THE EFFECT OF NEED- AND MERIT-BASED AID ON DEGREE ATTAINMENT AT GEORGIA'S PUBLIC COLLEGES AND UNIVERSITIES

by

ARTHUR DAVID VAUGHN

(Under the Direction of Charles Knapp)

Abstract

The Complete College America Initiative has suggested that America must improve tertiary education attainment and increase postsecondary credentials by decreasing educational disparities between socioeconomic classes. The median national graduation rate in 2010 was 35 percent. This study uses data provided from the University System of Georgia to analyze the impact of initial eligibility for Georgia's HOPE scholarship and/or Pell grants on degree attainment for first-time full-time freshmen. Findings from this study indicate initial eligibility for a need- or merit-based financial aid influence initial enrollment decisions and has a positive effect on degree completion.

INDEX WORDS: Degree Attainment, Completion, Hope Scholarship, Pell Grant, Higher Education, Financial Aid, Affordability, Human Capital and Graduation Factors, Merit-Based, Need-Based, Financial Aid.

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ARTHUR DAVID VAUGHN

Bachelors of Arts in Economics, Syracuse University, 1992

Master of Public Administration, Clark Atlanta University, 1998

Master of Science in Accounting, Southern Polytechnic State University, 2012

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ARTHUR DAVID VAUGHN

Major Professor:	Charles Knapp
Committee:	Manuel S. Gonzalez Canche Robert K. Toutkoushian

Electronic Version Approved:

Suzanne Barbour
Dean of the Graduate School
The University of Georgia
December 201

DEDICATION

“We sit in the shade of trees we did not plant.” To my late parents Alfred and Delores Vaughn; my beautiful and supportive wife, Octavia Vaughn and my daughters, Kiara, Kennedy and Madison and my mentors and friends who have supported and believed in me throughout the entire process of earning my doctorate.

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CHAPTER 1

INTRODUCTION

As federal and state legislative branches of government display increased interest in higher education affordability and accountability (Toutkoushian, 1999; Johnson, 2014) and trends for funding tertiary education favor postsecondary degree attainment (Brown, 2002; Jones, 2013), it is time to critically address factors that impact tertiary education completion rates. This study will add to current scholarly research by exploring the correlation between need- and merit-based grants in aid and their effect on completion at Georgia's public colleges and universities. Moreover, this study will address the effects of economic, social and cultural capital on student success.

The researcher maintains college completion rates can be explicated through the lens of students who are awarded merit- and need-based financial aid. Higher education researchers, including Bourdieu and Passeron (1977), Bourdieu (1996) Reay, (2004); Jaeger (2009), Jaeger (2011) and Andersen and Hansen (2012) suggest students from backgrounds with lower access to economic and family support are unable to readily leverage human capital, tend to perform and succeed in completing tertiary education at decreasing levels when compared to their well-capitalized peers. Grants in aid that do not require repayment provide one form of capital under the human capital framework that would encourage increased enrollment in tertiary education (Becker, 1993; Rubin, 2011). Capital represents economic, social and cultural resources that can be converted and used to gain some measurable social class advancement (Flemmen, 2013).

Statement of the Problem

Using data available from the University System of Georgia, the researcher will conduct systematic research and demonstrate the extent to which there is a correlative relationship between disparities in and attainment of tertiary degrees between first-time full-time students from academically and economically disadvantaged backgrounds when compared to their well-capitalized peer groups at Georgia's public colleges and universities.

Significance of the Study

Legislative activities focused on positively impacting postsecondary education graduation rates are prevalent throughout the United States (National Governors Association, 2010; O'Banion, 2010; Kanter, 2011; Bragg & Durham, 2012; Rhodes, 2012). Moreover, there is continuing interest in increasing the number of adults with career training in the form of postsecondary credentials, associate and bachelor degrees (Morris, 2012; Rhoades, 2012; Handel, 2013; McClenney, 2013; Complete College America [CCA] 2014; Complete College Georgia, [CCG] 2014). Although the University System of Georgia and the Georgia Legislature have adopted components of the national tertiary education completion agenda, attainment rates at Georgia's public colleges and universities have remained relatively unchanged.

Studies by Kelly and Schneider (2012); Phillips and Horowitz (2013); Handel (2013) and McClenney (2013) provide further support regarding the dominance of the postsecondary completion agenda as they seek to elucidate the role of two-year colleges in the attainment of tertiary education access and completion for underrepresented groups. Swail and Perna (2002) and Walpole (2008) further suggest that disparities linked to social, economic or environmental disadvantages adversely affect groups of people who have systematically experienced greater

obstacles to education on the basis of their racial or ethnic group, religion, socioeconomic status, gender, age, geographic location or other characteristic linked to discrimination or exclusion.

In a study of first-time full-time students enrolling at Ohio public colleges and universities during academic year (AY) 2000, Bettinger (2004) found that Pell grants increased student retention. Cornwell, Mustard, and Sridhar (2006) concluded that the introduction of merit-based aid programs increased enrollment in Georgia's two-and four-year public colleges and universities. However, consensus on how to increase postsecondary graduation rates has not yet been achieved (Adelman, 2007; Engstrom, 2008; Rhodes, 2012; McClenney, 2013). Moreover, the scholarly research exploring the aggregate effects of need- and merit-based financial aid on degree attainment is absