell Miller Grant.
- the attempted hours limit of 127 semester or 190 quarter hours is met. This requirement includes all degree level credit hours taken after high school graduation and any non-degree level credit hours accepted into a degree program.
- student earned a baccalaureate (four-year) degree, regardless of whether HOPE or Zell Miller scholarship funds were received while pursuing the degree (Georgia Student Finance Commission, 2020).

Ten-Year and Seven-Year Eligibility Limits

Students who receive their first HOPE or Zell Miller scholarship payment in the summer term 2019 or later may receive HOPE or Zell Miller scholarship payment until ten years after the date of their high school graduation, high school equivalency (HSE) diploma test date, or home study completion date, whichever occurred first (Doyle, 2010). Students who received their first HOPE or Zell Miller scholarship payment between summer term 2011 and spring term 2019 may receive HOPE or Zell Miller scholarship funding until seven years after the date of their high school graduation, high school equivalency (HSE) diploma test date, or home study completion date, whichever occurred first.

In addition to the above-mentioned requirements, the HOPE scholarship program requires students to meet academic eligibility requirements. These requirements include graduating from an accredited State of Georgia high school or an accredited home study program. Further, a student must graduate with a minimum of a 3.00 GPA as well as completing at least four college preparation courses in the areas of English, Mathematics, Science and/or Foreign Language (Georgia State Finance Commission, 2020).

Students not academically eligible for the HOPE Scholarship as an entering college first-year student can become eligible for it. These students must be residents of Georgia, attend a USG college/university and earn a cumulative GPA of at least 3.00 after earning 30, 60, or 90 semester hours (Georgia State Finance Commission, 2020). Although these students are required to pay for their first 30 credit hours attempted, this policy is intended to motivate them to succeed academically to receive future funding for their education.

The HOPE scholarship has dramatically increased in-state enrollment at postsecondary schools in Georgia (Cornwell et al., 2006). Zhang and Ness (2010) contend that the HOPE scholarship has reduced the "brain drain" effect by providing large financial incentives to academically qualified students to attend college within the State of Georgia. Ensuring the state has the appropriate educated citizenry is a critical goal for educational policy.

Changes in HOPE Policies

In 2011, the HOPE Scholarship program was significantly reformed. These changes were prompted by the fear that revenue generated by the state lottery program was not keeping pace with the program's overall funding needs (Sieder, 2023a). To address these challenges, the Georgia legislature created the House Study Committee on the Preservation of the HOPE Scholarship Program (House Study Committee on the Preservation of the HOPE Scholarship Program, 2016). The Committee evaluated the overall program and created new standards. Changes included reducing the amount of funding for each student by not funding books, and reducing the number of classes the HOPE scholarship would fund. Before this latter change, students could enroll in classes not required in their program of study.

In addition to the above-mentioned changes, the House Study Committee dramatically altered student financial support by creating a tiered system of funding. To that end, the Zell Miller scholarship was created to support students who graduated from an eligible Georgia high school with a 3.70 GPA and a minimum score on the SAT/ACT (House Study Committee on the Preservation of the HOPE Scholarship Program, 2016). Students who earned less than a 3.70 GPA in high school would still receive partial

funding to pursue their degree — the HOPE scholarship — but this funding would be limited to tuition and not include support for certain fees and other university costs.

Understanding the Funding Source for the HOPE Scholarship

Since the HOPE scholarship was implemented, studies have demonstrated that the funding for this program is primarily a regressive tax. Scafidi and Rubenstein (2002) state that the lottery creates a situation where the "burden of taxation falls disproportionally on lower-income individuals" (p. 228). Individuals who struggle financially often purchase lottery tickets with the hopes that a win might dramatically alter their current condition. The National Gambling Impact Study Commission (NGISC) contends that those with lower incomes are the primary group purchasing these tickets. This has caused many to question the program's supportive impact on students at-risk (National Gambling Impact Study Commission, 1999).

The study conducted by the National Gambling Impact Study Commission (1999) indicated that those who purchase lottery tickets are typically less educated. The majority of those that purchase lottery tickets have less than a high school education. In addition, the study found that African Americans purchase lottery tickets at a higher rate than other racial/ethnic groups. Basically, most lottery ticket purchasers are those with limited financial means, often hoping for a jackpot to lift them from their financial struggles. When someone purchases a ticket despite overwhelming odds, it implies that the money spent on tickets yields a predominantly negative outcome. Simply put, for every dollar invested in lottery tickets, only a fraction — ranging between 17 percent and 79 percent — of the funds are redistributed to ticket buyers, varying by state (Jacobson, 2023). As this discrepancy accumulates across hundreds of millions of tickets sold, the overall

impact resembles that of a regressive tax. Overall, the individuals contributing are the ones less likely to benefit from the program (National Gambling Impact Study Commission, 1999).

Impact of the HOPE Scholarship

The HOPE scholarship has increased in-state enrollments and helped minimize the number of students leaving the state to pursue their degree (Cornwell et al., 2006). Cornwell et al. (2006) showed that the HOPE scholarship increased first-year in-state student enrollment in Georgia by 5.9%, or 2,889 students per year. Between 2000 and 2006, rates of in-state university enrollment continued to rise by approximately 2% - 4% each year (Cornwell et al., 2006). Further, their study indicated that the HOPE program reduced the number of students leaving the state to pursue a degree while increasing the number of White and Black students at USG institutions.

Since the program serves a large number of Georgia residents, it has gained a great deal of support from politicians in the state (Dynarski, 2002). However, some contend that public monies are being allocated to students who would attend college anyway and, more importantly, could afford to attend college without a scholarship (Heller & Marin, 2004). In addition, while there continues to be a great deal of emphasis on the enrollment effect of the HOPE scholarship, there is debate on whether this scholarship has significantly met the workforce needs in the state (Groen, 2004). Because students must maintain a 3.00 GPA, it is possible that this requirement has caused some students to choose majors that are not as challenging, to maintain the financial support.

Retaining the HOPE Scholarship

The impact of the HOPE scholarship on student enrollment, persistence, and graduation continues to be an important focus for legislators and educators in the state. Increased attention has been placed on understanding the enrollment behaviors and ultimately the graduation rates of students who enter with the HOPE grant. The HOPE scholarship has dramatically expanded opportunities for students to enroll in state-supported institutions. While the HOPE scholarship encourages students to seek a postsecondary degree, reports show that over half of the students who enter a USG institution with the HOPE scholarship do not maintain it beyond their first year (Lee, 2021). Suggs (2016) reported that more than half of all HOPE students lose the financial support before their sophomore year. Furthermore, fewer than 8% of those who lose the scholarship ever regain it (Suggs, 2016).

Students lose the HOPE scholarship for academic success and personal issues. The Georgia Budget and Policy Institute (Lee, 2021) reported that most students lose the scholarship due to financial issues as well as health challenges (i.e., both personal and family). The Institute's study showed that over 43% of students with the HOPE scholarship commonly report struggling to pay for expenses like housing, food, and other bills. Students who work the most tend to be the most economically insecure, and long work hours can pull attention away from school (Lee, 2021). These challenges notwithstanding, the HOPE scholarship continues to be recognized as a model for assisting students to seek a degree in higher education. For many individuals, maintaining the HOPE scholarship is critical to earning a degree.

Beneficiaries of the HOPE Scholarship

In 2020 the Georgia Budget and Policy Institute conducted an analysis of the HOPE scholarship and Zell Miller scholarship (St. Amour, 2020). According to the Institute's findings, 44% of all undergraduate students attending a USG institution were recipients of either scholarship. Asian American and White students were the most frequent recipients, while Black and Native American students were the least likely beneficiaries. Even though they make up 10% of all undergraduate USG students, Black students were only 6% of the recipients of the Zell Miller scholarship (St. Amour, 2020). In addition, the report highlighted that students from higher-income families were disproportionately represented among scholarship recipients. Only 7% of Zell Miller scholarship recipients came from families with incomes below $15,000, while 31% came from families earning $120,000 or more (St. Amour, 2020).

Major Selection

It is important to understand how students select their major and how their desire to enter a certain profession might impact their selection of a major. When a student enters a USG institution, they are required to determine a course of study. Identifying a major can be a complex process influenced by peers, family pressure, academic ability, projected job availability, typical job salary, and a major's reputation or prestige (Aldosary & Assaf, 1996; Williamson et al., 2013). A large segment of the undergraduate student population enters college with a selected course of study, but due to various reasons, change their major (Gordon & Steele, 1992). Cuseo (2019) contends that 50% of students change their major over the course of their time in college. Research indicates that a lack of clear academic direction often prolongs a student's academic

journey (Cuseo, 2019). In addition, students often enter college with limited knowledge of the various degrees available to pursue (Cuseo, 2019). This lack of understanding often drives students to enter college with an initial idea of what degree to pursue but then change their focus after enrolling in various courses.

Factors Impacting the Choice of Major

Williamson et al. (2013) contend that although numerous factors play into a student's decision regarding a major and career focus, there seems to be a few common factors that are generally universal. First, a student's economic situation when entering a degree program has been shown to have a strong impact on major choice. A growing body of economic and sociological research explores how disadvantaged students — namely members of certain ethnic/racial minority groups, individuals from low-income families, and first-generation college students — make decisions regarding college major depending on their perceived level of likely success in maintaining their current financial support (e.g., Trejo, 2023). St. John and Musoba (2010) found that Asian American and White students were more likely than Black, Hispanic, and Native American students to pursue majors that are seen as more difficult.

Bleemer and Mehta (2023) have identified a phenomenon called "major restrictions" (p. 3). Major restrictions are policies that require students to meet additional requirements to pursue a specific major. These requirements often include things like interviews, attaining a certain GPA in general education courses, and/or participating in various intake programs (Bleemer & Mehta, 2023). These conditions are not as challenging for students who have a dedicated support system but can serve as significant barriers for students from minority groups who do not have this support. These students

may have difficulty adjusting to the demands of college classes and life on a college campus; their K-12 education may not have prepared them sufficiently to obtain high grades in their first year on campus; and they may struggle financially, making it impossible to pay for tutoring or protect their study time. Students from underrepresented minority (URM) backgrounds are more likely to face these challenges and are therefore more likely to be limited by major restrictions.

Some students enter their college experience with a specific career path in mind. This focus can be connected to their previous personal or work experiences but often is impacted by the financial potential of a specific career choice. The Pew Research Center (2016) reported in their article, "The Value of a Higher Education Degree" that Americans tend to "prioritize work-related skills and knowledge rather than general education development and/or personal growth" (p. 29). In addition, Kuh et al. (2006) has found that some students look at their first degree as merely a step toward a graduate degree. Further, Kuh et al. contend that students majoring in education or pre-professional degrees believe pursuing a graduate degree is a natural step to ensure their marketability and success.

Kuh et al. (2006) contend that a student's educational background has a significant impact on major selection. Students who have excelled academically in high school are often provided greater support and exposed to numerous opportunities which give them a greater understanding of various career opportunities that they might pursue. Unfortunately, all students are not provided the same access to this type of information and often, due to lack of resources, are lost within the education system. This inequity in high school resources means that all students do not the same understanding of potential

careers when entering higher education. This issue has caused many to question if high school programs currently in place are supportive of all students (García & Weiss, 2017). A lack of high school staffing often makes it difficult to truly know each student's academic and career potential.

Finally, gender continues to be a powerful factor in a student's major and career choice (Kugler et al., 2021). Quadlin (2020) contends that career stereotypes still exist. She believes that there are certain majors like engineering that are seen as better suited for men while other majors like education are seen as better suited for women. While this is not true, the perception has a powerful influence on the major selection process. In addition, some contend that men often select certain majors that are male dominated because they see these career paths as a natural step forward for them (Kugler et al., 2021).

Zafar (2009) points out that shifting students' preferences is "key to equalizing gender differences in major choice" and ultimately in career choice (p. 34). Nau (2018) contends that gender socialization starts early in a person's childhood. This gender socialization subjects boys and girls to "ongoing, subtle, and yet powerful pressures to conform" (Morgan et al., 2013, p. 991). This pressure can also be seen within fields of study in higher education. Yet, diversity in role models has the potential to increase individuals' belief that it is possible for students to excel in whatever major/career they choose.

Changing Majors

Students often do not graduate with the major that they initially choose. Leu (2017), for the National Center for Education Statistics, reported that about 80% of

students in college change their major at least once prior to completing their degree. On average, college students change their major at least three times in their college career. For example, approximately half (52%) of students who originally selected a major in mathematics switched majors within three years (Leu, 2017). Among students in STEM fields, those majoring in computer and information sciences, engineering, and engineering technology changed majors at a lower rate than students majoring in either natural sciences or mathematics (Leu, 2017). Among students in non-STEM fields, those in other applied fields had the lowest rates of major change (22%), followed by students in health care fields. Applied fields include academic study areas that focus on producing practical knowledge and share a core mission of preparing students for specific careers like business (Indeed Editorial Team, 2023). While my study focused only on an individual's major at graduation, the dynamic nature of the major selection process prior to completing a degree is important to understand.

Gated Programs

Over the last 25 years, there has been a rise in the use of gated admissions to certain majors (Vedder, 2017). Gated admissions are additional requirements set by academic departments to limit the number of students eligible to pursue a degree in that area. For example, in 2014 Kennesaw State University's Communication Department established a gated entrance policy for students interested in earning a bachelor's degree in communications. In order to declare communication as a major, an interested student must declare communication as their interest, pass all six Area F classes (i.e., general education core classes or what is now known as IMPACTS courses) in two or fewer attempts, have a GPA of 2.50 or higher, pass a department-required writing test, submit

an application, pay application fees, and if accepted, declare communication as their official major (Hodge, 2014). Similar gated entrance policies have been implemented in business, education, and other areas in all USG comprehensive institutions.

Although many times this type of policy is implemented to address the lack of resources related to course offerings, Bleemer et al. (2023) found that gated admission policies have a negative impact on students from underrepresented minority groups, specifically Black, Hispanic, and American Indian or Alaska Native people. Their study suggests that students from these minority groups may be forced to choose other majors because they do not meet the qualification for these gated programs. These students then may choose majors that are associated with lower career wages (Bleemer et al., 2023).

Similarly, St. Amour (2020) argues that the spread of major restriction policies also known as gated programs, which effectively impose additional requirements for admission to particular majors after a student has already matriculated, is a key contributor to the lack of racial/ethnic minority students in certain degree programs. These restrictions impose real costs on students excluded from degree programs with higher earning potential.

Unintended Consequences of the HOPE Scholarship on Major Selection

Research focused on understanding HOPE student persistence in higher education has grown over the years. For example, attention has been placed on understanding course enrollment and factors that lead to the loss of the scholarship (Cornwell et al., 2006; Henry et al., 2004). While this research is needed, there has been less of a focus on HOPE's impact on major selection. While traditionally it has been believed that students pursue a degree that is of most interest to them, Zhang (2011) contends that a new reality

has emerged. Financial pressures or perceived difficulty of a major may cause Georgia students to select majors perceived as less rigorous due to their need to maintain their HOPE scholarship. It is logical that if students depend on the HOPE scholarship to remain in college, they might choose a degree that provides them with the greater probability of success, defined as a student's ability to graduate while maintaining a 3.00 GPA (Kuh et al., 2006). There has been research conducted (Zhang, 2011) related to understanding the impact of the HOPE scholarship on major selection specifically connected to the STEM fields but there has not been as much of a focus on the HOPE scholarship's support for majors specifically identified as workforce needs for the State of Georgia. Higher education has been identified as a key player in providing Georgia's skilled workforce, so understanding the HOPE scholarship's impact is critical for ensuring effective policy.

Focus on Workforce Development

The term "workforce development" was first used in the mid-1990s. Over the years there has been great discourse connected to the exact meaning of this term. Initially, workforce development was considered merely as on-the-job training. Since this time there has been a shift away from the idea of "employment training," which was merely skill-based programs to a more comprehensive view of "workforce development," which seeks to intentionally leverage education to support the economic growth of a community (Thompsonowak, 2020).

As the concept of workforce development has evolved, initiatives have moved from specific problem-focused strategies seeking to address issues such as low-skilled workers or the need for more employees in a particular industry, to comprehensive

approaches that consider participants' many barriers and the overall needs of the region (Schrock, 2014). Workforce development has become a priority for ensuring regional economic growth and has become a goal connecting education, government, and industry for meeting both current and future economic needs of the state.

Governors and legislators throughout the country are looking to state higher education systems to train and educate the future workforce, including in key areas with high demand, such as business, education, nursing, and STEM (Tola, 2015). According to the U.S. Bureau of Labor Statistics, there are currently over 8.7 million open jobs across the United States (U.S. Bureau of Labor Statistics, 2024). The shortages remain uneven across industry sectors, with some having eliminated their shortages while others continuing to face personnel shortages (Georgia Department of Labor, n.d.). Thus, it is important to ensure that higher education not only provides an education but also encourages students to seek degrees that will support the growth and needs of the state.

Human Capital

Human capital is often characterized as the knowledge, skills and other personal characteristics that are required for an individual to be successful in the workforce. Just like any other natural resource, human capital is essential for an area's economic growth. Developing human capital primarily equates to providing formal education that is consistent with industry needs. As mentioned earlier, Shultz established the idea that just like other resources, human capital is essential for the growth of industry (as cited in Holden & Biddle, 2017).

While human capital theory is generally accepted, there have been various critics of the concept. Freeman, a Harvard economist, insisted that human capital only serves as

a signal for talent and ability (as cited in Smithers, 2019). He believed that real productivity is not realized until after individuals have had the benefit of training. Because of this need for training, individuals are not one of the factors of production, in Freeman's view. He believed that factors of production are land, labor, entrepreneurship, and capital (as cited in Smithers, 2019).

Others like Bowels and Gintis, Marxist economists, insisted that humans should not be considered capital because viewing people as capital is an attempt to weaken the rights of workers (as cited in Swartz, 2003). In their opinion, human resources should not be equated to a machine, as this perception minimizes an individual and serves to objectify individuals. Others support this idea because they contend that human capital theory is too simplistic (e.g., Fox, 2015). They believe there is no universal connection between human capital, productivity, and income because humanity is not a product.

In spite of these criticisms, human capital remains an accepted means by which to monetize workforce development. Politicians including Georgia's Lieutenant Governor maintain that for the state to succeed, there must be a workforce with the right education needed to advance production and inspire innovation (Office of the Lieutenant Governor of Georgia, 2024). This priority has led to many initiatives that support the creation of a workforce ready to lead the state forward.

Workforce Development in the Georgia Context

Sjoquist and Winters (2014) contend that the HOPE scholarship has already impacted the State of Georgia workforce. In their research study, "The Effects of Georgia's HOPE Scholarship on College Major: A Focus on STEM" they found that students with the HOPE scholarship were less likely to enter programs in science,

technology, engineering, and mathematics (i.e., STEM fields), compared to non-STEM fields. Zhang (2011) examined student-level data from Florida's public institutions and found that the number of students seeking a degree in a STEM-related field dropped after the adoption of the Bright Futures program, Florida's equivalent of Georgia's HOPE scholarship program. However, Zhang (2011) contends that "STEM fields are often considered to hold the technological underpinnings of global competitiveness, and the STEM workforce is crucial to national and state economies" (p. 392). Zhang (2011) further contends that the HOPE scholarship has had an "adverse effect on the production of a STEM workforce, directly undermining the ultimate goal of these state-sponsored programs: to cultivate a strong workforce, attract businesses, and grow the economy" (Zhang, 2011, p. 394).

While there is debate connected to whether nursing should be included as part of STEM, for the purposes of this study, nursing was included as part of the "needed workforce" category due to the heavy STEM curriculum associated with this degree, as well as the shortage of nurses in the state. According to the federal Health Resources Service Administration, Georgia has more than 20% fewer registered nurses than it needs (as cited in King, 2024). In his article "Georgia Grapples with Nation's Second Worst Nursing Shortage," King (2024) identifies this shortage as a huge challenge that could compromise the state's ability to provide health care to its citizens. Chelsea Hagopian, Executive Director of the Georgia Nursing Workforce Center, defined the shortage as "acute" and confirmed that steps need to be made to encourage students to pursue nursing, as well as to support nursing students (King, 2024).

A 2022 report from the Georgia Department of Labor highlights a projected decline in auditors, management, and accountants alongside STEM and nursing majors (Chambers, 2022). It emphasizes the necessity of an educated workforce versed in business to attract new enterprises to the region (Georgia Department of Economic Development, 2023; Womack, 2024). For Georgia to remain competitive there must be a populous with the appropriate education to meet the workforce needs.

A symposium convened by Georgia's Governor in 2014 (Wilson et al., 2014) underscored crucial requirements for fostering business growth, noting the impending retirement of a significant portion of the state's aging workforce. Additionally, concerns were raised by 19 companies across various sectors regarding the aging demographics of their workforce (Wilson et al., 2014). The symposium report stressed the importance of cultivating "soft skills" such as communication, teamwork, problem-solving, critical thinking, and work ethic, which were identified as most closely aligned with a business major. Many employers voiced concerns over the lack of these skills among younger employees, emphasizing the need for development of these skills across multiple disciplines (Wilson et al., 2014). Although the development of soft skills might be found in many majors, the report indicated that these skills are most intricately connected to a business major (Tushar & Sooraksa, 2023).

Since 2010, Georgia has prioritized business development in the state, focusing specifically on attracting business (Kannel, 2010). At that time Georgia ranked sixth in overall business climate, according to *Site Selection* magazine, which tracks the competition across the states (Kannel, 2010). In January 2023, Governor Brian Kemp reported that Georgia had made great progress and had become recognized as the place

for business development (Douglas, 2023). While Georgia has made strides in this area, there continues to be a need for business majors in the state.

According to the U.S. Department of Education, during the 2021-2022 school year, Georgia teacher shortages were apparent in subjects such as mathematics, special education, social studies, science, various world languages and physical education (as cited in Chambers, 2022). In the past few years, the University of Georgia's College of Education, like other USG institutions, has experienced a rapid decline in students seeking a degree in education (Chambers, 2022). In 2021, there was a 33% drop in the number of students who declared a major in elementary education in the state, in comparison to 2019, i.e., prior to COVID (Chambers, 2022). This drop in the number of students pursuing this degree is projected to continue into the 2023-2024 academic year (Carnes, 2023).

Current Workforce Priority

Higher education's focus on workforce development has expanded over recent years with increased scrutiny on how degree attainment is supporting workforce needs. In a 2013 Gallup Poll, only 11% of business leaders polled indicated that graduates with a bachelor's degree were prepared to enter the workforce (as cited in Francis & Auter, 2021). Sentiments like this have caused leaders in Georgia to take steps to ensure that there is a direct connection between degree programs and workforce needs. In 2023, the Board of Regents (BOR) for the University System of Georgia moved away from using the term "general education" and replaced it with term "IMPACTS" (Monga, 2023). The IMPACTS curriculum includes many of the requirements traditionally associated with general education coursework but clearly embeds a focus on career-readiness

competencies. This new policy adopted by the BOR requires all that all general education courses articulate student learning outcomes in the areas of critical thinking, inquiry and analysis, persuasion, teamwork, and problem-solving. The BOR identified this action as a clear step in ensuring graduates would gain the essential skills that were highly valued in the workforce and central to being prepared to lead in a complex, interconnected, and changing world (Monga, 2023).

Policy Steps to Strengthen Workforce Initiatives

To build Georgia's economy, cultivating good jobs and strengthening the workforce need to both be priorities of educational policy (Douglas, 2023). The HOPE scholarship may be seen a way for the state to cultivate a workforce with college-prepared students. For many years, leaders in Georgia pointed to the HOPE scholarship as an investment in the intellectual capital of the state (Georgia House of Representatives, 2016). For the State of Georgia to maintain a competitive edge, there must be a steady growth in a citizenry that has the skills to be innovative and has the educational background to move the state forward.

Chapter III

METHODOLOGY

Overview

In 2023, Georgia Governor Brian Kemp, the Georgia Department of Economic Development (GDEcD) Commissioner Pat Wilson, and University System of Georgia (USG) Chancellor Sonny Perdue met with a diverse group of businesses to identify strategies for meeting the workforce needs for Georgia. Over 600 stakeholders in education and businesses participated in the event focused on aligning higher education initiatives with the current and future workforce needs for the State (Georgia Department of Economic Development, 2023). These leaders identified that the priority for educational policy needed to be the production of a citizenry with the appropriate education to lead the State forward (Georgia Department of Economic Development, 2023). This meeting reinforced USG's priority not only for creating an educated citizenry but ensuring that graduates from USG have the appropriate education to lead the State forward.

Statement of the Problem

The economic changes following the COVID pandemic have caused many to re-evaluate the necessity of a college degree (Hansen, 2021). With the increasing cost of post-secondary education, there is an emerging concern that questions the worth of completing a college degree, a concern previously unseen in modern times (Fayed & Cummings, 2021; Webber, 2022). Although there is a great deal of evidence supporting

the value and long-term advantages of a college education, the selection of a major is crucial when considering job alignment and post-graduation outcomes, requiring careful consideration to achieve desired results after graduation (Bartscher et al., 2020).

In Georgia, the HOPE (Helping Outstanding Pupils Educationally) scholarship is recognized as the signature program supporting degree attainment. As such, it is seen as a program to ensure that the State has a workforce with the knowledge and skills to support the on-going growth of the State. This study offers insight on the major selections of individuals who earned a bachelor's degree from a USG comprehensive university while maintaining the HOPE scholarship, those who lost the HOPE scholarship prior to earning a bachelor's degree and those who never earned the HOPE scholarship.

USG comprehensive institutions have a specific mission for contributing to the workforce needs of the State (University System of Georgia, n.d.). Students' major selections were categorized into workforce or non-essential workforce needs as defined by various reports from the State of Georgia (Wilson et al., 2014; Womack, 2024). This investigation examined individuals who entered a USG comprehensive institution in fall 2011 or later and completed their undergraduate degree between 2015 and 2022. In fall 2011, the requirements for the HOPE scholarship changed and remained consistent through 2022.

Research Questions

Because the analyses included categorical variables, the main research question was overarching, while the research sub-questions were more indicative of the actual analysis procedures conducted. The overarching research question was: Is there a relationship

between HOPE scholarship status (i.e., maintained, lost, and never earned) and students' university majors associated with Georgia's essential workforce needs? To narrow the focus for the analyses that was conducted, the above question was operationalized to include the following specific questions:

1. Among USG comprehensive institution graduates is there a difference in the selection of critical workforce majors for the State of Georgia connected to their HOPE status?
2. Among USG comprehensive institution graduates, is there a difference in the pattern of major selection between individuals who maintained the scholarship, those who lost the HOPE scholarship, and those that never earned the HOPE scholarship?
3. Among USG comprehensive institution graduates, is there a difference in the pattern of major selection as a function of gender?
4. Among USG comprehensive institution graduates, is there a difference in the pattern of major selection across racial groups?

Initial Hypotheses

1. HOPE status and major selection (workforce/non-workforce): When developed, the HOPE scholarship was identified as an initiative to create a more educated citizenry. While the program has expanded the number of individuals pursuing a bachelor's degree, it might also serve as a deterrent for students pursuing degrees that are perceived to be more difficult. If students are dependent on maintaining the scholarship to complete their degree, they may make major selections based on their current financial status rather than on their long-term potential earnings (Bleemer &

Mehta, 2023). My hypothesis was that graduates who maintained the HOPE scholarship would select non-essential workforce majors in greater numbers than those who lost the HOPE scholarship or never earned the HOPE scholarship.

2. HOPE status and workforce needed majors: In some ways a continuance of the first question, it is important to understand if the HOPE scholarship is indeed a policy that supports the creation of the needed workforce for the State. As identified earlier, the State of Georgia has defined critical workforce needs in the areas of business, education, nursing, and STEM (Chambers, 2022; King, 2024; Womack, 2024; Zhang, 2011). My hypothesis was that graduates who maintained the HOPE scholarship would select majors in Arts, Humanities, and Multidisciplinary; Social Sciences; and Physical Education/Human Services in greater numbers than majors in Nursing and STEM.
3. Gender, major selection, and HOPE status: Research shows that despite numerous interventions, certain majors are still single gender-dominated (Morgan et al., 2013). For example, a higher number of females earn bachelor's degrees in education and nursing while a higher number of men earn bachelor's degrees in STEM and business (Nau, 2018). My hypothesis was that while the HOPE scholarship was intended to expand opportunities for all individuals to pursue various degrees, the gender divide would continue to be prevalent.
4. Race/ethnicity, major selection and HOPE status: The HOPE scholarship was intended to expand opportunities for all students, but race/ethnicity still greatly influences both HOPE status and major selection (Dixon-Román et al., 2013; Jones, 2021). My hypothesis was that apart from Asian students, racial/ethnic minority

groups are both losing the HOPE scholarship at a greater rate and more frequently choosing majors that are not considered to be workforce needs for the State, compared to White students.

Research Design

When considering the problem statement, research questions, sample method, and data involved in this study, quantitative research was the appropriate methodology. One of the characteristics of the quantitative research method is that it can show the relationship between variables, which was the objective of this study and was necessary to answer the research questions (Bhandari, 2020). A cross-sectional approach in reviewing the data was utilized. While the individuals did not complete their degree at the same time, only students who earned a bachelor's degree were included, consistent with this methodology (Wang & Cheng, 2020). While this approach does have limitations such as the inability to demonstrate causal connections, the cross-sectional strategy used in this study offered the ability to gain information to assist in inferring potential relationships and provide initial data to support future research.

Finally, while the overall study was quantitative, a modified qualitative approach was used to categorize CIP coding (National Center for Education Statistics, 2020) for degree major classifications and for the workforce/non-workforce designations. The CIP codes are general categories that serve to classify a person's major. For example, if a student earns a bachelor's degree in architecture, the student is assigned a CIP code that begins with 4. Four is the overarching category for this major. Data provided by the BOR included a CIP code for each graduate. To ensure consistency and credibility for the study, the following procedure was implemented for defining the CIP codes. First, an

initial review of the CIP coding system was conducted by the dissertation chair and researcher individually. Each person examined the codes and sorted them into major categories. Major categories were shared across the dyad. Codes that matched across the two coders were assigned to their respective categories, while any discrepancies were deliberated upon, and a final determination was reached regarding their classification. Once the CIP codes were categorized, majors were also categorized as either aligned with workforce needs or not aligned with workforce needs. Complete details of the analysis of workforce categories are found in the "Operationalizing of the Data" section of this chapter. Please see Appendix A for workforce major coding and for non-essential workforce major coding.

Data Source

Due to the nature of this study, the primary data evaluated were provided by the University System of Georgia (USG). The USG provided information about academic programs and data on student enrollment, retention, graduation, and degrees conferred. Data analyzed for this study included individuals who earned a bachelor's degree between 2015 and 2022 from a USG comprehensive university. Individuals must have matriculated in Fall 2011 or after. Information was collected by each institution's technology services, in partnership with the Research and Policy Analysis division of the USG. These agencies facilitate the collection and storage of this information obtained from system schools for University System reporting. These data collections originate from the source systems (i.e., individual USG institutions) and then are aggregated for USG, State, and federal reporting.

Data Request

To access the data needed for this study, the researcher was required to complete an application that identified the study's nature/purpose, the research questions to be answered, and analyses to be conducted. In addition, the USG required that the full application include an approval (see Appendix B) from the researcher's affiliated Institutional Review Board (IRB). A clearly defined security protocol was also required by USG, detailing the complete plan for ensuring the integrity and confidentiality of the data. Finally, the researcher was asked to identify the specific variables needed to support the study.

The full application for use of the data was then evaluated by a Board of Regents (BOR) committee that consisted of the Chief Information Officers from each of the 26 USG institutions. See Appendix C for the full application for data. Once the application was approved, USG generated a contract (see Appendix D) that outlined specific requirements including an advance report of findings to the BOR prior to the release of any information to individuals outside of the researcher and dissertation committee, including release of information at a public dissertation defense. Data were transferred by USG to the researcher using an online security system called MOVEit. Data were then downloaded using security measures required by KSU technology services. Approved storage protocols were followed to ensure protection of the data at rest.

Characteristics of the Data

To better understand the nature of major selections of graduates from comprehensive institutions connected to their HOPE scholarship status, specific data associated with a group of variables were extracted from the obtained USG data. Student

identifiers (i.e., social security numbers or specific student ID numbers) were not included. Instead, a randomly generated number was created for each individual included in the data set. The randomly generated number associated with each individual student was the consistent variable in each of the datasets provided.

Data were provided in three separate comma-separated values (i.e., csv) data files. The files were titled "Demographics," "Awards," and "HOPE." A complete index of all data elements provided by USG is included in Appendix E.

The first file was called "Demographics" and included the following variables:

- Institution Name: This variable identified the specific institution where an individual earned a degree.
- Sector Description: This variable identified the institution designation. For this study, only USG comprehensive institutions were included. These institutions are Georgia Southern University, Kennesaw State University, University of West Georgia, and Valdosta State University.
- Gender: The USG only uses binary coding for gender; thus, categorization was either Male or Female. These data were obtained at the time of matriculation.
- Age at Enrollment: This variable identified the graduate's age during the last term they enrolled and completed a course.
- Age at Matriculation: This variable identified the age of the graduate when they first enrolled at the institution.
- Race/Ethnicity: This variable included the following categories: American Indian or Alaska Native, Asian, Black or African American, Hispanic or

Latino/a, Native Hawaiian, or other Pacific Islander, Two or More Races, Unknown, and White. These data were obtained at the time of matriculation.

- Citizenship Status: This variable identified student citizenship status. Categories included the following: Citizen, Non-Resident Alien and Resident Alien. These data were obtained at the time of matriculation. While this variable was not directly used in the analyses, it provided evidence of data validity. For example, people who are non-citizens of the U.S. are ineligible for the HOPE scholarship. If one of the variables included an individual who was not a citizen, but the data set showed that they earned the HOPE, this individual would be eliminated from the study. There were no cases included in the data set removed due to this reason.

The second file was termed "Awards" and included the following variables:

- Award Term: This variable identified the year and term of an individual's graduation.
- Matriculation Term: This variable identified the fiscal year and term in which the student first enrolled at the institution as an undergraduate.
- CIP Code: This variable, known as the Classification for Instruction program (CIP) code, is the code used by the Department of Education for the student's program of study (National Center for Education Statistics, 2020).
- USG CUM GPA: The USG cumulative (CUM) grade point average (GPA) variable represented the individual's cumulative grade point average. This variable was used to ensure validity of other data (i.e., if the USG CUM GPA

was over 3.00 then it was reasonable to conclude that the individual had maintained the HOPE scholarship).

- USG CUM HRS Earned: The USG CUM hours (HRS) earned variable related to the student's cumulative credit hours. This variable was used to ensure the integrity of other data (i.e., an individual must have earned at least 120 credit hours to earn a bachelor's degree.)

The third file was titled "HOPE" and included the following variable: FIS YR. This variable identified the last fiscal (FIS) year (YR) that the HOPE scholarship was earned. Notably, as mentioned above, all three datasets contained the randomly generated number associated with the individual student, which served to connect data related to each student across the three datasets.

Operationalizing the Data

USG provided the data in three separate comma-separated value (i.e., csv) files. Data were analyzed and duplicate entries removed. Once reformatted, the Demographics and Awards files were combined. As mentioned above, the randomized identification code served as the common variable for the dataset when merging these two separate files. The new comprehensive file contained 92,475 graduates.

To maintain the research study's integrity and manage the vast amount of data, steps were taken to ensure its validity. The full data set provided by the BOR included all individuals that graduated from a USG comprehensive university. The total number of graduates in this data set was 92,475 individuals. This full data set included transfer students. This study examined characteristics of graduates connected to their HOPE status. Because of this focus, all individuals who earned less than 120 credit hours from

the same institution were removed. (The standard USG bachelor's degree program requires at least 120 credit hours.) This reduced the total number of graduates to 43,893.

Developing the Studied Set

In developing the studied set, various strategies were considered including systematic sampling, stratified sampling, and simple sampling. Systematic sampling is like simple random sampling but is typically easier to implement. In this method, every member of the population is assigned a number, and instead of randomly selecting numbers, individuals are chosen at regular intervals such as every 100th individual in the data set (Bradburn, n.d.). Stratified sampling, on the other hand, involves segmenting the population into subgroups that may differ in significant ways. This approach enhances the accuracy of conclusions by ensuring that each subgroup is adequately represented in the sample. To apply this method, a researcher first divides the population into strata based on relevant characteristics, such as gender identity, age, income level, or job role (Bradburn, n.d.). Then, based on the overall proportions within the population, the researcher determines how many individuals to sample from each subgroup. Finally, a random or systematic sampling technique is employed to select individuals from each stratum.

While each methodology offers effective strategies for evaluating data, a simple sampling methodology was employed for this study. The evaluated set was extracted from the group of all graduates who earned at least 120 credit hours from the same institution. The studied set was calculated using a 98% confidence level and a margin of error of +/-3%. The result of this calculation was 1458. Data for 1500 students were extracted from the data set of 43,893 using a randomization equation generated by the

Excel program (Bradburn, n.d.). The randomly generated number for each variable was then sorted from largest to smallest and the first 1500 individuals were selected for the study.

Data for 1500 individuals were extracted in case there was missing information, or other issues were present that could have compromised the integrity of the selected data set. Variables such as gender, race/ethnicity, HOPE status and majors were analyzed for each group (i.e., the full group that included all individuals that earned a bachelor's degree from a comprehensive institution for the time studied, the extracted group of those that earned at least 120 credit hours from the same institution from a comprehensive institution for the time studied, and finally the studied data set) to ensure that there was no significant variance between each group. All groups were consistent with less than a 2% variance between all variables. (A complete overview of each data set is included in Chapter 4 of the dissertation).

Development of the HOPE Status Variable

The HOPE file provided by the USG included a unique student identification code and each semester that the individual earned the HOPE award. Students who did not earn the scholarship did not appear in this spreadsheet. The format of the provided datasets necessitated a review be conducted of each individual to determine the last semester that the HOPE scholarship was earned. This examination allowed sorting of the data on HOPE status into the following categories:

- HOPE GRAD: This category included all individuals who maintained the HOPE scholarship each semester until degree completion. Category membership was defined using the FISYR variable (i.e., the last semester a

student earned the scholarship) and the Award Term variable (i.e., term that the individual graduated). If the last semester HOPE was awarded and the Award Term were the same, then the HOPE GRAD designation was assigned.

- LOST HOPE GRAD: This category included all individuals who earned the HOPE scholarship at some point in their undergraduate career but lost the scholarship prior to earning a bachelor's degree. Category membership was defined using the FISYR variable (i.e., the last semester a student earned the scholarship) and the Award Term variable (i.e., term that individual graduated). If the last semester HOPE was awarded and the Award Term were different, then the LOST HOPE GRAD designation was assigned.
- NO HOPE GRAD: This category included all individuals who did not appear in the HOPE award file (i.e., the unique student identification number found in the merged Demographics/Award file did not appear in the Excel spreadsheet that defined HOPE status.).

Development of Workforce/Major Variables

The Classification of Instructional Programs (CIP) taxonomic scheme developed by the U.S. Department of Education's National Center for Education Statistics (NCES; 2020) was used to define the specific major areas. As mentioned above, a modified qualitative analysis was conducted of all CIP codes to identify workforce categories. This analysis produced two newly created variables that were added to the dataset: Workforce Dichotomous Group and Workforce Nominal Group. The CIP codes were operationalized into general major categories for analyses. The data were categorized into majors critical for Georgia's workforce based on data sourced from the Georgia Department of Labor (n.d.) and analyses of reports from both Governor Brian Kemp and

Chancellor Sonny Perdue (Georgia Department of Economic Development, 2023; Womack, 2024). This analysis produced the following workforce needs and non-workforce needs categories:

- Workforce Dichotomous Groups:
  - Needed Workforce: This category included majors in the following areas: Business, Education, Nursing, and STEM.
  - Non-Essential Workforce: This category included majors in the broad areas of Arts, Human Services, Humanities, Social Sciences, Physical Education, and Multidisciplinary.
- Workforce Nominal Groups
  - Needed Workforce: This category further delineated the workforce needs groups into their specific major domain category. Individual categories were created for Business, Education, Nursing, and STEM.
  - Non-Essential Workforce: This category further delineated the non-workforce needs groups into their specific major domain category. Individual categories were initially created for Arts, Human Services, Humanities, Social Sciences, Physical Education, and Multidisciplinary. Categorization was further narrowed to the following classifications: Arts, Humanities, & Multidisciplinary; Social Sciences; and Physical Education/Human Services.

Independent Variables

Gender and race/ethnicity served as key independent variables for this study. Prior research studies suggest that gender impacts a student's decision about major selection

(e.g., Corbett, 2015). For example, Corbett contended that girls and women were "systematically tracked away from science and math throughout their education, limiting their access, preparation and opportunities to go into these fields as adults" (p. 4). Women make up only 34% of the workforce in science, technology, engineering, and math (STEM), and men outnumber women majoring in most STEM fields in college (Corbett, 2015). STEM is one of the fastest growing areas in education and offers among the highest-paid jobs, yet women continue to be less represented. Employing gender as a variable in this study offered deeper insight into the relationship that exists between these gender groups and major decisions.

In addition, race/ethnicity was included as an independent variable. Barshay (2023) found that, despite many interventions, a significant gap still exists between racial groups in college degree attainment nationally. Her report indicated that a gap of 40 percentage points existed between Asian American adults, with 66% holding a college degree, and Native American adults, with only 25% possessing a college degree. The research additionally revealed that just 34% of Black adults attained a college degree and only 28% of Hispanic adults earned a college degree. In contrast, 50% of White adults achieved a bachelor's degree.

Racial disparity has also been seen in the choice of majors. Lee (2022) reported that some racial/ethnic minority groups are losing the HOPE scholarship at a higher rate than other groups. Relatedly, in Georgia, Black students face the highest level of underrepresentation in Zell Miller Scholarships at 6%, although Black students are 29% of the USG college population (Lee, 2022). These choices have a significant impact on long-term success for many minority groups. These racial disparities continue to be seen

in needed workforce areas among the most lucrative careers (U.S. Bureau of Labor Statistics, 2023b).

In addition, Latinx students represent another demographic group disproportionately affected by the loss of the HOPE scholarship, according to Lee (2022). A 2017 report from the Georgetown Center on Education and the Workforce revealed that while there has been increase in Latinx college enrollment in the United States, graduation rates lag significantly behind that of White and Black students (as cited in Carnevale & Fasules, 2017). The report underscored how inadequate academic preparation and unequal opportunities faced by many Latinx students severely hinders their success upon entering college (Carnevale & Fasules, 2017).

An article in *The Boston Globe* highlighted the different reality for Latinx students in Massachusetts (Garcia, 2024). The article reported that the number of Latinx individuals attending and successfully completing college was significantly lower than in other racial/ethnic groups. Garcia reported that only 44% of Latinx students obtain a degree or certificate within six years of enrollment, in stark contrast to the 69% graduation rate among their White counterparts. A lack of college readiness is apparent in this group with the report describing that more than half of Latinx students in the state of Massachusetts are required to take remedial courses in their first semester of college, compared to just 28% of White students (Garcia, 2024). These disparities have profound and enduring implications for the workforce, as evidenced by the fact that only 23% of Latinx adults in Massachusetts hold an associate degree or higher, according to Garcia (2024).

Independent/Dependent Variable

The variable of HOPE status served as both an independent and dependent variable. An initial analysis sought to examine the relationship between the demographic variables of gender and race/ethnicity and HOPE status. In addition, HOPE status was also used as an independent variable to understand the relationship of receipt of this scholarship to workforce designation as well as major selection. As detailed above, the categories associated with HOPE variable were:

- graduates from a comprehensive USG institution between 2015 and 2022 who maintained the HOPE scholarship through graduation,
- graduates from a comprehensive USG institution between 2015 and 2022 who entered with the HOPE scholarship but lost it prior to graduation, and
- graduates from a comprehensive USG institution between 2015 and 2022 who never earned the HOPE scholarship.

Figure 2 illustrates the initial analysis conducted. This analysis placed HOPE status as the dependent variable and gender and race/ethnicity as the independent variables. This initial test was important for understanding how gender and race/ethnicity predict the graduate's HOPE status.

Dependent Variables

The study used workforce status and major as key dependent variables. Major was defined as the major associated with the graduation degree. As students often change their major choice, the degree at completion served as the standard by which this variable was defined. Only majors offered by four-year comprehensive universities were analyzed.

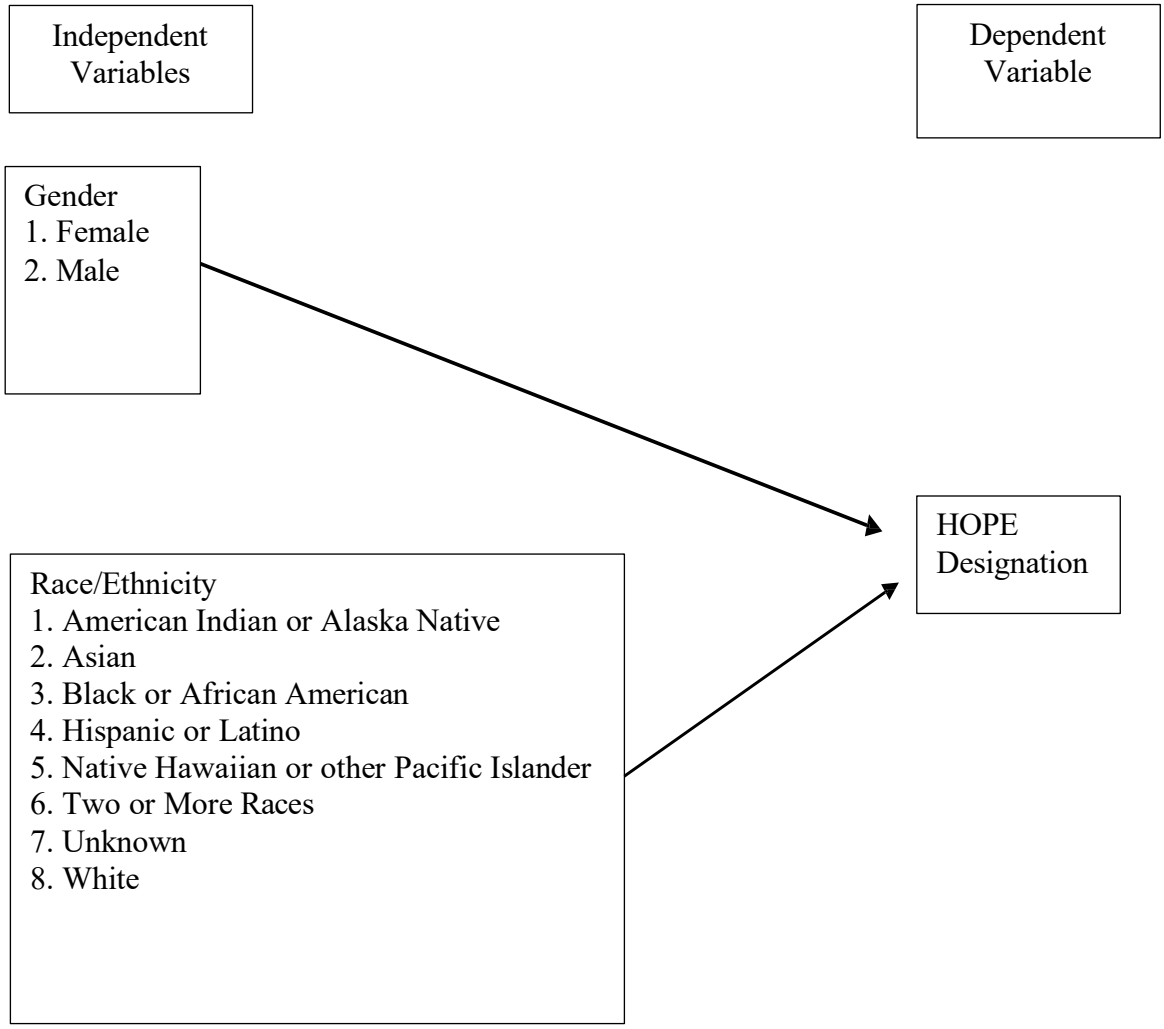

Figure 2. *Multinomial Regression Analysis: HOPE Status*

Figure 3 shows the binomial regression analysis conducted where workforce status was the dependent variable. This analysis was conducted to determine the relationship between this set of predictor variables (i.e., gender, race/ethnicity and HOPE designation) and workforce status.

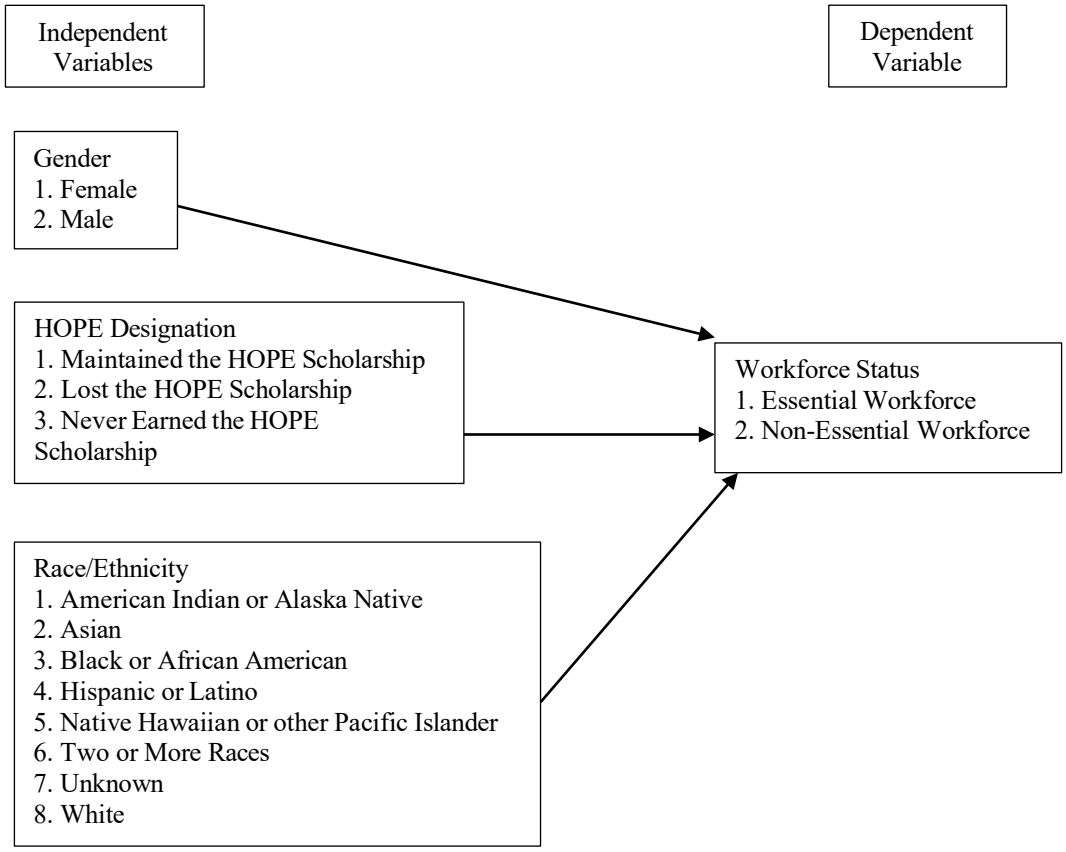

Figure 3. *Binomial Regression Analysis: Workforce Status*

Figure 4 shows the binomial regression analysis conducted where specific major category was the dependent variable. This analysis was conducted to determine the relationship between the three-variable set of gender, race/ethnicity and HOPE designation and major selected.

Analyses Overview

The researcher proposed that significant relationships, indicated by *p* values less than .05, exist between the set of independent variables (i.e., gender, race/ethnicity, HOPE status) and the dependent variables of workforce status. In quantitative research, *p* values assess evidence against a null hypothesis (Creswell & Creswell, 2018), with

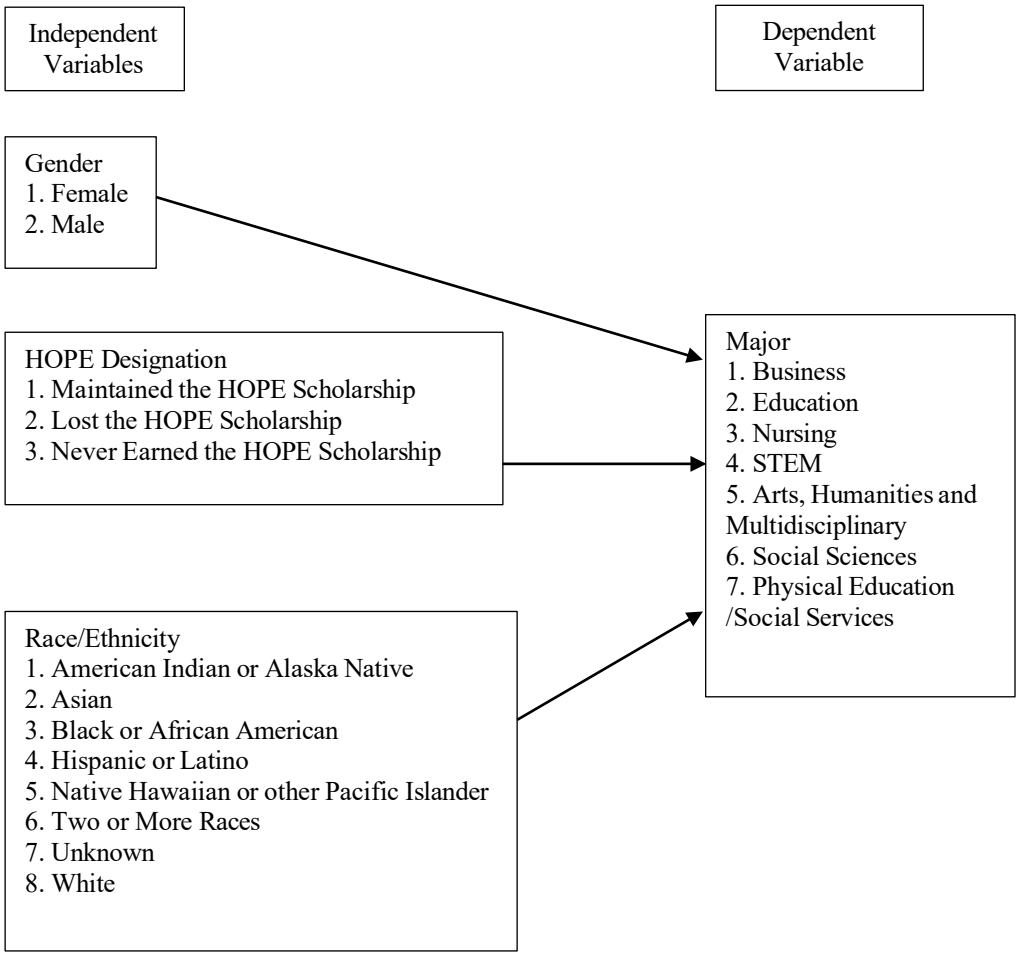

Figure 4. *Multinomial Regression Analysis: Major*

values below .05 demonstrating a significant relationship which allows researchers to reject the null hypothesis (Kwak, 2023). Initial descriptive analyses were conducted on the full data set, the extracted data set including individuals who earned 120 credit hours or above from the same institution, and finally the study set of 1500 that served as the primary data set.

Cross-tabulations were conducted determining relationships between gender, race/ ethnicity, HOPE status, workforce status, and major. Chi-Square was the primary

statistical analysis used to determine the significance of these relationships. Finally, regression analyses were completed to validate statistical significance and to gain greater understanding of the relationships between these variables (Rahman & Muktadir, 2021).

SPSS 29.0.1.1 was chosen for its comprehensive capabilities in statistical analysis across multiple disciplines including business and social sciences. This program identifies correlations, includes central tendency measures, and generates *p* values (Bevans, 2023). This software facilitates logical conclusions regarding research questions, including acceptance or rejection of null hypotheses (George & Mallery, 2022). This program was used to conduct all statistical tests.

Specific Data Categorization Used in Analyses

To gain a greater understanding of the data, descriptive analyses were conducted for the full data set and the sample set. These descriptive analyses included the following categories and associated numerical codes:

- Gender: Gender was a key variable evaluated as part of this study. Analyses were conducted to ensure that the extracted set of 1500 from the full dataset was representative. As mentioned above, USG only identifies female and male designations, so these were the parameters used for this variable. For the purposes of data analysis, gender was coded as 1 for female and 2 for male.
- Race/ethnicity: Race/ethnicity is a significant variable for this study. Analyses were conducted to ensure that the sample extracted from the full dataset was representative. The categories for this variable included 1 for American Indian or Alaska Native, Native Hawaiian, Other Pacific Islander,

& Unknown (these categories were combined because the total number accounted for only 12 individuals from the set of 1500); 2 for Asian; 3 for Black or African American; 4 for Hispanic or Latino; 5 for Two or More Races; and 5 for White.

- Specific Institution Affiliation: Institution was used to further describe the data set and ensure data validity. Data were coded as follows: 1 for Georgia Southern University (GSU), 2 for Kennesaw State University (KSU), 3 for University of West Georgia (UWG) and 4 for Valdosta State University (VSU).
- HOPE Designation: HOPE designation was identified using the data provided by the USG. Data were coded as follows: 1 for graduates who never earned the HOPE scholarship, 2 for graduates who earned the HOPE scholarship but lost it prior to completing a bachelor's degree, and 3 for graduates who maintained the HOPE scholarship through earning a bachelor's degree.
- Major Designation: Review of all CIP codes was conducted as described above. From that analysis the following major classifications were initially created: 1 for majors associated with Business, 2 for majors associated with Education, 3 for majors associated with Nursing, 4 for majors associated with STEM, 5 for majors associated with Arts, 6 for majors associated with the Humanities, 7 for majors associated with the Social Sciences, 8 for majors associated with Physical Education/Human Services, and 9 for majors that did not fit into any of the other major designations (i.e., Other).

- Georgia Essential Workforce/Georgia Non-Essential Workforce: Majors were further operationalized in the following manner: 1 for workforce needs, which included majors in the categories of Business, Education, Nursing, and STEM; and 2 for non-workforce needs that initially included the major categories of Arts, Humanities, Social Sciences, Physical Education/Human Services and Other.

Data Analysis Techniques: Descriptive Analyses

Descriptive analyses were conducted to further understand all variables connected to this study. This included the variables of gender, race/ethnicity, and major selections (Creswell & Creswell, 2018). Assumption checks prior to generating descriptive statistics involved identifying outliers and addressing missing or corrupted data (Creswell & Creswell, 2018). No outliers were present, so the complete set of 1500 was used in the study. Degree coding (i.e., bachelor's degree designation) and cumulative hours earned were examined to ensure the credibility of the data set. SPSS, known for its capability to calculate and graphically depict descriptive statistics, was used for this purpose (Creswell & Creswell, 2018). Specific descriptive analyses were also conducted using the HOPE status variable, with the three categories of (a) those who maintained the HOPE scholarship, (b) those who lost the HOPE scholarship prior to earning a degree, and (c) those who never earned the HOPE scholarship.

Data Analysis Techniques: Cross-Tabulation, Chi-Square and Regression Analyses

The overarching focus of the study was to identify relationships between workforce needs (essential workforce/non-essential workforce), HOPE status, gender, and race/ethnicity. Cross-tabulations were conducted to gain greater understanding of the relationship between select variables. Cross-tabulations were followed by a chi-square

test of independence to determine the significance of the relationship between these variables (Creswell & Creswell, 2018). In addition to the chi-square tests, regression analyses were conducted to determine the variables that had the strongest relationships with the dependent variables (workforce status, major category, and HOPE status).

Data Security Measures

As members of the Kennesaw State University (KSU) faculty, the researcher and dissertation chair had to comply with KSU's Data Security Policy (Milsaps, 2003) and all applicable USG and KSU guidelines. These regulations were followed for all data collection, retention, and management procedures. Data was protected through a combination of measures, including operational safeguards, privacy specific safeguards, and security controls (e.g., encryption). Using a risk-based approach for protecting the confidentiality of data, all members of the research team employed reasonable practices to protect the data from unauthorized physical and electronic access.

Data Aggregation, Storage, and Analysis Procedures

Data analysis was performed using KSU-approved technology and software resources. Data were stored on a secure computer. Data access was restricted to project personnel using group-based file management policies. Additionally, all data were password protected, stored on a password-protected computer, and locked in a KSU office. Data will be destroyed three years after completion of the research using the KSU disposal methods outlined by the Legal Affairs and/or Records Information Office at the time of disposal. Data will be destroyed in compliance with the KSU policy.

Planned Results Dissemination

The format of data provided by the BOR was de-identified. The sharing of research results will be consistent with KSU and USG policies governing intellectual

property, copyright, and the dissemination of research products. Findings will be shared with USG faculty, staff, and personnel. Findings will also be submitted for publication in various journals and used as part of conference presentation(s).

Institutional Approval

The USG Office of Research, in collaboration with University Information Technology Services, KSU, and Valdosta State University (VSU), approved the data security plan for this study. All individuals (i.e., researcher and dissertation chair) associated with this study and who had access to data completed all relevant CITI training. All approvals and CITI certifications were gained through the VSU Institutional Review Board (IRB). While the data were maintained using KSU safety protocols, the KSU IRB did not require additional protocol approval. Instead, the KSU IRB indicated their support of the study due to the doctoral candidate's status as a tenured faculty member. Documentation of these approvals is included in Appendix B.

Chapter IV

RESULTS

This chapter presents findings from the analysis of data related to graduates from USG (University System of Georgia) comprehensive universities between 2015-2022. The study focused on understanding major selection of graduates who maintained the HOPE scholarship, those who lost the HOPE scholarship prior to graduation, and those who never earned the HOPE scholarship, connected to workforce needs for the State of Georgia. To maintain the integrity of the group evaluated, this study included only graduates who had earned 120 cumulative hours or above from the same institution. The full data set provided by the Board of Regents (BOR) included all graduates including transfer students. To investigate variance between the sets of data, descriptive analyses were conducted for three groups. These three groups included the following:

(a) the full data set of all individuals who graduated with a bachelor's degree from a USG comprehensive institution between 2015-2023,

(b) the extracted data set for all individuals who graduated with a bachelor's degree from a USG comprehensive institution between 2015-2023 and earned at least 120 credit hours from the same institution, and

(c) the analyzed data set of 1500 randomly selected individuals who graduated with a bachelor's degree from a USG comprehensive institution between 2015-2023 and earned at least 120 credit hours from the same institution.

Table 1 provides an overview all individuals who earned a bachelor's degree from a USG comprehensive institution between 2015 and 2023 per institution. In the full data set, 41.0% of the students were from Kennesaw State University (KSU), 33.2% from Georgia Southern University (GSU), 13.8% from University of West Georgia (UWG) and 12% from Valdosta State University (VSU).

Characteristics of the Full Data Set

Table 1. *Institution Distribution of the Full Data Set*

	Frequency	Percent
Georgia Southern University	30710	33.2
Kennesaw State University	37918	41.0
University of West Georgia	12779	13.8
Valdosta State University	11068	12.0
Total	92475	100.0

Table 2 provides an overview of the gender distribution for all USG comprehensive institutions for the time studied. The percentage of females who graduated from a comprehensive USG institution for the period studied was approximately 58% and the percentage of men was approximately 42%.

Table 2. *Gender Distribution of the Full Data Set*

	Frequency	Percent
Female	53734	58.1
Male	38741	41.9
Total	92475	100.0

Table 3 provides the total number of graduates by race/ethnicity. Approximately 57% of all graduates included in the full data set were White and 26% were Black or African American. Approximately 8% of the group consisted of Hispanic or Latinx individuals.

Table 3. *Race/Ethnicity Distribution of the Full Data Set*

	Frequency	Percent
American Indian or Alaska Native	213	0.2
Asian	3509	3.8
Black or African American	23690	25.6
Hispanic or Latinx	7247	7.8
Native Hawaiian or Other Pacific Islander	119	0.1
Race and Ethnicity Unknown	1285	1.4
Two or More Races	3314	3.6
White	53098	57.4
Total	92502	100.0

Note. Students could indicate more than one racial/ethnic group.

Characteristics of the Extracted Data Set

The main purpose of this study was to gain insight into major selections of students who graduated from a USG comprehensive institution. While transfer students are an important group to analyze, this study focused on graduates who remained at the same institution for their college career. To ensure this status, all graduates who earned less than 120 credit hours (i.e., the standard hours needed to earn a bachelor's degree) from the same institution were removed from the full set. The new data set of all graduates who earned at least 120 credit hours from the same institution served as the data set from which the random sample was extracted.

Table 4 shows the distribution of the graduates who earned over 120 credit hours from the same institution, by institution. As shown in Tables 1 and 4, GSU increased from 33.2% of graduates in the full data set to 37.5% of all graduates in the

Table 4. *Institution Distribution for Extracted Group*

	Frequency	Percent
Georgia Southern University	16464	37.5
Kennesaw State University	15899	36.2
University of West Georgia	7043	16.0
Valdosta State University	4487	10.2
Total	43893	100.0

extracted data set. UWG increased from 13.8% of graduates in the full data set to 16.0% of the total number of graduates in the extracted set. KSU dropped from 41.0% of graduates in the full data set to 36.2% of the total graduates in the extracted data set while VSU dropped from 12.0% in the full data set to 10.2% of the total number of graduates in the extracted data set.

Table 5 provides the gender distribution of those individuals earning at least 120 credit hours or above. This group contains 58% females and 42% males. This represents less than 0.1 percent difference between the full data set and the extracted data set, regarding the gender distribution.

Table 5. *Gender Distribution for Extracted Group*

	Frequency	Percent
Female	25446	58.0
Male	18447	42.0
Total	43893	100.0

Table 6 shows the race/ethnic breakdown of the set of individuals earning at least 120 credit hours or above. The racial/ethnic characteristics of the extracted data set were congruent with that of the full data set. The highest variation was with the Black or African American group with a 1.2% difference between the full data set and the extracted data set.

Table 6. *Race/Ethnicity Distribution for Extracted Group*

	Frequency	Percent
American Indian or Alaska Native	88	.2
Asian	1447	3.3
Black or African American	11783	26.8
Hispanic or Latino	3235	7.4
Native Hawaiian or Other Pacific Islander	62	.1
Race and Ethnicity Unknown	428	1.0
Two or More Races	1580	3.6
White	25270	57.6
Total	43893	100.0

Characteristics of the Analyzed Data Set

For this study's purposes, 1500 graduates were randomly selected from the set of students who earned 120 credit hours or above from the same institution. The sample size was developed using a 98% confidence rate with a margin of error of +/-3%. The number required was 1458, but this number was rounded up to 1500 to allow for potential issues like missing data. The entire group of 1500 were used in all analyses due to there being no irregularities.

Table 7. *Institution Distribution of Study Sample*

	Frequency	Percent
Georgia Southern University	564	37.6
Kennesaw State University	524	34.9
University of West Georgia	268	17.9
Valdosta State University	144	9.6
Total	1500	100.0

Table 7 shows the institution distribution of the sample used for this study. Generally similar to the extracted group of 43893 students, 37.6% of the sample earned a bachelor's degree from GSU, 34.9% earned a degree from KSU, 17.9% earned a degree from UWG, and 9.6% earned a degree from VSU.

Table 8 shows that 57.9% of the studied group were female and 42.1% of the studied group were male. There was only a 0.1% difference between these proportions and the gender distribution of the set of 43893 individuals who earned 120 credit hours or above from the same institution.

Table 8. *Gender Distribution of Study Sample*

	Frequency	Percent
Female	868	57.9
Male	632	42.1
Total	1500	100.0

Table 9 provides an overview of the race/ethnicity distribution of the study sample, extracted from the group of individuals earning 120 credit hours or above. Due to the size of some subsamples, the categories of American Indian, Alaska Native, Native Hawaiian & Other Pacific Islander, and Unknown were merged into one group totaling 0.8% of the group analyzed.

Table 9. *Race/Ethnicity Distribution of Study Sample*

	Frequency	Percent
American Indian, Alaska Native, Native Hawaiian, Other Pacific Islander, & Unknown	12	0.8
Asian	43	2.9
Black or African American	412	27.5
Hispanic or Latino	119	7.9
Two or More Races	59	3.9
White	855	57.0
Total	1500	100.0

Table 10. *Time to Degree of Study Sample*

	Frequency	Percent
3 years to graduation	344	22.9
4 years to graduation	757	50.5
5 years to graduation	262	17.5
6 years to graduation	88	5.9
7 years or more to graduation	49	3.3
Total	1500	100.0

Table 10 shows the time taken for individuals to earn a bachelor's degree at one of the USG comprehensive institutions. Approximately 74% of all graduates completed their bachelor's degree in 4 years or less. In addition, only 9.2% of those who earned a bachelor's degree completed it after 6 or more years.

Figure 5 provides an overview of the set of study participants, connected to their HOPE status. Approximately 46% of the total number of individuals who earned a bachelor's degree between 2015 and 2023 maintained the HOPE scholarship, 33% of those that earned a bachelor's degree lost the HOPE scholarship prior to earning their degree, and 21% of those who earned a bachelor's degree never earned the HOPE scholarship.

Table 11 provides an overview of the distribution of major categories for all individuals who earned at least 120 credit hours from the same institution and graduated with a bachelor's degree during the time studied. Graduates who earned a bachelor's degree with a STEM major comprised 26.8% of the total number of graduates in this analyzed data set.

The second largest group was individuals earning a bachelor's degree by completing a major in the social sciences with 21.9%. Business majors accounted for

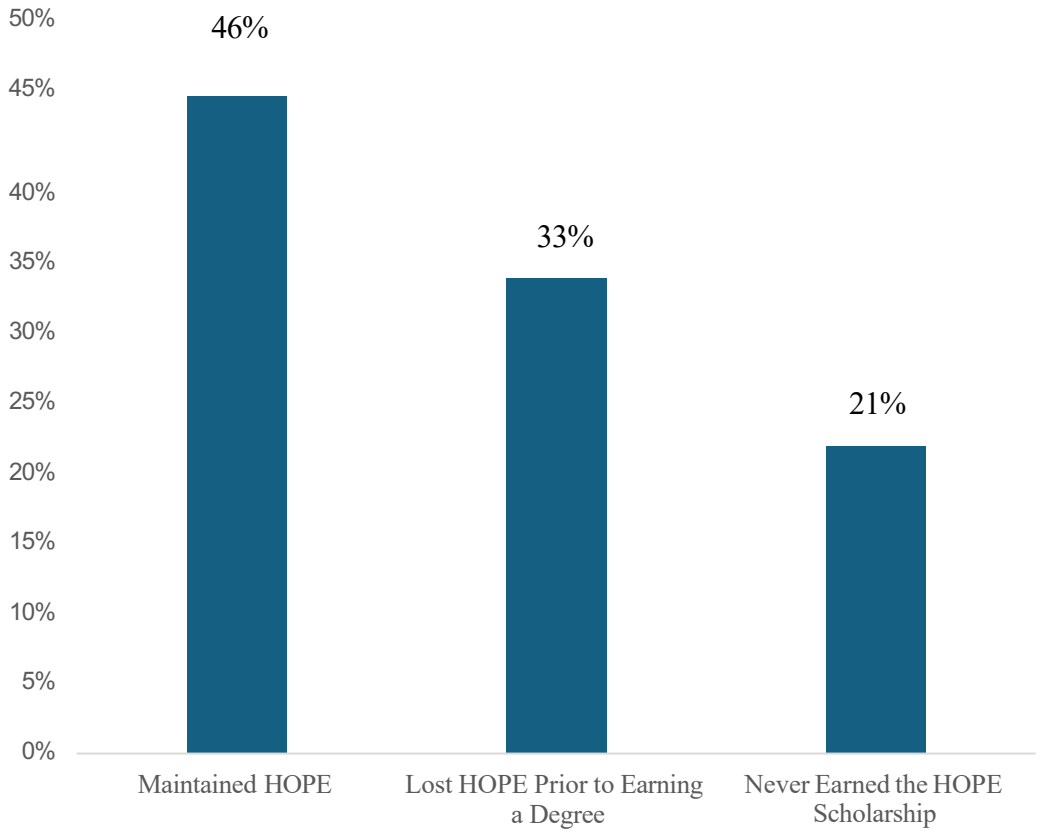

Figure 5. *Percentage of Individuals who Earned a Bachelor's Degree by HOPE Status*

17% of all those that earned a bachelor's degree. The lowest percentage of graduates was in the area of nursing, at 4.3%. This is not surprising because nursing programs have limited capacity; thus, the number of students accepted to these programs is less than for most other programs. Finally, 9.4% of graduates in this studied set earned a degree in education.

Fifty-seven percent of the studied group earned a bachelor's degree with a major in an essential workforce field while 43% of the group earned a bachelor's degree by completing a major in a non-essential workforce field.

Table 11. *Graduates by Major Category of Study Sample*

	n	%
Business	255	17.0%
Education	141	9.4%
Nursing	65	4.3%
STEM	402	26.8%
Arts, Humanities, & Multidisciplinary	153	10.2%
Social Sciences	328	21.9%
Physical Education/Human Services	156	10.4%
Total	1500	100%

Understanding HOPE Status as a Predictor

The overarching focus of this study was to better understand the relationship between USG comprehensive university HOPE scholarship graduation status and student major, as associated with Georgia's essential workforce needs. The first step in gaining this understanding was to identify the relationship between HOPE status and student major category. Cross-tabulation analyses were conducted for both workforce code (i.e., essential and non-essential) and major selection. Last, multinomial regression analyses were conducted to gain greater understanding of these relationships.

First, Table 12 details the major category selections of all graduates as a function of HOPE status. It was found that the number of individuals who earned a degree while maintaining the HOPE scholarship was higher, compared to the number of individuals who lost the HOPE scholarship or never earned the HOPE scholarship, in all major areas except for STEM. In the STEM field, 43% of the graduates lost the scholarship prior to earning their degree while only 37% maintained the scholarship through earning a

Table 12. *Cross-Tabulation: Major Code and HOPE Status*

		Never Earned	Lost	Maintained	Total
Business	Count	66	82	107	255
	% HOPE	20.1%	16.3%	16.0%	17.0%
	% Major	25.9%	32.2%	42.0%	100%
Education	Count	19	38	84	141
	% HOPE	5.8%	7.6%	12.6%	9.4%
	% Major	13.5%	27.0%	59.6%	100%
Nursing	Count	NR*	12	47	65
	% HOPE	NR*	2.4%	7%	4.3%
	% Major	NR*	18.5%	72.3%	100%
STEM	Count	80	172	150	402
	% HOPE	24.3%	34.3%	22.4%	26.8%
	% Major	19.9%	42.8%	37.3%	100%
Arts, Humanities,	Count	36	48	60	144
	% HOPE	11.6%	9.8%	9.9%	10.2%
& Multi.	% Major	25.0%	33.3%	41.7%	100%
Social Sciences	Count	87	89	161	337
	% HOPE	25.9%	17.5%	23.2%	21.9%
	% Major	25.8%	26.4%	47.8%	100%
Physical	Count	35	61	60	156
Education/Human Services	% HOPE	10.6%	12.2%	9.0%	10.4%
	% Major	22.4%	39.1%	38.5%	100%

Note. NR* = Not reported. Multi. = Multidisciplinary Studies

bachelor's degree. Individuals who earned a bachelor's degree in education maintained the HOPE scholarship at approximately twice the rate as those who lost it. Approximately 60% of all individuals who graduated with a degree in education maintained the scholarship while only 27% of graduates earning an education degree lost the HOPE scholarship. Close to 73% of the graduates who earned a nursing degree

maintained the HOPE scholarship through earning their degree while 18.5% of these graduates lost the HOPE scholarship prior to graduation.

Table 13 shows the results of the chi-square test for association between major category and HOPE status for all individuals earning a bachelor's degree. There was a statistically significant association between major category and HOPE Status, $\chi 2(12) = 62.918$, $p < .001$.

Table 13. *Chi-Square Test Results: Major Code and HOPE Status*

	Value	*df*	Asymptotic Significance (2-sided)
Pearson Chi-Square	62.918	12	<.001
Likelihood Ratio	63.028	12	<.001
N	1500		

Note. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.26.

An additional analysis was conducted to determine the relationship between HOPE status and receiving a degree aligned with workforce needs in Georgia. It has been identified that the State of Georgia has critical needs for graduates in the areas of Business, Education, Nursing and in STEM-related areas (Chambers, 2022; Grice Connect, 2023; Wintemute, 2024; Zhang, 2011). Majors were sorted into the categories of essential workforce need and non-essential workforce need. Table 14 provides the results of this analysis.

The percentage of graduates who never earned the HOPE scholarship and earned a degree with an essential workforce major was 52%, while 48% of this group completed a non-essential workforce major, a difference of 4%. The percentage of graduates who maintained the HOPE scholarship and earned a degree with an essential

Table 14. *Cross-Tabulation: HOPE Status and Workforce Designation*

		Essential Workforce Need	Non-Essential Workforce Need	Total
Never Earned the HOPE Scholarship	Count	171	158	329
	% Workforce	19.8%	24.8%	21.9%
	% HOPE	52%	48%	100%
Lost the HOPE Scholarship	Count	304	198	502
	% Workforce	35.2%	31.1%	33.5%
	% HOPE	61%	39%	100%
Maintained the HOPE Scholarship	Count	388	281	669
	% Workforce	45.0%	44.4%	44.6%
	% HOPE	58%	42%	100%

workforce major was 58% while 42% of these students selected a non-essential workforce major, a difference of 16%. The proportion of graduates who lost the HOPE scholarship and completed an essential workforce major was 61% while 39% completed a non-essential workforce major, a difference of 21%.

Table 15 provides the results from a chi-square test of HOPE status and completing a major associated with essential workforce needs. There was a moderate association between HOPE status and workforce designation, as shown by the following equation $\chi 2(2) = 6.097$, $p = .047$.

Multinomial Regression: Predicting HOPE Status

A multinomial regression analysis was conducted with HOPE status as the

Table 15. *Chi-Square Test Results: HOPE Status and Workforce Designation*

	Value	*df*	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.097	2	0.047
Likelihood Ratio	6.072	2	0.048
N	1500		

Note. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 139.72.

dependent variable and gender and race/ethnicity as the two independent variables. One of the conditions of the regression analysis is that no collinearity exists. Collinearity exists when the two independent variables are highly intercorrelated. A test was conducted for this regression analysis, and it was found that no collinearity existed. Results for this test are included in Appendix F. With that assumption satisfied, the multinomial regression analysis was conducted.

The results from the likelihood ratio test showed that both gender and race/ethnicity were significantly associated with HOPE status. In addition, this regression showed that males were more likely than females to never have earned the HOPE scholarship. In addition, Black/African American and Hispanic/Latinx individuals were more likely than White individuals to never have earned the HOPE scholarship. Finally, men and Black/African American individuals were more likely than women and White individuals to lose the HOPE scholarship. Results from this analysis are found in Appendix G.

Understanding Student Gender as a Predictor

The Relationship Between Gender and Race/Ethnicity

To gain greater understanding of the relationship between gender and race/ethnicity,

a cross-tabulation analysis was conducted. Table 16 provides the results of this analysis. As shown, females out-number men in all ethnic groups, except for people who identify as Asian and individuals from the combined American Indian, Alaska Native, Native Hawaiian, Other Pacific Islander, and Unknown group. In the Asian group, 49% were female, and 51% were male. The group including individuals in the categories of American Indian, Alaska Native, Native Hawaiian, Other Pacific Islander, and Unknown was 41.7% female and 58.3% male. The category of "Two or More Races" had the greatest gender difference, with females accounting for 68% of this subsample and men 32%. Black or African Americans had the second greatest difference between genders with females representing 63% of this group, while 37% of this group were male.

Table 17 shows the results of the Pearson chi-square test. There was a significant association between race/ethnicity and gender in this sample of GSU graduates, as shown by the following equation $\chi 2(5) = 12.948$, $p = .024$.

The Relationship Between Gender and HOPE Status

Table 18 shows the distribution of males and females connected to HOPE status. Females who maintained the HOPE scholarship through the time of graduation with a bachelor's degree was the largest group at approximately 65% while only approximately 35% of this HOPE status group were men. The percentage of male and females that graduated but never earned the HOPE scholarship was roughly even (approximately 49% female and 51% male). Females outnumbered men in all categories except for those that never earned the HOPE scholarship.

Table 16. *Cross-Tabulation: Race/Ethnicity and Gender*

		Female	Male	Total
American Indian, Alaska Native, Native Hawaiian, Pacific Islander, & Unknown	Count	NR*	NR*	12
	Expected Count	NR*	NR*	12
	% within Gender	NR*	NR*	0.8%
	% within Race/Ethnicity	NR*	NR*	NR*
Asian	Count	21	22	43
	Expected Count	24.9	18.1	43
	% within Gender	2.4%	3.5%	2.9%
	% within Race/Ethnicity	48.8%	51.2%	100%
Black or African American	Count	261	151	412
	Expected Count	238.4	173.6	412
	% within Gender	30.1%	23.9%	27.5%
	% within Race/Ethnicity	63.3%	36.7%	100%
Hispanic or Latino	Count	70	49	119
	Expected Count	68.9	50.1	119
	% within Gender	8.1%	7.8%	7.9%
	% within Race/Ethnicity	58.8%	41.2%	100%
Two or More Races	Count	40	19	59
	Expected Count	34.1	24.9	59
	% within Gender	4.6%	3.0%	3.9%
	% within Race/Ethnicity	67.8%	32.2%	100%
White	Count	471	384	855
	Expected Count	494.8	360.2	855
	% within Gender	54.3%	60.8%	57.0%
	% within Race/Ethnicity	55.1%	32.2%	100%

Table 17. *Chi-Square Test Results: Race/Ethnicity and Gender*

	Value	*df*	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.948[a]	5	0.024
Likelihood Ratio	13.035	5	0.023
N	1500		

Table 18. *Cross-Tabulation: Gender and HOPE Status*

		Female	Male	Total
Never HOPE	Count	162	167	329
	Expected Count	190	139	329
	% Gender	18.7%	26.4%	21.9%
	% HOPE	49.2%	50.8%	100%
Lost HOPE	Count	269	233	502
	Expected Count	291	212	502
	% Gender	31.0%	36.9%	33.5%
	% HOPE	53.6%	46.4%	100%
Maintained HOPE	Count	437	232	669
	Expected Count	387	282	669
	% Gender	50.3%	36.7%	44.6%
	% HOPE	65.3%	34.7%	100%

Figure 6 provides an overview of gender distribution connected to HOPE status. The number of men who maintained the HOPE scholarship and those who lost the scholarship was roughly equal. The only category where men outnumbered women was for those who never earned the HOPE scholarship.

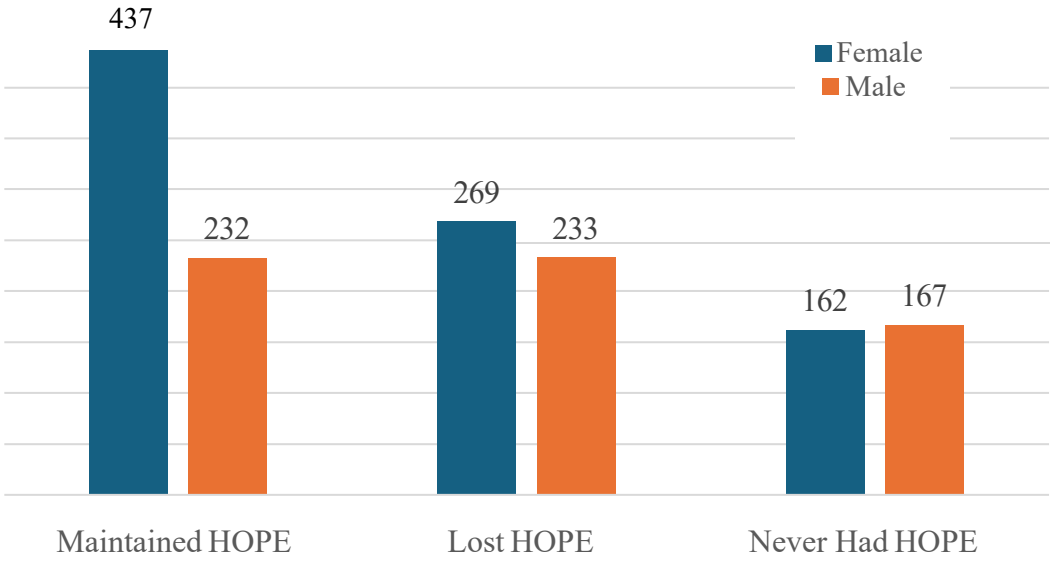

Figure 6. *HOPE Status by Gender*

Table 19 shows the results of the Pearson chi-square test. There was a significant association between gender and HOPE status, $\chi 2(2) = 29.064$, $p < .001$.

Table 19. *Chi-Square Test Results: Gender and HOPE Status*

	Value	*df*	Asymptotic Significance (2-sided)
Pearson Chi-Square	29.064[a]	2	<.001
Likelihood Ratio	29.214	2	<.001
N	1500		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 138.62.

The Relationship Between Gender and Major Category

One of the primary questions of this study focused on the relationship between gender and student major. Table 20 provides the results of this cross-tabulation.

Table 20. *Cross-Tabulation: Gender and Major Category*

		Female	Male	Total
Business	Count	109	146	255
	Expected Count	147.6	107.4	255.0
	% Gender	12.6%	23.1%	17.0%
	% within Major	42.7%	57.3%	100.0%
Education	Count	125	16	141
	Expected Count	81.6	59.4	141.0
	% Gender	14.4%	2.5%	9.4
	% within Major	88.7%	11.3%	100.0%
Nursing	Count	60	NR*	65
	Expected Count	37.6	NR*	65.0
	% Gender	6.9%	NR*	4.3%
	% within Major	92.3%	NR*	100.0%
STEM	Count	142	260	402
	Expected Count	232.6	169.4	402.0
	% Gender	16.4%	41.1%	26.8%
	% within Major	35.3%	64.7%	100.0%
Arts, Humanities, & Multidisciplinary	Count	86	58	144
	Expected Count	83.3	60.7	144.0
	% Gender	10.6%	9.7%	10.2%
	% within Major	59.7%	40.3%	100.0%
Social Sciences	Count	245	92	337
	Expected Count	195.0	142.0	337.0
	% Gender	27.5%	14.1%	21.9%
	% within Major	72.7%	27.3%	100.0%
Physical Education/Human Services	Count	101	55	156
	Expected Count	90.3	65.7	156.0
	% Gender	11.6%	8.7%	10.4%
	% within Major	64.7%	35.3%	100.0%

Note. NR* = Not reported.

The highest percentage difference between males and females was in the nursing major category. Females accounted for 92% of graduates with a nursing degree. A similar distribution was seen with graduates earning a bachelor's degree in education, with approximately 89% of all education majors being females. The number of females majoring in social science and physical education/human services outpaced males as

well. Of all students graduating with a major in the social sciences, 73% were female. Females made up 65% of the graduates earning a bachelor's degree with a major in physical education/human services. Men outnumbered females only in two major areas, business and STEM. Approximately 65% of all individuals who earned a bachelor's degree while completing a major in a STEM-related field were male. In business-related majors, 58% of the total number of majors were men.

Table 21 shows the results of the Pearson chi-square test investigating the relationship between gender and major category. There was a significant association between gender and major category, $\chi 2(6) = 227.786$, $p < .001$.

Table 21. *Chi-Square Test Results: Gender and Major Category*

	Value	*df*	Asymptotic Significance (2-sided)
Pearson Chi-Square	227.786[a]	6	<.001
Likelihood Ratio	245.145	6	<.001
N	1500		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 27.39.

The Relationship Between Gender and Workforce Designation

A central question in this study was the relationship between gender and workforce major designation (i.e., essential vs. non-essential). Table 22 provides an overview of workforce major categorization as a function of student gender.

The number of females and males graduating with an essential workforce major was roughly equal; 50.5% of all individuals that earned a degree with a workforce major were female while 49.5% were male. The distribution of females and males was much different with non-essential workforce majors, as approximately 68% of those that completed a non-essential workforce major were female and 32% of this group was male.

Table 22. *Cross-Tabulation: Workforce Major and Gender*

		Females	Males	Total
Essential Workforce Major	Count	436	427	863
	Expected Count	499	364	863
	% Gender	50.2%	67.6%	57.5%
	% Workforce	50.5%	49.5%	100%
Non-Essential Workforce Major	Count	432	205	637
	Expected Count	369	268	637
	% Gender	49.8%	32.4%	42.5%
	% Workforce	67.8%	32.2%	100%
Count		868	632	1500

Figure 7 provides a visual illustration of the gender distribution connected to type of workforce major. As the bar graph shows, 436 of those that selected an essential workforce major were female while 432 of those that selected a non-essential workforce major were female. Additionally, 427 of those that selected an essential workforce major were male while 205 of those that selected a non-essential workforce major were male.

Table 23 shows the results of the Pearson chi-square test of association between gender and workforce category. There was a significant association between workforce and gender, as shown by the following equation $\chi 2(1) = 44.970$, $p < .001$.

Understanding Student Race/Ethnicity as a Predictor

The Relationship Between Race/Ethnicity and HOPE Status

To gain greater understanding of the relationship between race/ethnicity and HOPE status, a cross-tabulation analysis was conducted. Tables 24 and 25 provide the results of this analysis.

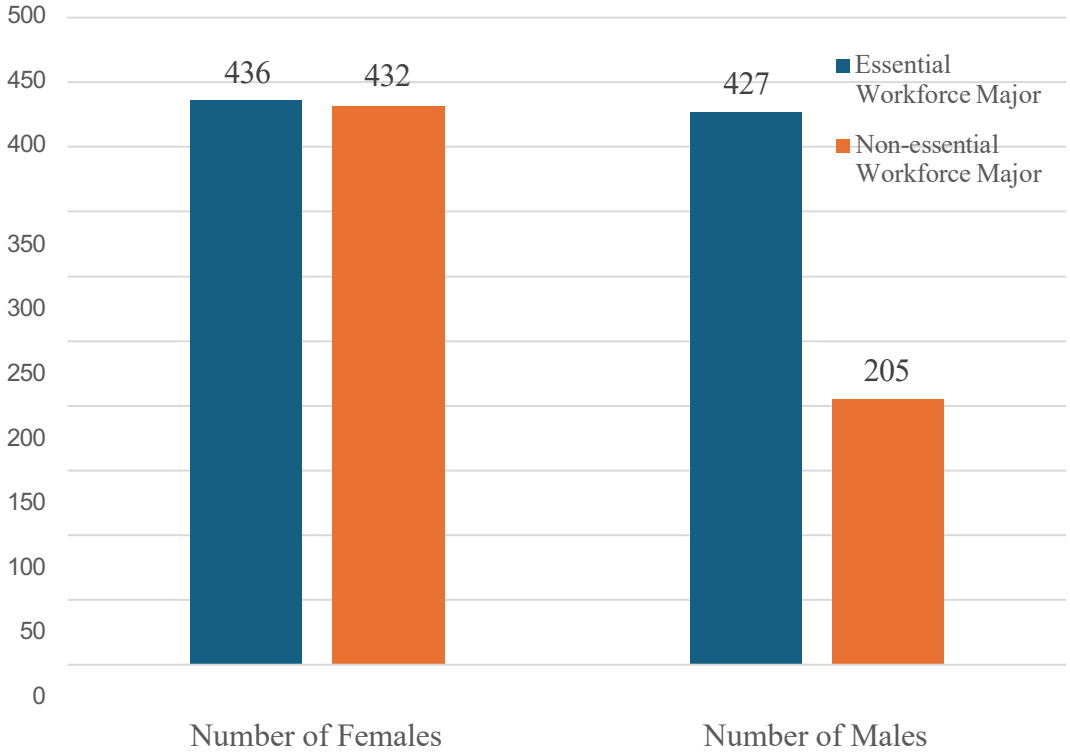

Figure 7. *Gender Distribution by Workforce Major Status*

Table 23. *Chi-Square Test Results: Workforce Category and Gender*

	Value	*df*	Significance (2-sided)
Pearson Chi-Square	44.970	1	< .001
Likelihood Ratio	45.507	1	<.001
N	1500		

The percentage of those that maintained the HOPE scholarship, as compared to never earning the HOPE scholarship or losing it, was greater for all racial/ethnic groups except for Black or African American students. Approximately 37% of Black or African American graduates lost the HOPE scholarship while 36% of this ethnic/racial group maintained the HOPE scholarship.

Table 24. *Cross-Tabulation: Race/Ethnicity and HOPE Status: Combined Racial/ Ethnic Groups, Asian, and Black or African American*

		Never Earned the HOPE	Lost the HOPE	Maintained the HOPE	Totals
Combined Racial Groups	Count	NR**	NR**	NR**	12
	Expected Count	NR**	NR**	NR**	12
	% HOPE	NR**	NR**	NR**	
	% Race/Ethnicity	25.0%	33.3%	41.7%	100%
Asian	Count	10	14	19	43
	Expected Count	9.4	14.4	19.2	43
	% HOPE	3.0%	2.8%	2.8%	
	% Race/Ethnicity	23.3%	32.6%	44.2%	100%
Black or African American	Count	111	154	147	412
	Expected Count	90.4	137.9	183.8	412
	% HOPE	33.7%	30.7%	22.0%	
	% Race/Ethnicity	26.9%	37.4%	35.7%	100%

Table 25. *Cross-Tabulation: Race/Ethnicity and HOPE Status: Hispanic/Latinx, Two or More Races, and White*

		Never Earned the HOPE	Lost the HOPE	Maintained the HOPE	Totals
Hispanic or Latinx	Count	36	39	44	119
	Expected Count	26.1	39.8	53.1	119
	% HOPE	10.9%	7.8%	6.6%	
	% Race/Ethnicity	30.3%	32.8%	37%	100%
Two or More Races	Count	10	23	26	59
	Expected Count	12.9	19.7	26.3	59
	% HOPE	3.0%	4.6%	3.9%	
	% Race/Ethnicity	16.9%	39%	44.1%	100%
White	Count	159	268	428	855
	Expected Count	187.5	286.1	381.3	855
	% HOPE	48.4%	53.4%	64.0%	
	% Race/Ethnicity	18.6%	31.3%	50.1%	100%

The highest percentage of graduates who maintained the HOPE scholarship were White with approximately 50% of White students maintaining the scholarship through graduation. Finally, the highest percentage of graduates who completed their degree without the HOPE scholarship were Hispanic/Latinx with 30% of this population never earning the scholarship.

Table 26 shows the results of the Pearson chi-square test. There was a significant association between race/ethnicity and HOPE status, $\chi 2(10) = 31.802$, $p < .001$.

Table 26. *Chi-Square Test Results: Race/Ethnicity and HOPE Status*

	Value	*df*	Asymptotic Significance (2-sided)
Pearson Chi-Square	31.802[a]	10	<.001
Likelihood Ratio	31.723	10	<.001
N	1500		

Note. 2 cells (11.1%) have expected count less than 5. The minimum expected count is 2.63.

The Relationship Between Race/Ethnicity and Major

One of the primary study questions centered on understanding the major selections of graduates from different race/ethnic groups. Tables 27 and 28 provide information about the proportion of individuals in each racial/ethnic group that completed degrees in the essential workforce major fields and the non-essential workforce major fields.

First, Table 27 provides an overview of majors that were defined as essential workforce needs, selected by the various racial/ethnic groups. As seen in Table 27, Asian and Hispanic/Latinx individuals had the highest percentage of students in a STEM-related major. Approximately 49% percent of Asian graduates earned a degree with a major in STEM.

Table 27. *Cross-Tabulation: Race/Ethnicity and Essential Workforce Majors*

		Business	Education	Nursing	STEM
American Indian, Alaska Native, Native Hawaiian, Other Pacific Islander, & Unknown	Count	NR*	NR*	NR*	NR*
	% Race/Ethnicity	NR*	NR*	NR*	NR*
	% Major	NR*	NR*	NR*	NR*
Asian	Count	NR*	NR*	NR*	21
	% Race/Ethnicity	NR*	NR*	NR*	48.8%
	% Major	NR*	NR*	NR*	5.2%
Black or African American	Count	53	29	17	106
	% Race/Ethnicity	12.9%	7.0%	4.1%	25.7%
	% Major	20.8%	20.6%	26.2%	26.4%
Hispanic or Latinx	Count	22	10	NR*	37
	% Race/Ethnicity	18.5%	8.4%	NR*	31.1%
	% Major	8.6%	7.1%	NR*	9.2%
Two or More Races	Count	12	NR*	NR*	20
	% Race/Ethnicity	20.3%	NR*	NR*	33.9%
	% Major	4.7%	3.5%	7.7%	5.0%
White	Count	154	95	39	215
	% Race/Ethnicity	18.0%	11.1%	4.6%	25.1%
	% Major	60.4%	67.4%	60.0%	53.5%

Note. NR* = Not reported.

In addition, 31.1% of Hispanic/Latino graduates earned a bachelor's degree by completing a major in a STEM-related field. Approximately 25% of all White graduates selected a major in STEM.

Table 28 provides information on the distribution of non-essential workforce majors by race/ethnicity. Approximately 28% of the Black or African American

graduates earned a degree by completing a major in the social sciences while 20% of White graduates earned a bachelor's degree with a major in a social science field.

Table 28. *Cross-Tabulation: Race/Ethnicity and Non-Essential Workforce Majors*

		AHM	Social Sciences	PE/HS
Asian	Count	NR*	NR*	NR*
	% within Race/Ethnicity	NR*	NR*	NR*
	% within Major	NR*	NR*	NR*
Black or African American	Count	30	114	63
	% within Race/Ethnicity	7.3%	27.7%	15.3%
	% within Major	19.6%	34.8%	40.4%
Hispanic or Latino	Count	12	25	10
	% within Race/Ethnicity	10.1%	21.0%	8.4%
	% within Major	7.8%	7.6%	6.4%
Two or More Races	Count	NR*	NR*	NR*
	% within Race/Ethnicity	NR*	NR*	NR*
	% within Major	NR*	NR*	NR*
White	Count	103	173	76
	% within Race/Ethnicity	12.0%	20.2%	8.9%
	% within Major	67.3%	52.7%	48.7%

Note. NR* = Not reported. Also not reported are data for the combined category of American Indian, Alaska Native, Native Hawaiian, Pacific Islander, and Unknown Ethnic Background. AHM = Arts, Humanities, and Multidisciplinary. PE/HS = Physical Education and Human Services.

Table 29. *Chi-Square Test Results: Race/Ethnicity and Major Categorization*

	Value	*df*	Significance (2-sided)
Pearson Chi-Square	66.731	30	< .001
Likelihood Ratio	67.822	30	< .001

N=1500

Table 29 shows the results of the Pearson chi-square test. There was a significant association between race and major categorization, $\chi 2(30) = 66.731$, $p < .001$

The Relationship Between Race/Ethnicity and Workforce Major Designation

The final cross-tabulation evaluated the connection between student race/ethnicity and workforce designation. Table 30 illustrates the findings from this analysis.

Table 30. *Cross-Tabulation: Race/Ethnicity and Workforce Major Designation*

		Essential Workforce	Non-Essential Workforce	Total
American Indian, Alaska Native, Native Hawaiian, Other Pacific Islander, & Unknown	Count	NR*	NR*	12
	Expected Count	NR*	NR*	12.0
	% within Race/Ethnicity	NR*	NR*	100%
Asian	Count	33	10	43
	Expected Count	24.7	18.3	43
	% within Race/Ethnicity	76.7%	23.3%	100%
Black or African American	Count	205	207	412
	Expected Count	237	175	412.0
	% within Race/Ethnicity	49.8%	50.2%	100%
Hispanic or Latinx	Count	72	47	119
	Expected Count	68.5	50.5	119.0
	% within Race/Ethnicity	60.5%	39.5%	100%
Two or More Races	Count	42	17	59
	Expected Count	33.9	25.1	59
	% within Race/Ethnicity	71.2%	28.8%	100%
White	Count	503	352	855
	Expected Count	491.9	363.1	855
	% within Race/Ethnicity	58.8%	41.2%	100%

Note. NR* = Not reported.

The table shows that a higher percentage of students from each racial/ethnic group earned a degree with an essential workforce major, compared to a non-essential workforce major except for Black or African American graduates. Black or African American students were equally split between those choosing a major associated with workforce needs and those selecting a major not associated with workforce needs. The greatest variance was seen within the set of Asian graduates with 76.7% of this group choosing an essential workforce major while 28.8% completing a non-essential workforce major. The second highest percentage of graduates earning a degree with an essential workforce major were graduates who identified with two or more racial/ethnic groups, with 71.2% of these students earning a degree with a major field classified as an essential part of the workforce. Approximately 61% of Hispanic or Latino graduates selected an essential workforce major while 39.5% earned a degree with a non-essential workforce major. Approximately 59% of all White graduates completed an essential workforce major while 41.2% selected a non-essential workforce major.

Table 31 shows the results of the Pearson chi-square test. There was a significant association between race/ethnicity and workforce, $\chi 2(5) = 22.621$, $p < .001$.

Table 31. *Chi-Square Test Results: Race/Ethnicity and Workforce Major Designation*

	Value	*df*	Asymptotic Significance (2-sided)
Pearson Chi-Square	22.621[a]	5	<.001
Likelihood Ratio	23.192	5	<.001
N	1500		

0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.10.

Regression Analyses: Workforce Status and Major Designations

Two final logistic regression analyses were conducted with workforce status (i.e., essential workforce/non-essential workforce) and major (i.e., specific major categories) serving as the dependent variables. These tests provided greater insight to the relationship that existed between three predictor variables (i.e., gender, race/ethnicity, and HOPE status) and each of the two dependent variables. One of the conditions of regression analyses including more than two independent variables is that no multicollinearity exists. Tests were conducted prior to these regression analyses and no multicollinearity existed, as shown in Appendix F.

Summary information tables (included in Appendix H of this document) were created for each specific major defined as part of the essential workforce. These included Business, Education, Nursing and STEM. Results related to the non-essential workforce majors (i.e., Arts, Humanities, & Multidisciplinary; Social Sciences) are also found in Appendix H. Physical Education/Human Services served as the reference category in this latter multinomial regression analysis.

Regression Analysis: Workforce Designation

A simultaneous binomial logistic regression was performed to determine the effects of gender, race/ethnicity, and HOPE status on the likelihood that participants earned an essential workforce major. Results from this test are found in Appendix H of this document. The logistic regression model was statistically significant, $\chi^2(4) = 52.068$, $p < .001$. The model explained 5.0% (Nagelkerke R^2) of the variance in the selection of a workforce major and correctly classified 26.1% of cases. Sensitivity was 84.4%, specificity was 26%, positive predictive value was 65%, and negative predictive value was 55.1%. Of the three predictor variables only two were statistically significant: gender

and HOPE status. Females had 2.13 times higher odds of earning a non-essential workforce major than males.

Multinomial Regression: Major Category

A multinomial regression analysis was conducted with major area as the dependent variable and gender, race/ethnicity, and HOPE status as the independent variables. Major selection was found to have a significant association with gender, race/ethnicity, and HOPE status. All predictors were significant, $p < .001$. The summary regression analyses tables are included in the Appendix H of this document.

Identified Workforce Majors Regression Summary

Results from the multinomial regression analyses show the prediction of majors from gender, race/ethnicity, and HOPE status (Results of each analysis are found in Appendix H of this document). These analyses suggest that Black or African American students were less likely to earn a bachelor's degree with a major in business, compared to White students. Women were eight times more likely than men to earn an education degree. In addition, education majors were found to be more likely to maintain the HOPE scholarship than lose it or never earn it. Finally, women are choosing nursing majors at a greater rate than men. Females were 12 times more likely to earn a nursing degree than men (see Table 22). In addition, nursing majors were approximately four times more likely to maintain the HOPE than lose it, and approximately eight times more likely to maintain it than never earn it. It was found that men chose STEM majors nearly two times as frequently as women did (see Table 22). Asian students were more likely than students of other racial/ethnic backgrounds to earn a bachelor's degree with a STEM major. The results also showed that women were more likely than men to earn a bachelor's degree with a major in the social sciences. The results also showed that

Black/African American students were earning degrees in physical education/human services at a greater rate than any other racial group.

CHAPTER V

CONCLUSION

The HOPE scholarship was established as a step toward creating a more educated Georgia (jecarter4, n.d.). This program was and continues to be seen as an investment in the development of an educated populus that can support the on-going growth and success of the State. Higher education, especially State-supported institutions, have a dual role, supporting the development of an educated citizenry as well as providing the appropriate education that will support the long-term growth of the State. Gaining an understanding of major selections connected to students' HOPE status was the focus of this study. Specific attention was placed on students' major selections connected to workforce needs for the State of Georgia. Contained in this closing chapter is a review of the problem and interpretation of findings connected to each of the research questions. In addition, a review of insights gained from the study and its limitations are presented. Finally, recommendations for further research studies are highlighted that might deepen understanding of the HOPE scholarship and its support for the development of the workforce needed to support the success of the State.

Review of the HOPE Scholarship and Georgia's Focus on Workforce Development

In 2011, a tiered HOPE scholarship system was introduced, creating the Zell Miller Scholars program for students with a high school GPA of 3.70 or above, covering full tuition, and the general HOPE scholarship, which covers 70% of tuition for students

with a high school GPA between 3.00 and 3.69 (Sieder, 2023b). To qualify for either scholarship, students must attend a University System of Georgia (USG) institution. This study did not differentiate between these tiers; all recipients of either scholarship were categorized as HOPE scholars.

As mentioned in Chapter 3, Governor Brian Kemp, Georgia Department of Economic Development (GDEcD) Commissioner Pat Wilson, and Chancellor Sonny Perdue convened with a diverse group of businesses in 2023 to develop strategies for addressing Georgia's workforce needs. The leaders concluded that the primary educational policy priority should be to produce a well-educated citizenry capable of advancing the state (Georgia Department of Economic Development, 2023). In this meeting and in subsequent meetings, they have identified four critical workforce needs, those being in the areas of business, education, nursing, and STEM.

My study examined individuals who obtained a bachelor's degree from a USG comprehensive institution between 2015 and 2023. USG comprehensive universities include Georgia Southern University (GSU), Kennesaw State University (KSU), University of West Georgia (UWG), and Valdosta State University (VSU). The study examined major selections among graduates who retained the HOPE scholarship, those who lost the scholarship before completing their degree, and those who never received the HOPE scholarship. Major selections of individuals in these three groups were reviewed and connected to workforce needs of the state.

Interpretation of the Findings Related to HOPE Status, Georgia Workforce Needs, and Major Selection

The overarching research question focused on understanding the relationship

between HOPE scholarship status (i.e., maintained, lost, and never earned) and students' major specifically connected to Georgia's essential workforce needs. This question was further operationalized into four more specific questions that provided greater understanding of the overall topic.

HOPE Status and Workforce Designation

An initial focus of this study was to gain greater understanding of the difference in the pattern of major selection between individuals who maintained the scholarship, those who lost the HOPE scholarship and those that never earned the HOPE scholarship My hypothesis was that there would be a higher number of students who maintained the HOPE scholarship majoring in non-workforce majors. This did not prove to be true. The number of graduates selecting a Georgia essential workforce major instead of a non-essential workforce major was higher in all HOPE categories, across those who maintained the scholarship, those that earned the scholarship but lost it prior to earning a degree, and those that never earned the scholarship.

Individuals who lost the HOPE scholarship showed the greatest variability in major selection. Approximately 60% of the graduates who lost the HOPE scholarship earned a degree in an essential workforce major while approximately 40% of this group earned a degree in a non-essential workforce major. The differential between numbers of students who selected essential workforce majors and non-essential workforce majors was lowest in individuals who did not earn the HOPE scholarship. Almost 52% of the individuals who never earned the HOPE scholarship selected workforce-related majors while 48% of this group chose majors identified as non-essential workforce majors, only a 4% difference. As seen in Table 13 in Chapter 4, the relationship between HOPE status and

major choice was statistically significant. The promise of a higher salary after graduation and other factors may serve as powerful motivators for choosing specific degrees.

HOPE Status and Major Selection

The second question focused on determining if a difference existed in the selection of critical workforce majors connected to a graduate's HOPE status. This question broadened the scope of the previous analysis to gain understanding of the patterns of specific major selections connected to HOPE status. It is understood that the selection of a major is an important decision because it can have long-term implications for an individual's future earnings (Bleemer et al., 2023). Examining the various major areas connected to graduates' HOPE status offered several insights that are important to understand. First, over half of the total number of graduates in nursing and education maintained the HOPE scholarship. Seventy-two percent of all graduates who earned a nursing degree maintained the HOPE scholarship and 60% of all graduates who earned an education degree maintained the HOPE scholarship. While not the majority, approximately 48% of those individuals that earned a degree in social sciences maintained the HOPE scholarship.

The only major areas where those who maintained the HOPE scholarship were not the majority were in STEM and physical education/human services. This result connected to STEM majors is congruent with previous findings (Cornwell et al., 2006; Zhang, 2011) and suggests the need for increased support for individuals seeking degrees in these areas. Regarding physical education/human services, the results of this study may suggest the need for greater support for these students as well. Gaining expanded understanding as to the causes of students losing the HOPE scholarship but earning a degree in physical education/human services requires further study.

Overall, this study demonstrated that there is a significant relationship between HOPE status and major selection. The perception of degree difficulty can be a significant factor in a student's decision for major selection. For example, if students are dependent on the HOPE scholarship to complete a degree, this pressure can greatly impact their major decision. Many factors contribute to a student's major selection including academic preparation and financial support but gaining greater understanding of this phenomenon specifically connected to the HOPE scholarship is important (Wilson et al., 2014).

Gender, Workforce Designation and Major Selection

My third research question focused on understanding the patterns of major selection connected to a graduate's gender. The initial analyses showed that 58% of all graduates were female and 42% of graduates were male, a distribution that mirrors the distribution of college graduates in the United States (Parker, 2021). Females who earned a bachelor's degree outnumbered men in all racial/ethnic groups except for Asians and the consolidated category of individuals who identified as American Indian, Alaska Native, Native Hawaiian, or other Pacific Islander, or their racial/ethnic background was unknown. Of particular interest, Black or African American students were the only group where a large gap existed in degree completion between females and males. Black or African American females made up 63% of the group that earned a bachelor's degree while only 37% of the Black or African American men earned a bachelor's degree.

A significant divide continues to exist between females and males connected to degree attainment with females greatly outnumbering men in earning a degree. In addition, there continues to be a gender divide in the majors that each group selects (Hossain & Robinson, 2012). Men continue to be the primary group earning degrees in

both business and STEM with males comprising 57% of all business majors and 65% of all STEM majors in this study. Females earned degrees in a higher number, compared to men, in both the education and nursing fields, with females comprising 89% of all education majors and 92% of all nursing majors in this study. These findings support previous research indicating the gender divide in specific majors (Fry et al., 2021). These findings suggest there needs to be continued work in promoting increased gender diversity in all majors but specifically in education, business, nursing, and STEM.

Race/Ethnicity, Workforce Designation and Major Selection

My final research question focused on understanding the pattern of major selection connected to a graduate's race/ethnicity. My hypothesis was that there would be a difference in selections of majors specifically connected to Georgia workforce needs as a function of graduates' race/ethnicity. Research shows that race/ethnicity still serves as a powerful influence on major selection and student success in general (Dixon-Román et al., 2013; Jones, 2021). This divide was seen in the current study, in those who maintained the HOPE scholarship and within the patterns of major selection.

First, a strong relationship was found to exist between race/ethnicity and HOPE status. A higher number of White and Asian students maintained the scholarship in comparison to other racial/ethnic groups. As shown in Tables 24 and 25 in Chapter 4, approximately 50% of White students who graduated with a bachelor's degree maintained the HOPE scholarship and approximately 44% of all Asian graduates maintained the HOPE scholarship. The percentage of Black or African American students who maintained the HOPE is 36%. The percentage of Black or African American students who lost the HOPE is 37%. The proportion of Hispanic/Latinx students who never earned the HOPE is 30%.

Second, student race/ethnicity was found to be significantly related to the choice of an essential workforce major. Over 70% of all Asian students as well as graduates identifying as two or more races earned their degree with the completion of an essential workforce majors. In addition, it is important to note that Black or African American students were the only group that did not have a higher percentage of individuals earning a workforce-needed major, compared to a workforce non-essential major. In this group, approximately 50% earned a degree with a major in an essential workforce field. These results illustrate the racial divide that continues to exist.

Finally, race/ethnicity was shown to have a significant impact on major selection in general. The highest percentage of Asian graduates earned a bachelor's degree with a major in a STEM-related field, with 49% of this population earning their degree with a major in a STEM field. In addition, approximately 31% of the Hispanic/Latinx students selected a major in a STEM field, while 25% of all White graduates selected a major in a STEM area. On the other hand, approximately 35% of all graduates who earned their degree with a social science major were Black or African American. In addition, Black or African American students made up 40% of all physical education/human services majors. These findings are congruent with findings from previous studies (Barshay, 2023; Bleemer et al., 2023) suggesting that Black/African American individuals are at times choosing majors that generate lower incomes.

Study Limitations and Recommendations for Future Research

This study employed a cross-sectional approach to understanding the nature of major selections for graduates, connected to their HOPE status. While this analysis provided insight to major selections for students who maintained the HOPE scholarship through graduation, those who lost the HOPE scholarship before graduation, and those

who never earned the HOPE scholarship, its design had certain limitations. Because the data analyzed only included individuals who earned a bachelor's at the time of degree completion, there was no way to understand the various factors impacting students' final major choice. For example, it is common for individuals to change their major multiple times prior to earning a degree. It is important to understand the pattern of students' decisions to change majors and the factors influencing them to make these decisions. The current findings highlight the majors that the students in the sample eventually selected but do not offer insight connected to the process that an individual might have experienced prior to making their final major selection. Understanding this process could offer a more comprehensive view of how certain restrictions might impact a student's major selection. Investigating the relationship between students' desired majors and their eventual selections could be valuable, as their original choices may not align with their final major at the time of graduation. This insight could help educational policymakers identify students who might face obstacles in achieving their academic goals.

This study did not offer the opportunity to determine causal relationships between the various variables. For example, there is no way to conclusively state that the HOPE scholarship impacts major selections. While my study indicates that HOPE status and major selection are significantly correlated, it is not possible to show a causal relationship between the variables or to know if these variables are directly or indirectly related. To better understand how the HOPE scholarship and major selection are connected, it would be important to take a more comprehensive approach to the study, such as talking with individuals throughout the process of earning their degree.

During the time of this study, the United States and countries around the world dealt with an unprecedented health issue with the COVID-19 virus. This virus disrupted

all aspects of life including the opportunity for individuals to earn a degree. Colleges and universities took various steps in order to continue to support their students' degree attainment by offering expanded online learning as well as hybrid strategies to ensure individuals' health and well-being. Aucejo et al. (2020) found in a study of 1500 students that due to COVID-19, 13% of students postponed their graduation and 40% of the students lost a job, internship, or job offers that hindered their progression. Additionally, one-quarter of students reported increasing their study time by over four hours per week, while another quarter reduced their study time by more than five hours per week. Aucejo et al. (2020) suggested that COVID-19 more profoundly impacted minority and low-income groups. Lower-income students were 55% more likely than their higher-income counterparts to have delayed graduation due to COVID-19 (Aucejo et al., 2020). Furthermore, their analysis showed that the economic and health-related shocks caused by the pandemic varied systematically according to socioeconomic factors and played a crucial role in explaining the significant (and varied) effects of COVID-19. It is possible that some individuals who were in the sample may have found it difficult to graduate and even academically maintain their HOPE scholarship, but it is not possible to know which students faced hardships related to COVID. Expanding this work to gain understanding for those individuals who entered a comprehensive USG institution during the COVID-19 pandemic would offer much needed insight to this group.

Finally, the results of any research study are dependent on the validity of the data analyzed. There were a variety of irregularities in the data provided by the USG that required decisions to be made connected to the analyses that were conducted. First, many graduates in the provided data set had not earned the number of hours required for a bachelor's degree. While individuals do transfer from one institution to another, there are

still specific requirements for a minimum number of hours that must be completed to earn a bachelor's degree (University System of Georgia, 2012). The decision to include only individuals who earned at least 120 credit hours was a means to create a sample that was homogeneous regarding experience at one of the USG comprehensive college campuses.

General Policy Recommendations

This study provides some actionable insight that might contribute to student success. The study found that more graduates had maintained the HOPE scholarship instead of losing it or never earning it (see Figure 5). However, interventions that focus on assisting students in maintaining the scholarship could serve to expand the number of USG graduates. Interventions seem particularly important for individuals in STEM and physical education/human services degree programs. These are the only two major areas where more individuals lost the HOPE scholarship rather than maintained it.

In addition, while there have been numerous interventions created to support greater gender and racial diversity within majors, this study suggests that there is much work that still needs to be done. First, it was surprising that the proportion of men in the major fields or education and nursing was less than 12%. There continues to be a need for men, especially African American men, in the PK-12 classroom. If students are indeed influenced by having role models who resemble them, then increasing the number of male teachers could have beneficial long-term impacts (Reeves, 2024). By encouraging more men, particularly men of color, to enter the teaching profession, this could have a rippling effect, inspiring more men of color to enter college as well. More male teachers in the classroom could result in more boys having male role models, which could, in turn, inspire more boys to graduate from college and pursue careers in teaching themselves.

While national data indicate that there has been a substantial increase in the number of men entering the nursing profession (American Nurses Association, 2023), this study suggests that less than 10% of those earning degrees in nursing in Georgia are men. Much like the need for men in the field of education, the nursing career may also benefit from having more men enter the field. Like in other fields of study, creating mentoring programs as well as having male role models can be an important way to expand the number of men pursuing this degree.

The study demonstrated that interventions still need to be enacted to expand the number of women entering the STEM and business fields. Much like the situation with the lack of men in nursing and education training programs and careers, women are noticeably underrepresented in the STEM and business areas. Strategies have emerged to support women entering these fields (Eide, 1994; Turner & Bowen, 1999; Zafar, 2009) but this study shows that more work needs to be done. Much like the situation for men in female-dominated career fields, role models are important for women in the business and STEM areas.

Educational leaders can use these insights to better support students throughout their college experience while focusing on the greater goal of career success. Expanded training for both academic and career advisors is advocated. Advisors must be aware of their unconscious biases and recognize the disadvantages faced by historically marginalized students, including societal gender biases. Advising models should offer exploratory opportunities to introduce all available options for both major selection and career trajectories available to students.

One specific advising model that has emerged is called “intrusive” academic advising (Varney, 2007). The term “intrusive” defines initiatives taken by institutions that

closely monitor student progress. If students falter (e.g., fail a test, miss class) professional staff are immediately contacted and intervene. These interventions often come in counseling, academic tutoring, or similar support services. The key to the success of these initiatives is timing. These interventions must be immediate and intentional to be successful. In addition, to achieve this success, a university must have the necessary resources to support these programs. While they are highly beneficial, their effectiveness depends on having adequate resources.

In addition, it is appropriate for there to be a review of the major gates that are limiting students' ability to enter various degree programs. While these initiatives might be in place to provide greater support for those admitted, they also serve to limit the opportunities for many students, especially those from underrepresented populations. Academic gatekeeping, such as restrictive admission standards for major programs, may limit social mobility opportunities for various groups. Universities should take time to reflect on the cultural diversity of each department, as students who do not see themselves represented may feel less welcomed. Thoughtful policymaking by educational leaders can create more pathways to social mobility for all students.

Results suggest a need for expanded career advising. Students must have access to greater understanding of the long-term implications that the selection of a major has on their future. The Steppingblocks program that was recently adopted by USG has the potential of offering some support in this area but this system in isolation will not likely generate the desired results. The Steppingblocks program provides students the opportunity to gain insight into how major selection connects to careers and also the potential earnings connected to those careers (Steppingblocks, n.d.). With that said, this program is just a tool. To be successful, the Steppingblocks program must be integrated

into a more comprehensive program that exposes students to an array of options available to them.

A critical factor in supporting a person's overall success is increased opportunities for them to engage with various career paths and mentors in those fields. The new concept of micro-internships has become increasingly popular. This initiative offers students the opportunity to engage with an array of different employers before deciding on one internship site where they will be spending a full semester. Programs like this also connect students with individuals within these career paths that can offer support and valuable insights to career success.

Finally, the HOPE scholarship was intended to provide opportunities for all students within the State (jecarter4, n.d.) but it seems to have exacerbated the divide between different groups. A policy such as the HOPE scholarship should not been seen as an end in itself, but instead must be part of a more comprehensive approach in creating educational pathways for all students to succeed within the State. The results of this study suggest a need for a more seamless connection for individuals throughout their educational experience. The Georgia Lottery system already offers support for Pre-K programs (Georgia Student Finance Commission, 2024) but this study's results suggest that more needs to be done to expand opportunities for all students throughout their educational pursuit. Stronger connections between K-12 and higher education have the potential for ensuring greater innovation and success for the State by meeting students where they are and helping to propel them forward. These specific interventions throughout a student's career will deepen the impact of the HOPE scholarship program and have the potential for placing Georgia at the forefront in both innovation and overall success.

Closing Remarks

This study explored the relationship between a set of variables (i.e., student gender, race/ethnicity, and HOPE status) and student major selection specifically connected to workforce needs for the State of Georgia. This study suggests that the HOPE scholarship has expanded opportunities for individuals in Georgia, but the scholarship in isolation is not enough. If the state seeks to develop an educated populus ready to meet the needs of the state, increased support for all students earning a bachelor's degree is important.

In addition, we must recognize that while there is a need for citizens with specialized knowledge and skills to lead our state forward, education should never be seen as merely a "ticket to a trade." Higher education must be much more than that. It needs to be an experience that challenges a person's perspective, connects them with diverse forms of thought, and inspires them to positively contribute to the advancement of all members of society.

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Appendix A

CIP Coding for Essential/Non-Essential Workforce Majors

Essential Workforce Major Areas (National Center for Education Statistics, 2020)		
CIP Family	**CIP Title**	**CIP Definition**
4	Architecture and Related Services	Instructional programs that prepare individuals for professional practice in the various architecture-related fields and focus on the study of related aesthetic and socioeconomic aspects of the built environment.
11	Computer and Information Sciences and Support Services	Instructional programs that focus on the computer and information sciences and prepare individuals for various occupations in information technology and computer operations fields.
13	Education	Instructional programs that focus on the theory and practice of learning and teaching, and related research, administrative and support services.
14	Engineering	Instructional programs that prepare individuals to apply mathematical and scientific principles to the solution of practical problems.
15	Engineering Technologies and Engineering-Related Fields	Instructional programs that prepare individuals to apply basic engineering principles and technical skills in support of engineering and related projects or to prepare for engineering-related fields.
26	Biological and Biomedical Sciences	Instructional programs that focus on the biological sciences and the non-clinical biomedical sciences, and that prepare individuals for research and professional careers as biologists and biomedical scientists.
27	Mathematical and Statistics	Instructional programs that focus on the systematic study of logical symbolic language and its applications.
30	Biological and Physical Sciences.	A program that is either a general synthesis of one or more of the biological and physical sciences, or a specialization which draws from the biological and physical sciences.
30	Systems Science and Theory	A program with a multidisciplinary approach to the analysis and solution of complex problems, requiring a combined approach using data and models from the natural, social, technological, behavioral and life sciences, and other specialized fields.
30	Mathematics and Computer Science	A program with a general synthesis of mathematics and computer science or a specialization which draws from mathematics and computer science.
30	Biopsychology	A program that focuses on biological and psychological linkages, especially the linkages between biochemical and biophysical activity and the functioning of the central nervous system.
30	Science, Technology and Society	A program that focuses on the contemporary social and public policy ramifications of science and technology, the interrelationship of science and engineering with the public policy process, and the social and ethical dimensions of scientific and technological enterprises.
30	Accounting and Computer Science	A program that combines accounting with computer science and/or computer studies.
30	Natural Sciences	A program with a combined or undifferentiated focus on one or more of the physical and biological sciences.

Essential Workforce Major Areas (National Center for Education Statistics, 2020)		
CIP Family	**CIP Title**	**CIP Definition**
30	Cognitive Science	A program that focuses on the study of the mind and the nature of intelligence from the interdisciplinary perspectives of computer science, philosophy, mathematics, psychology, neuroscience, and other disciplines. Includes instruction in mathematics and logic, cognitive process modeling, dynamic systems, learning theories, brain and cognition, neural networking, programming, and applications to topics such as language acquisition, computer systems, and perception and behavior.
30	Human Biology	An interdisciplinary program that focuses on understanding the human being from the biological, social science, and humanities perspectives and that addresses contemporary issues related to biology and society, such as global health and disease, environmental policy, bioethics, and biotechnology.
30	Maritime Studies	A program that focuses on the history, science, policy issues, and literature of the ocean. Includes instruction in maritime history, maritime law, maritime literature, oceanography, maritime security, and maritime politics.
30	Computational Science	A program that focuses on the study of scientific computing and its application. Includes instruction in scientific visualization, multi-scale analysis, grid generation, data analysis, applied mathematics, numerical algorithms, high performance parallel computing, and numerical modeling and simulation with applications in science, engineering and other disciplines in which computation plays an integral role.
30	Marine Sciences	A program that focuses on the study of biology, chemistry, geology and physics applied to marine, estuarine and coastal environments. Includes instruction in marine biogeochemistry, atmosphere and ocean dynamics, coastal ecology, coastal ocean processes, microbial ecology, marine ecosystem modeling, and polar microbiology.
40	Physical Sciences	Instructional programs that focus on the scientific study of inanimate objects, processes of matter and energy, and associated phenomena.
41	Science Technologies/Technicians	Instructional programs that prepare individuals to apply scientific principles and technical skills in support of scientific research and development.
46	Construction Trades	Instructional programs that prepare individuals to apply technical knowledge and skills in the building, inspecting, and maintaining of structures and related properties.
47	Mechanic and Repair Technologies/Technicians	Instructional programs that prepare individuals to apply technical knowledge and skills in the adjustment, maintenance, part replacement, and repair of tools, equipment, and machines.
48	Precision Production	Instructional programs that prepare individuals to apply technical knowledge and skills to create products using techniques of precision craftsmanship or technical illustration.
51	Health Professions and Related Programs	Instructional programs that prepare individuals to practice as licensed professionals and assistants in the health care professions and related clinical sciences and administrative and support services.

Essential Workforce Major Areas (National Center for Education Statistics, 2020)		
CIP Family	**CIP Title**	**CIP Definition**
52	Business, Management, Marketing, and Related Support Services	Instructional programs that prepare individuals to perform managerial, technical support, and applied research functions related to the operation of commercial and non-profit enterprises and the buying and selling of goods and services.

Non-Essential Workforce Major Areas (National Center for Education Statistics, 2020)		
CIP Family	**CIP Title**	**CIP Definition**
1	Agriculture, Agricultural Operations, and Related Sciences	Instructional programs that focus on agriculture and related sciences and that prepare individuals to apply specific knowledge, methods, and techniques to the management and performance of agricultural operations.
3	Natural Resources and Conservation	Instructional programs that focus on the various natural resources and conservation fields and prepare individuals for related occupations.
5	Area, Ethnic, Cultural, Gender, and Group Studies.	Instructional programs that focus on the defined areas, regions, and countries of the world; defined minority groups within and across societies; and issues relevant to collective gender and group experience.
9	Communication, Journalism, and Related Programs	Instructional programs that focus on how messages in various media are produced, used, and interpreted within and across different contexts, channels, and cultures, and that prepare individuals to apply communication knowledge and skills professionally.
10	Communications Technologies/ Technicians and Support Services	Instructional programs that prepare individuals to function as equipment operators, support technicians, and operations managers in the film/video, recording, and graphic communications industries.
12	Personal and Culinary Services	Instructional programs that prepare individuals to provide professional services related to cosmetology, funeral services, and food preparation and service.
16	Foreign Languages, Literatures, and Linguistics	Instructional programs that focus on foreign languages and literatures, the humanistic and scientific study of linguistics, and the provision of professional interpretation and translation services.
19	Family and Consumer Sciences/Human Sciences	Instructional programs that focus on the human interface with the physical, social, emotional, and intellectual environments and the developmental stages and needs of individuals in the interrelated spheres of family, workplace, and community.
22	Legal Professions and Studies	Instructional programs that prepare individuals for the legal profession, for related support professions and professional legal research, and focus on the study of legal issues in non-professional programs.
23	English Language and Literature/Letters	Instructional programs that focus on the structure and use of the English language and dialects, speech, writing, and various aspects of the literatures and cultures of the English-speaking peoples.
24	Liberal Arts and Sciences, General Studies and Humanities	General instructional programs and independent or individualized studies in the liberal arts subjects, the humanities disciplines and the general curriculum.
25	Library Science	Instructional programs that focus on the knowledge and skills required for managing and/or maintaining libraries and related information and record systems, collections and facilities for research and general use.
28	Military Science, Leadership, and Operational Art	Instructional programs that provide professional education and training of military officers in leadership, military science and operational studies, security policy and strategy, military economics

Non-Essential Workforce Major Areas (National Center for Education Statistics, 2020)		
		and management, and pre-officer training. These CIP codes are not valid for IPEDS reporting.
29	Military Technologies and Applied Sciences	Instructional programs that prepare individuals in specialized and advanced subject matter for the armed services and related national security organizations, including intelligence operations, military applied sciences, and military technologies.
28	Military Science, Leadership and Operational Art	Instructional programs that provide professional education and training of military officers in leadership, military science and operational studies, security policy and strategy, military economics and management, and pre-officer training. These CIP codes are not valid for IPEDS reporting.
29	Military Technologies and Applied Sciences	Instructional programs that prepare individuals in specialized and advanced subject matter for the armed services and related national security organizations, including intelligence operations, military applied sciences, and military technologies.
30	Cultural Studies/Critical Theory and Analysis	An interdisciplinary program that focuses on the analysis and critique of culture in its varied forms, including values, ideas, belief systems, and expressive acts, and the relationship between cultural forms, everyday life, and structures of power. Includes instruction in anthropology, communications, history, literary studies, philosophy, political economy, and sociology, as well as recent theories and methodologies such as semiotics, deconstruction, postcolonial studies, gender theory, and ethnography.
30	Gerontology	A program that focuses on the human aging process and aged human populations, using the knowledge and methodologies of the social sciences, psychology and the biological and health sciences.
30	Historic Preservation and Conservation	A program that focuses on the architectural design principles and building techniques used in historic structures and environments, and the process of saving and restoring old buildings and districts for contemporary use and enjoyment. Includes instruction in architectural history; building conservation techniques; real estate, land-use and tax laws and codes; economics and public policy; and public relations.
30	Cultural Resource Management and Policy Analysis	A program that focuses on the application of cultural studies, public policy analysis, and management skills to planning, promoting, and implementing programs to preserve and protect cultural heritage sites and artifacts. Includes instruction in historical preservation and conservation, business management, policy analysis, applied economics, public relations, applied history, historical archaeology, and environmental impact studies.
30	Historic Preservation and Conservation, Other	Any instructional program that focuses on architectural design and building techniques for historic and restored structures not listed above.
30	Human Computer Interaction	An interdisciplinary program that focuses on the study of the interaction between people and technology and how that technology impacts society and combines disciplines within the fields of computing and information science (information systems, software engineering, artificial intelligence and design) and the behavior sciences (cognitive science, cognitive psychology, sociology, organizational psychology, and social psychology). Includes

Non-Essential Workforce Major Areas (National Center for Education Statistics, 2020)		
		instruction in information technology, cognitive and behavioral sciences, and systems design.
30	Maritime Studies	A program that focuses on the history, science, policy issues, and literature of the ocean. Includes instruction in maritime history, maritime law, maritime literature, oceanography, maritime security, and maritime politics.
30	Medieval and Renaissance Studies	A program that focuses on the study of the Medieval and/or Renaissance periods in European and circum-Mediterranean history from the perspective of various disciplines in the humanities and social sciences, including history and archeology, as well as studies of period art and music.
30	Museology/Museum Studies	A program that focuses on the attitudes, knowledge, and skills required to develop, prepare, organize, administer, conserve, store and retrieve artifacts, exhibits and entire collections in museums and galleries, and that prepares individuals to assume curatorial, technical and managerial positions in museums. Includes instruction in institutional management, acquisition, exhibit design, conservation, packing techniques, and public relations.
30	Behavioral Sciences	A program with a combined or undifferentiated focus on the social sciences, psychology, and biomedical sciences to study complex problems of human individual and social growth and behavior.
30	Nutrition Sciences	A scientific program that focuses on the utilization of food for human growth and metabolism, in both normal and dysfunctional states, from the interdisciplinary perspective of the agricultural, human, biological, and biomedical sciences. Includes instruction in food science, biochemistry, physiology, dietetics, food and nutrition studies, biotechnology, biophysics, and the clinical sciences.
30	International/Global Studies	A program that focuses on global and international issues from the perspective of the social sciences, social services, and related fields.
30	Holocaust and Related Studies	A program that focuses on genocide in human history with particular reference to twentieth century genocides such as that of the Ottoman Armenians during World War I and the Nazi Holocaust during World War II. Programs also focus on topics such as survivor studies and counseling, war crimes research and prevention, reconciliation and compensation, ethical and spiritual issues, holocaust art and literature, and legacy and effect in relation to subsequent generations.
30	Ancient Studies/Civilization	A program that focuses on Western and Non-Western cultures and related topics in the periods of Pre-history and Antiquity. Includes such disciplines as ancient languages, archeology, history, art history, geography, population studies, environmental studies, religious studies, and the social sciences.
30	Classical, Ancient Mediterranean and Near Eastern Studies and Archaeology	A program that focuses on the cultures, environment, and history of the ancient Near East, Europe, and the Mediterranean basin from the perspective of the humanities and social sciences, including archaeology.
30	Intercultural/ Multicultural and Diversity Studies	A program that focuses on the dynamic social relations between and among majority and minority groups and different minority groups, and ways to promote mutual tolerance, inter-group cooperation, and the leadership and management of diverse groups and diversity issues

Non-Essential Workforce Major Areas (National Center for Education Statistics, 2020)		
		in family, educational, recreational, and work settings. Includes instruction in ethnic and cultural studies, group psychology, sociology, anthropology, conflict resolution, human services and resources, and applications to various functional environments.
30	Dispute Resolution	A program that provides individuals with skills in negotiation, mediation, and arbitration, that can be applied to resolve disputes in a variety of settings, including business, legal, domestic, and labor relations.
30	Sustainability Studies	A program that focuses on the concept of sustainability from an interdisciplinary perspective. Includes instruction in sustainable development, environmental policies, ethics, ecology, landscape architecture, city and regional planning, economics, natural resources, sociology, and anthropology.
30	Multi-/Interdisciplinary Studies, Other	Any instructional program in multi/interdisciplinary studies not listed above.
31	Parks, Recreation, Leisure, and Fitness Studies	Instructional programs that focus on the principles and practices of managing parks and other recreational and fitness facilities; providing recreational, leisure and fitness services; and the study of human fitness.
32	Basic Skills and Developmental/Remedial Education	Instructional programs that focus on the fundamental knowledge and skills that individuals need to function productively in society. These CIP codes are not valid for IPEDS reporting.
33	Citizenship Activities	Instructional programs that prepare individuals for citizenship and provide instruction in how citizens may engage in civic activities. These CIP codes are not valid for IPEDS reporting.
34	Health-related Knowledge and Skills	Instructional program that focus on the promotion of personal and family health. These CIP codes are not valid for IPEDS reporting.
35	Interpersonal and Social Skills	Programs that focus on the development of methods and skills for effective interactions with others in a variety of settings (private, social, and business settings). These CIP codes are not valid for IPEDS reporting.
36	Leisure and Recreational Activities	Programs that focus on the development of an appreciation for and competency in recreational and leisure-related activities. These CIP codes are not valid for IPEDS reporting.
37	Personal Awareness and Self-Improvement	Programs that focus on the development of improved self-awareness, avoidance of stressful behavior, and improved decision-making skills. These CIP codes are not valid for IPEDS reporting.
38	Philosophy and Religious Studies	Instructional programs that focus on logical inquiry, philosophical analysis, and the academic study of organized systems of belief and religious practices.
39	Theology and Religious Vocations	Instructional programs that focus on the intramural study of theology and that prepare individuals for the professional practice of religious vocations.
42	Psychology	Instructional programs that focus on the scientific study of the behavior of individuals, independently or collectively, and the physical and environmental bases of mental, emotional, and neurological activity.

Non-Essential Workforce Major Areas (National Center for Education Statistics, 2020)		
43	Homeland, Security, Law Enforcement, Firefighting, and Related Protective Services	Instructional programs that focus on the principles and procedures for providing homeland security, police, fire, and other safety services and managing penal institutions. Note: this series is titled Security and Protective Services" in the Canadian CIP.
44	Public Administration and Social Service Professions	Instructional programs that prepare individuals to analyze, manage, and deliver public programs and services.
45	Social Sciences	Instructional programs that focus on the systematic study of social systems, social institutions, and social behavior.
49	Transportation and Materials Moving	Instructional programs that prepare individuals to apply technical knowledge and skills to perform tasks and services that facilitate the movement of people or materials.
50	Visual and Performing Arts	Instructional programs that focus on the creation and interpretation of works and performances that use auditory, kinesthetic, and visual phenomena to express ideas and emotions in various forms, subject to aesthetic criteria.

Appendix B

IRB Approval

Institutional Review Board (IRB)
For the Protection of Human Research Participants

PROTOCOL EXEMPTION REPORT

Protocol Number: 04409-2023 **Responsible Researcher(s):** Brian M. Wooten

Supervising Faculty: Dr. Christine Ziegler

Project Title: *HOPE Scholarship impact on Major selection connected to Workforce Needs.*

INSTITUTIONAL REVIEW BOARD DETERMINATION:

This research protocol is **exempt** from Institutional Review Board (IRB) oversight under 45 CFR 46.101(b) of the federal regulations, **category 4**. If the nature of the research changes such that exemption criteria no longer apply, please consult with the IRB Administrator (tmwright@valdosta.edu) before continuing your research study.

ADDITIONAL COMMENTS:

- *This protocol has been approved as Exempt under category 4 – use of secondary information.*
  - *Category 5 – as applied for, is not applicable to this protocol. Under category 5, the researcher would be required to post the study on a publicly accessible Federal Website.*
- *Upon completion of the research study, collected data must be securely maintained and accessible only by the researcher(s) for a minimum of 3 years. At the end of the required time, collected data must be permanently destroyed.*

☒ ***If this box is checked, please submit any documents you revise to the IRB Administrator at tmwright@valdosta.edu to ensure an updated record of your exemption.***

Elizabeth Ann Olphie *03.30.2023*
Elizabeth Ann Olphie, IRB Administrator

Thank you for submitting an IRB application.
Please direct questions to irb@valdosta.edu or 229-253-2947.

Appendix C

Final USG Data Request

MEMORANDUM

TO: Dr. Lori Hagood
Executive Director
Research & Policy Analysis Board of Regents of the University System of Georgia

FROM: Brian M. Wooten
Doctoral Student
Valdosta State University

RE: Data Request and Supporting Documentation

DATE: January 24, 2024

Please find included in this document the following documents:

1. Full Data Request which includes:
    a. Completed data request form
    b. IRB Approval
    c. Data at rest storage approvals from VSU and KSU
    d. Data Agreement with KSU
2. Requested variables.

If you have any questions or need more information, please do not hesitate to let me know. Many thanks for your help with this process

University System of Georgia Data Request Form for De-identified Student/Personnel Level Data

Researchers seeking de-identified, student or personnel-level data from the University System of Georgia (USG) should submit this form along with CV to rpaextreq@usg.edu for consideration.

Data access will require IRB approval from the researcher's home institution, approval of USG Data Governance Data Sharing Sub-Committee[1], and receipt of signed data sharing agreement. Applications will only be considered for researchers with adequate research skills and experience as indicated by their CV. Graduate students requesting data must include a faculty member as a co-requester.

Contact Information

Name: Brian M. Wooten
Title: Doctoral Student
Organization/Affiliation: Valdosta State University
Email: bwooten@valdosta.edu
Phone: 404-805-1120
In addition to the primary researcher requesting data, who else (including graduate assistants) will access the data? Graduate students requesting data must include a faculty member as a co-requestor.

- Dr. Christine Ziegler, Professor of Psychology, Kennesaw State University. cziegler@kennesaw.edu
- Dr. Neena Banerjee, Associate Professor of Public Administration; Valdosta State University; nbanerjee@valdosta.edu

Data Request Overview

1. Please provide a brief overview of the research you plan to conduct. Specify the following (1,000 words maximum).

   a. Motivation and purpose of the study

      Motivation: This study is being conducted to satisfy the requirement for the Doctor of Public Administration degree at Valdosta State University.

      Purpose: The study will examine 2015-2022 University System of Georgia Comprehensive University HOPE Scholarship graduates, their majors, and alignment with Georgia's essential workforce needs. (Scholarship requirements remained consistent during this period. In addition, for the purposes of this study, analysis will include individuals who earned/maintained either the Zell Miller scholarship or the general HOPE scholarship).

   b. Research question(s)

[1] Academic and Financial data requests will be reviewed by the Academic Data Governance Committee, and Administrative (personnel) data requests will be reviewed by the Human Resources Data Governance Committee. Personnel data requests also require the approval of the Vice Chancellor for Human Resources.

Because I am dealing with categorical variables, my research question is overarching, while the sub-research questions are more indicative of the actual analysis procedures that will be conducted.
RQ1: Is there a relationship between USG Comprehensive University HOPE scholarship graduates, their majors, and Georgia's essential workforce needs?

- What are the majors of students who earned a bachelor's degree and maintained the HOPE scholarship?
- Among HOPE scholars, is there a difference in the patterns of major selection between students who maintained the scholarship and students who lost it during their bachelor's program?
- Among HOPE scholars, is there a difference in the patterns of major selection between gender?
- Among HOPE scholars, is there a difference in the patterns of major selection between racial groups?

c. Intended audience (e.g., intended for publication, presentation, dissertation)

Dissertation committee, University System of Georgia faculty, staff, and personnel, conference presentation(s)

d. Does this research have external funding? If so, please specify.

No

e. Has this research been approved by IRB? (Note: IRB approval is not required to submit this form but is required before accessing data). If so, please attach.

IRB exemption has been obtained and is attached. I have also received support from KSU (All documentation is attached.)

f. Additional information

2. Describe the methodology to be used for the study (descriptive statistics, correlations, sample comparisons, regression, quasi-experimental, etc.) (500 words maximum).

I will explore the research questions using descriptive and regression analyses. I will operationalize the data in three steps to conduct the analyses:

First, a new variable will be created separating individual data set into 3 different groups using the following definitions:

- HOPE GRAD: Category will include all individuals whose graduation year and last semester HOPE awarded are the same (FIS_YR is equal to AWARD_TERM).
- LOST HOPE GRAD: Category will include all individuals whose graduation year and last semester HOPE awarded are not the same (FIS_YR is not equal to AWARD_TERM).

- NO HOPE GRAD: Category will include all individuals who graduated without ever earning the HOPE scholarship (FIS_YR = 0).

Second, data will be further defined using the Classification of Instructional Programs (CIP) taxonomic scheme developed by the U.S. Department of Education's National Center for Education Statistics (NCES). A qualitative analysis will be conducted of CIP codes that will operationalize the data into major categories. Categories will include: Arts, Business; Education, Health/Human Services, Humanities, Social Sciences, STEM and Other for those that do not fit into any of the mentioned categories.

Third, majors connected to business, education and STEM will be identified as Georgia critical workforce needs; all other majors will be identified as non-essential Georgia workforce needs.
The results from this analysis will produce the following groupings:

- Workforce Dichotomous groups:
  - ➡ Needed Workforce (This will include majors in the following areas: Business, Education, & STEM) Defined as 1.
  - ➡ Non-Essential Workforce: (All majors other than those defined above) Defined as 2.
- Workforce Nominal Groups
  - ➡ Needed Workforce Defined as 1 for Business, 2 for Education and 3 for STEM
  - ➡ Non-Essential Workforce Defined as follows: 4 for Arts, 5 for Health/Human Service, 6 for Humanities majors, 7 for Social Sciences, 8 Other

Descriptive Analysis: Using the definitions above, I will compare the gender, ethnicity and age for students in the following categories: HOPE GRAD, LOST HOPE GRAD and NO HOPE GRAD. Similar analyses will be conducted for gender, ethnicity and age connected to Georgia's critical workforce need. Finally, HOPE status and workforce groups will be analyzed together. New variables will be created for this analysis.

Regression Analysis: Regression analysis will be conducted focusing on relationships between HOPE status, majors, workforce needs and demographic information.

3. Are you planning to merge USG data with other data sources? If so, please explain/describe.
   No

4. Below, explain the type of data requested:

a. Describe the format of the data (cross-section, panel, etc.)

   Cross-Sectional

b. Years/cohorts requested:

   Individuals who earned a bachelor's degree from a USG Comprehensive University between 2015 and 2022.
   Added requirement: Individuals must have entered the university in 2011 or after. (This ensures that all students who earned a bachelor's degree entered under the same eligibility requirements for the HOPE scholarship.)
   Because this is a cross-sectional study, I ONLY need graduates that meet the above-mentioned requirements.

c. Select variables needed for analysis by entering "Y" in the Request Variable column of the Researcher's Data Element Dictionary (DED) Variable Selection form and submit it with this application. Utilize the DED Codebook to find additional information on the variables listed in the Variable Selection form.

   Needed variables have been identified in the attached Excel spreadsheet.

d. If there are data elements that are essential for your research project but are not listed in the DED please note them here. We may be able to accommodate these requests if the data is available. A comprehensive list of elements collected via the Academic, Financial, and Administrative (HR) Resources Data Collection is available here:

   Academic:
   https://www.usg.edu/research/assets/research/documents/DED_July_2021.pdf

   Administrative (HR):
   https://www.usg.edu/research/assets/research/documents/HRDM_DED_100520.pdf

   Financial Aid:
   https://www.usg.edu/research/assets/research/documents/FADC_DED_2021.pdf

5. All data provided must be maintained in a secure environment. Please describe the capabilities you have to ensure a secure environment for the data (500 words maximum).

   Data shall be protected through a combination of measures, including operational safeguards, privacy specific safeguards, and security controls. Using a risk-based approach for protecting the confidentiality of data, we will employ reasonable practices to protect data from unauthorized physical and electronic access.

a. Data Exchange/Transfer
Data will be encrypted in transit. The confidentiality and integrity of data being transmitted will be protected and preserved using mutually agreed-upon encrypted file exchange mechanisms. The provided data files will contain no personal identifiable information (PII) to allow for students 'anonymity. Instead, the files will be deidentified and associated with random unique identification numbers.

b. Data Storage/Data at Rest
Data will be stored on a secure virtual server to which access is restricted using the IP- and group-based access controls implemented within Kennesaw State University's* restricted access virtual private network. Data will be restricted to project personnel using group-based file management policies. Additionally, all data will be password protected, stored on a password-protected computer, and locked in a KSU office. Data will be destroyed three years after completion of the research using the University disposal methods outlined by Legal Affairs and/or Records Information Management Office at the time of disposal.

** Because I am a faculty member at Kennesaw State University (KSU), I have received approval from the Valdosta State University's IRB to store the data using KSU resources and protocols. (Approvals are included in this request.)*

RE: IRB Approval Question Tina M Wright <tmwright@valdosta.edu>
Tue 10/10/2023 10:10 AM

To: Brian M Wooten <bwooten@valdosta.edu>;Brian M Wooten <bwooten@valdosta.edu>
Cc:cziegler@kennesaw.edu <cziegler@kennesaw.edu>;

Brian,
In light of the information provided by Cathy Sowa, it is acceptable to store your research data on Kennesaw State's secure server. The data must be securely maintained and accessible only by you – the researcher.

Best regards,

Tina Wright
Compliance Officer
OSPRA
Converse Building - 3106
229-253-2947
tmwright@valdosta.edu

From: Brian M Wooten <bwooten@valdosta.edu>
Sent: Tuesday, October 10, 2023 9:47 AM
To: Tina M Wright <tmwright@valdosta.edu>
Subject: IRB Approval Question

Good morning, Ms. Wright!
I hope this message finds you well.
You probably saw the email we received from Cathy Sowa yesterday regarding the storage of data I hope to receive from the University System of Georgia. As a reminder, she recommended that I use the data storage available at Kennesaw State. When I originally submitted my IRB request, we discussed the need for the data to be held at VSU. Is there something that I need to do at this point to update my IRB request? Will this be acceptable for VSU's IRB?

I just want to make sure that I am covering all my bases. Many thanks as always for your help and support!

-Brian

Brian M. Wooten
DPA Student
Valdosta State University

Re: Data Security Assistance
Sandra Arntz <sarntz@kennesaw.edu>
Mon 1/8/2024 11:27 AM
To:Brian Wooten <bwooten@kennesaw.edu>
Cc:Debbie Smith <dsmith1@kennesaw.edu>;Chris Ziegler <cziegler@kennesaw.edu>;Tom Boyle <tboyle@kennesaw.edu>;Tobias Simpson <tsimps44@kennesaw.edu>

Brian - Since you are doing this research in your capacity of student at VSU, it really doesn't fall under KSU IRB's purview. Since VSU has given permission for you to store the data here at KSU, that is all that would be needed in terms of approval. And since the data are de-identified, I have absolutely no concerns about you storing research data here (Department of Interdisciplinary Studies).

I do appreciate your thoroughness in ensuring all research requirements are being met. You seem to have satisfied both VSU and KSU's requirements regarding research and data storage.

Please let me know if I help with anything else,

Dr. Arntz

Sandra Arntz, Ph.D.
Assistant Director, Research Compliance for Human Subjects
Office of Research
Social Science Lab Complex
1150 Big Shanty Rd., NW
Kennesaw, GA 30144
p: 470-578-2106
e: sarntz@kennesaw.edu
w: https://research.kennesaw.edu/compliance/

Research Data Security Plan:

Purpose and scope

The data security plan outlines the procedures and protocols for collecting, storing, and managing the "2015-2022 University System of Georgia Comprehensive University HOPE Scholarship Graduates, their Majors, and Alignment with Georgia's Essential Workforce Needs" data to ensure compliance with applicable data security requirements and research data security best practices. It applies to all faculty, staff, and students who receive, collect, store, or manage research data associated with the 2015-2022 University System of Georgia comprehensive university HOPE scholarship graduates, their majors, and alignment with Georgia's essential workforce needs project.

Purpose: The study will examine 2015-2022 University System of Georgia comprehensive university HOPE scholarship graduates, their majors, and alignment with Georgia's essential workforce needs. (Scholarship requirements remained consistent during this period. In addition, for the purposes of this study, analysis will include individuals who earned/maintained either the Zell Miller scholarship or the general HOPE scholarship and matriculated in fall 2011 and after).

General Data Security

All KSU faculty, staff, and students are required to comply with KSU's Data Security Policy and all applicable University System of Georgia and Kennesaw State University guidelines. These regulations will be followed for all data collection, retention, and management procedures. Data shall be protected through a combination of measures, including operational safeguards, privacy specific safeguards, and security controls.

Using a risk-based approach for protecting the confidentiality of data, we will employ reasonable practices to protect data from unauthorized physical and electronic access.

Data Collection

The University System of Georgia will provide requested data. In addition to the PI for the project, KSU Professor Emeritus of Psychology and KSU Professor of Interdisciplinary Studies will have access to the data. Data will be encrypted in transit. The confidentiality and integrity of data being transmitted will be protected and preserved using mutually agreed-upon encrypted file exchange mechanisms. The provided data files will contain no personal identifiable information (PII) to allow for students' anonymity. Instead, the files will be deidentified and associated with random unique identification numbers. Special note: The USG will provide data de-identified. No personal information will be included in the data provided. Sponsor for the project is Dr. Debbie N. Smith, Professor of Interdisciplinary Studies.

Data Aggregation, Storage and Analysis

The PI or delegated person(s) is responsible for managing project members' access to research data. Data analysis will be performed on KSU-approved technology and software resources as detailed here. The previously mentioned file server will serve as the "system of record" for research study data. Data will be stored on a secured desktop computer. Data will be restricted to project personnel using group-based file management policies. Additionally, all data will be password protected, stored on a password-protected computer, and locked in a KSU office. Data will be destroyed three years after completion of the research using the University disposal methods outlined by Legal Affairs and/or Records Information Management Office at the time of disposal. Data will

be destroyed in compliance with the KSU policy found here: Records and Information Management Policy.

Data Format, Dissemination, and Retention

The format of data being requested from the Board of Regents will be cross-sectional. The sharing of research results will be consistent with KSU and USG policies governing intellectual property, copyright, and the dissemination of research products. Findings will be shared with University System of Georgia faculty, staff, and personnel. Findings will also be submitted for publication in various journals and used as part of conference presentation(s).

Data will be destroyed three years after completion of the research using the University disposal methods outlined by Legal Affairs and/or Records Information Management Office at the time of disposal. Disposal will be completed as directed by the KSU policy found here: Records and Information Management Policy. Data will be backed up using a data locker drive as approved through KSU Data Security.

Training and Awareness

The Office of Research, in partnership with University Information Technology Services, will ensure that all faculty, staff, and students associated with the 2015-2022 University System of Georgia comprehensive university HOPE scholarship graduates, their majors, and alignment with Georgia's essential workforce needs project will receive training on data security best practices and policies, including but not limited to, responsible data handling, password management and incident response. All individuals (PI, Professor Emeritus of Psychology and Professor of Interdisciplinary Studies) associated with this study and have access to data have already completed all relevant CITI trainings. The full

study has IRB approval from Valdosta State University, and Kennesaw State University IRB has given their support as well. (All approvals and CITI certifications are available upon request and will be housed in the Department of Interdisciplinary Studies at KSU.)

Specific Data Elements Requested to the Board of Regents

Student Demographics:

1. Unique ID: Deidentified unique student identifier
2. Age at Enrollment
3. Age at Matriculation
4. CIP Code
5. Citizenship Status
6. Degree Level Description
7. Degree Level Code
8. Gender Description
9. Institution Cumulative GPA
10. Institution Name
11. IPEDS Race/Ethnicity Description
12. Matriculation Term
13. Sector Description
14. USG Cumulative GPA
15. USG Cumulative Hours Earned

Degree Awarded

1. Unique ID: Deidentified unique student identifier
2. Institution Name
3. Award Term
4. CIP Code
5. Degree Acronym
6. Degree Level Code

HOPE Status

1. Unique Student ID
2. Institution
3. Fiscal Year: Academic Year of Award
4. Fiscal Quarter: Academic Term of Award

Appendix D

Board of Regents Data Contract

Data Sharing Agreement
Between the
Board of Regents of the University System of Georgia
and Brian M. Wooten

This data sharing agreement ("Agreement") is entered into by the Board of Regents of the University System of Georgia ("BOR") and Brian M. Wooten.

Purpose of Agreement

The purpose of this Agreement is to:

This study is being conducted to satisfy the requirement for the Doctor of Public Administration degree at Valdosta State University.

The study will examine 2015-2022 University System of Georgia comprehensive university HOPE scholarship graduates, their majors, and alignment with Georgia's essential workforce needs. (Scholarship requirements remained consistent during this period. In addition, for the purposes of this study, analysis will include individuals who earned/maintained either the Zell Miller scholarship or the general HOPE scholarship).

Because I am dealing with categorical variables, my research question is overarching, while the sub-research questions are more indicative of the actual analysis procedures that will be conducted.

- RQ1: Is there a relationship between USG comprehensive university HOPE scholarship graduates, their majors, and Georgia's essential workforce needs?
    - What are the majors of students who earned a bachelor's degree and maintained the HOPE scholarship?
    - Among HOPE scholars, is there a difference in the pattern of major selection between students who maintained the scholarship and students who lost it during their bachelor's program?
    - Among HOPE scholars, is there a difference in the pattern of major selection between gender connected to workforce needs?
    - Among HOPE scholars, is there a difference in the pattern of major selection between racial groups connected to workforce needs?

Data

The BOR will provide Brian M. Wooten with the following data:

Individuals who earned a bachelor's degree from a USG comprehensive university between 2015 and 2022.
Added requirement: Individuals must have entered the university in 2011 or after. (This ensures that all students who earned a bachelor's degree entered under the same eligibility requirements for the HOPE scholarship.)

Because this is a cross-sectional study, I ONLY need graduates that meet the above-mentioned requirements.

Specific variables to be included are degree, gender, CIP code, etc. (full list attached) to provide insight to the research questions.

BOR agrees to share data with Brian M. Wooten in a manner that safeguards the confidentiality of student data as defined by the Federal Family Educational Rights and Privacy Act (FERPA) and other applicable laws and regulations. FERPA establishes a right of privacy for student data based on a rule of non-release of individually identifiable data to anyone outside the student's institution or to persons inside the institution who have no legitimate need for the information without the express written permission of the student. However, FERPA contains a limited exception to the general rule when information is used by educational organizations for the purposes of conducting research to improve instruction. This Agreement fits under this limited exception to FERPA. See 20 U.S.C. § 1232 g (b)(1)(F).

Specifically, BOR agrees to share data with Brian M. Wooten under the following stipulations.

- The data will be used only for purposes outlined in this agreement:
    - Data will be used as part of a study to satisfy the Doctor of Public Administration degree at Valdosta State University.
    - Findings will be submitted for publication in various research journals as well as conference presentations.

- The parties agree that the transmittal of data shall be done in a secure manner.

- Brian M. Wooten will limit access to the data to staff who require the data to develop, exchange, maintain, analyze and evaluate information for the purposes outlined in this agreement. Brian M. Wooten shall maintain records of those individuals who are allowed access to the data and shall assure that each person is fully cognizant of the restrictions placed upon use of the data and the restrictions upon its disclosure.

- The data will be maintained in a secure environment and shall not be shared with other parties except as authorized by federal and/or state law.

- Brian M. Wooten will utilize their best efforts to maintain the confidentiality of the data.

- The linked data will be destroyed after use or two years after the BOR shares data with Brian M. Wooten.

- Brian M. Wooten will indemnify and hold the BOR harmless against any claim, loss, expense, or demand incurred by the BOR as a result of Brian M. Wooten's access and use of the data.

- Brian M. Wooten will provide any findings to be presented/published from the data to BOR at least two weeks prior to presentation/publication. Dissertations must be provided for review at least two weeks prior to defense.

- Small cell sizes ($n < 10$) cannot be published.

Termination

This Agreement shall take effect upon completion of signatures and remain in effect for one year or until terminated. This Agreement may be terminated by either BOR or Brian M. Wooten upon notice to the other party. BOR may terminate this Agreement with or without cause at any time by providing written notice to Brian M. Wooten thirty (30) calendar days prior to the termination date. Upon termination, all projects using the linked data must be immediately discontinued.

Board of Regents of the University System of Georgia

Name: Angela Bell

Title: Vice Chancellor for Research and Policy Analysis
Organization: Board of Regents of the University System of Georgia

Signature: *Angela Bell*

Date: June 1, 2024

Name: Brian M. Wooten
Title: Doctoral Student, Public Administration
Organization: Valdosta State University

Signature: *Brian M. Wooten*

Date: June 1, 2024

Appendix E

Coding of Variables for Analyses

Coding of Variables for Analyses	
Institution Code	1- Georgia Southern University 2- Kennesaw State University 3- University of West Georgia 4- Valdosta State University
Time 2 Degree Age	1. Time between age at matriculation and age at enrollment (last term enrolled) calculated by subtracting Row F from Row E
Gender	1- Female 2- Male
Race/Ethnicity	1- American Indian or Alaska native 2- Asian 3- Black or African American 4- Hispanic or Latinx 5- Two or more races 6- Unknown 7- White
Race/Ethnicity Narrowed	1- American Indian/Alaska native/ Native Hawaiian/Other Pacific Islander or Unknown 2- Asian 3- Black or African American 4- Hispanic or Latinx 5- Two or more races 6- White
Race/Ethnicity Narrowed to 5 groups	1- American Indian/Alaska native/ Native Hawaiian/Other Pacific Islander, Unknown or Two or more races 2- Asian 3- Black or African American 4- Hispanic or Latinx 5- White
Time_2_Degree_by_Matriculation	1. Time between matriculation term and award term calculated by subtracting Row Q minus from Row R
Major Classification	1- Business 2- Education 3- Nursing 4- STEM 5- Arts 6- Humanities 7- Social Science 8- Physical Education 9- Human Services

Coding of Variables for Analyses	
	10- Multidisciplinary Degree
Major Classification Condensed	1- Business 2- Education 3- Nursing 4- STEM 5- Arts, Humanities & Multidisciplinary 6- Social Science 7- Physical Education/Human Services
Degree Definition	1. Specific major field as defined by specific CIP code
Workforce/Non-Workforce	1- Workforce 2- Non-workforce
Last HOPE Earned	1- Never earned HOPE 2- DATE: Date HOPE was lost 3- Maintained HOPE scholarship
HOPE Status	1- Never earned HOPE scholarship 2- Lost HOPE scholarship 3- Maintained HOPE scholarship

Appendix F

Tests for Collinearity

Collinearity Diagnostics HOPE Status Dependent Variable

				Variance Proportions			
Model	Dimension	Eigenvalue	Condition Index	(Constant)	Gender Code	Race/Ethnicity	Workforce Major Code
1	1	3.766	1.000	0.00	0.01	0.01	0.01
	2	0.127	5.452	0.00	0.36	0.01	0.45
	3	0.084	6.696	0.00	0.30	0.63	0.14
	4	0.023	12.759	1.00	0.33	0.36	0.40

Collinearity Diagnostics Workforce Major Dependent Variable

				Variance Proportions			
Model	Dimension	Eigenvalue	Condition Index	(Constant)	Gender Code	Race/Ethnicity	HOPE Status
1	1	3.774	1.000	0.00	0.01	0.01	0.01
	2	0.124	5.518	0.00	0.45	0.00	0.40
	3	0.075	7.071	0.00	0.19	0.70	0.31
	4	0.027	11.864	1.00	0.36	0.30	0.29

Collinearity Diagnostics Workforce Status Dependent Variable

				Variance Proportions			
Model	Dimension	Eigenvalue	Condition Index	(Constant)	HOPE Status	Gender Code	Race/Ethnicity
1	1	3.365	1.000	0.00	0.01	0.03	0.01
	2	0.517	2.552	0.00	0.02	0.90	0.01
	3	0.083	6.371	0.01	0.69	0.04	0.43
	4	0.035	9.766	0.98	0.28	0.03	0.56

Appendix G

Parameter Estimates: HOPE Status as Dependent Variable and Gender and Race as Independent Variables

Parameter Estimates: HOPE Status Dependent Variable

HOPE Status [a]		*B*	Std. Error	Wald	*df*	Sig.	Exp(*B*)	95% Confidence Interval for Exp(*B*)	
								Lower Bound	Upper Bound
Never earned the HOPE scholarship	Intercept	-1.328	0.117	129.035	1	<.001			
	[Gender(M/F)	0.729	0.139	27.292	1	<.001	2.073	1.577	2.724
	[Gender (M/F)	0[b]	.	.	0	.	.	.	.
	[Race, Ethnicity= Multi [c]]	0.391	0.744	0.276	1	0.599	1.478	0.344	6.349
	[Race, Ethnicity=Asian	0.310	0.406	0.582	1	0.445	1.363	0.615	3.018
	[Race, Ethnicity=Black]	0.787	0.159	24.551	1	<.001	2.196	1.609	2.997
	[Race, Ethnicity= Hispanic/Latino]	0.834	0.246	11.491	1	<.001	2.302	1.421	3.728
	[Race, Ethnicity= Two or more]	0.134	0.387	0.120	1	0.729	1.144	0.536	2.441
	[Race, Ethnicity= White]	0[b]	.	.	0	.	.	.	.
Lost the HOPE scholarship	Intercept	-0.706	0.096	54.003	1	<.001			
	[Gender (M/F)	0.541	0.122	19.493	1	<.001	1.717	1.351	2.183
	[Gender (M/F)	0[b]	.	.	0	.	.	.	.
	[Race, Ethnicity= Multi [c]]	0.179	0.680	0.069	1	0.793	1.196	0.315	4.534
	[Race, Ethnicity= Asian]	0.134	0.363	0.136	1	0.712	1.143	0.561	2.330
	[Race, Ethnicity=Black]	0.571	0.141	16.465	1	<.001	1.770	1.344	2.333
	[Race, Ethnicity= Hispanic Latino]	0.380	0.235	2.617	1	0.106	1.462	0.923	2.317
	[Race, Ethnicity= Two or more]	0.418	0.299	1.954	1	0.162	1.519	0.845	2.730
	[Race, Ethnicity= White]	0[b]	.	.	0	.	.	.	.

a. The reference categories are: Maintained the HOPE scholarship, Females and White.

b. This parameter is set to zero because it is redundant.

c. Multi includes American Indian, Alaska Native, Native Hawaiian, Other Pacific Islander, & Unknown

Appendix H

Binomial/Multinomial Regression Tables

Results of Binomial Logistic Regression Predicting Workforce Designation from Gender, Race/Ethnicity, and HOPE Status

	B	S.E.	Wald	*df*	Sig.	Exp(*B*)	95% C.I. for Exp (*B*)	
							Lower	Upper
Gender Code	0.756	0.111	46.845	1	< .001	2.130	1.716	2.646
Race/Ethnicity	0.034	0.037	0.852	1	0.356	1.035	0.962	1.112
HOPE Status	0.155	0.069	5.031	1	0.025	1.168	1.020	1.337
Constant	-1.269	0.281	20.407	1	< .001	0.281		

S.E.= standard error
C.I. = confidence interval

Results of Likelihood Ratio Test: Major Category as Dependent Variable

Effect	Model Fitting Criteria	Likelihood Ratio Test		
	-2 Log Likelihood of Reduced Model	Chi-Square	*df*	Sig.
Intercept	556.827	0.000	0	
Gender Recode (M=0, F=1)	787.136	230.310	6	<.001
Race/Ethnicity	621.950	65.123	30	<.001
HOPE Status	602.017	45.190	12	<.001

Note. The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

Multinomial Regression: Predicting Business Major from Gender, Race/Ethnicity and HOPE Status

Condensed Major Code[a]		*B*	Std. Error	Wald	*df*	Sig.	Exp(*B*)	95% Confidence Interval for Exp(*B*)	
								Lower Bound	Upper Bound
	Intercept	0.356	0.204	3.038	1	0.081			
	[Male]	0.859	0.214	16.084	1	<.001	2.361	1.552	3.594
	[Female]	0	.	.	0	.	.	.	.
	[Race/Ethnicity= Consolidated[b]]	0.866	1.113	0.605	1	0.437	2.377	0.268	21.078
	[Race, Ethnicity=Asian]	1.524	1.066	2.043	1	0.153	4.589	0.568	37.079
	[Race, Ethnicity= Black/African American]	-0.789	0.238	11.010	1	<.001	0.454	0.285	0.724
	[Race, Ethnicity=Hispanic/Latino]	0.146	0.411	0.126	1	0.723	1.157	0.517	2.587
	[Race, Ethnicity= Two or more races]	0.350	0.555	0.398	1	0.528	1.420	0.478	4.215
	[Race, Ethnicity= White]	0	.	.	0	.	.	.	.
	[HOPE Status= Never Earned]	0.032	0.272	0.014	1	0.907	1.032	0.606	1.759
	[HOPE Status= Lost HOPE]	-0.262	0.239	1.209	1	0.272	0.769	0.482	1.228
	[HOPE Status= Maintained HOPE]	0[b]	.	.	0	.	.	.	.

a. The reference category is: Physical Education/Human Services
b. Consolidated includes American Indian, Alaska Native, Native Hawaiian, Pacific Islander, & Unknown.

Multinomial Regression: Predicting Education Major from Gender, Race/Ethnicity and HOPE Status

Condensed Major Code[a]		*B*	Std. Error	Wald	*df*	Sig.	Exp(*B*)	95% Confidence Interval for Exp(*B*)	
								Lower Bound	Upper Bound
	Intercept	0.874	0.203	18.522	1	<.001			
	[Gender Male=0 Female=1]	-1.453	0.318	20.892	1	<.001	0.234	0.125	0.436
	[Gender Male=0 Female=1]	0	.	.	0	.	.	.	.
	[Race/Ethnicity= Consolidated [b]]	-18.12	8579.45	0.00	1.00	1.00	0.00	0.00	.c
	[Race, Ethnicity=Asian]	0.436	1.239	0.124	1	0.725	1.547	0.136	17.536
	[Race, Ethnicity= Black/African American]	-0.994	0.278	12.800	1	<.001	0.370	0.215	0.638
	[Race, Ethnicity=Hispanic/Latino]	-0.229	0.479	0.228	1	0.633	0.796	0.311	2.033
	[Race, Ethnicity= Two or more races]	-0.340	0.656	0.269	1	0.604	0.711	0.197	2.574
	[Race, Ethnicity= White]	0	.	.	0	.	.	.	.
	[HOPE Status= Never Earned]	-0.668	0.339	3.884	1	0.049	0.513	0.264	0.996
	[HOPE Status= Lost HOPE]	-0.640	0.272	5.551	1	0.018	0.527	0.309	0.898
	[HOPE Status= Maintained HOPE]	0	.	.	0	.	.	.	.

a. The reference category is: Physical Education/Human Services.
b. Consolidated includes American Indian, Alaska Native, Native Hawaiian, Pacific Islander, & Unknown.

Multinomial Regression: Predicting Nursing Major from Gender, Race/Ethnicity and HOPE Status

Condensed Major Code [a]		*B*	Std. Error	Wald	*df*	Sig.	Exp(*B*)	95% Confidence Interval for Exp(*B*)	
								Lower Bound	Upper Bound
	Intercept	0.198	0.240	0.684	1	0.408			
	[Gender Male=0 Female=1]	-1.785	0.499	12.815	1	<.001	0.168	0.063	0.446
	[Gender Male=0 Female=1]	0	.	.	0	.	.	.	.
	[Race/Ethnicity= Consolidated[b]]	-17.77	0.00	.	1.00	.	0.00	0.00	0.00
	[Race, Ethnicity=Asian]	0.637	1.436	0.197	1	0.657	1.891	0.113	31.545
	[Race, Ethnicity= Black/African American]	-0.564	0.345	2.672	1	0.102	0.569	0.289	1.119
	[Race, Ethnicity= Hispanic/Latino]	-0.494	0.695	0.506	1	0.477	0.610	0.156	2.381
	[Race, Ethnicity= Two or more races]	0.578	0.673	0.737	1	0.391	1.783	0.476	6.671
	[Race, Ethnicity= White]	0b	.	.	0	.	.	.	.
	[HOPE Status= Never Earned]	-1.262	0.489	6.651	1	0.010	0.283	0.109	0.739
	[HOPE Status= Lost HOPE]	-1.254	0.375	11.160	1	<.001	0.285	0.137	0.596
	[HOPE Status= Maintained HOPE]	0b	.	.	0	.	.	.	.

a. The reference category is: Physical Education/Human Services.
b. Consolidated includes American Indian, Alaska Native, Native Hawaiian, Pacific Islander, & Unknown

Multinomial Regression: Predicting STEM Major from Gender, Race/Ethnicity, and HOPE Status

Condensed Major Code[a]		*B*	Std. Error	Wald	*df*	Sig.	Exp(*B*)	95% Confidence Interval for Exp(*B*)	
								Lower Bound	Upper Bound
	Intercept	0.381	0.197	3.750	1	0.053			
	[Gender Male=0 Female=1]	1.218	0.201	36.646	1	<.001	3.382	2.279	5.017
	[Gender Male=0 Female=1]	0	.	.	0	.	.	.	.
	[Race/Ethnicity= Consolidated[b]]	0.008	1.177	0.000	1	0.994	1.008	0.100	10.130
	[Race, Ethnicity =Asian]	2.072	1.037	3.992	1	0.046	7.943	1.040	60.659
	[Race, Ethnicity= Black/African American]	-0.393	0.214	3.362	1	0.067	0.675	0.444	1.027
	[Race, Ethnicity= Hispanic/Latino]	0.384	0.388	0.983	1	0.321	1.469	0.687	3.139
	[Race, Ethnicity= Two or more races]	0.565	0.526	1.154	1	0.283	1.760	0.627	4.939
	[Race, Ethnicity= White]	0b	.	.	0	.	.	.	.
	[HOPE Status= Never Earned]	-0.215	0.263	0.671	1	0.413	0.806	0.482	1.350
	[HOPE Status= Never Earned]	0.084	0.220	0.146	1	0.702	1.088	0.707	1.674
	[HOPE Status= Maintained HOPE]	0b	.	.	0	.	.	.	.

a. The reference category is: Physical /Human Services
b. Consolidated includes American Indian, Alaska Native, Native Hawaiian, Pacific Islander, & Unknown.

Multinomial Regression: Predicting Arts, Humanities, & Multidisciplinary and Social Sciences from Gender, Race/Ethnicity and HOPE Status

Condensed Major Code [a]		*B*	Std. Error	Wald	*df*	Sig.	Exp(*B*)	95% Confidence Interval for Exp(*B*)	
								Lower Bound	Upper Bound
Arts, Humanities, and Multidisciplinary	Intercept	0.307	0.215	2.029	1	0.154			
	[Gender Male=0 Female=1]	0.124	0.240	0.268	1	0.605	1.132	0.708	1.812
	[Gender Male=0 Female=1]	0	.	.	0	.	.	.	.
	[Race/Ethnicity= Consolidated [b]]	-18.55	9128.28	0.00	1.00	1.00	0.00	0.00	.[c]
	Race, Ethnicity =Asian	0.791	1.165	0.460	1	0.497	2.204	0.225	21.622
	[Race, Ethnicity= Black/African American]	-1.030	0.272	14.368	1	<.001	0.357	0.209	0.608
	[Race, Ethnicity= Hispanic/Latino]	-0.125	0.456	0.075	1	0.784	0.882	0.361	2.158
	[Race, Ethnicity= Two or more races]	-0.268	0.652	0.168	1	0.682	0.765	0.213	2.747
	[Race, Ethnicity= White]	0[b]	.	.	0	.	.	.	.
	[HOPE Status= Never Earned]	0.099	0.301	0.108	1	0.742	1.104	0.612	1.992
	[HOPE Status= Lost HOPE]	-0.221	0.265	0.692	1	0.406	0.802	0.477	1.349
	[HOPE Status= Maintained HOPE]	0[b]	.	.	0	.	.	.	.
Social Sciences	Intercept	1.122	0.186	36.311	1	<.001			
	[Gender Male=0 Female=1]	-0.402	0.212	3.606	1	0.058	0.669	0.442	1.013
	[Gender Male=0 Female=1]	0	.	.	0	.	.	.	.
	[Race/Ethnicity= Consolidated [b]]	0.317	1.167	0.074	1	0.786	1.373	0.139	13.523
	Race, Ethnicity =Asian	0.941	1.090	0.745	1	0.388	2.562	0.302	21.702
	[Race, Ethnicity= Black/African American]	-0.230	0.213	1.168	1	0.280	0.795	0.524	1.206
	[Race, Ethnicity= Hispanic/Latino]	0.062	0.401	0.024	1	0.878	1.064	0.484	2.336
	[Race, Ethnicity= Two or more races]	-0.517	0.604	0.731	1	0.392	0.596	0.183	1.949
	[Race, Ethnicity= White]	0[b]	.	.	0	.	.	.	.
	[HOPE Status= Never Earned]	0.015	0.257	0.003	1	0.953	1.015	0.614	1.678
	[HOPE Status= Lost HOPE]	-0.534	0.228	5.497	1	0.019	0.587	0.375	0.916
	[HOPE Status= Maintained HOPE]	0[b]	.	.	0	.	.	.	.

a. The reference category is: Physical Education/Human Services.
b. Consolidated includes American Indian, Alaska Native, Native Hawaiian, Pacific Islander, & Unknown.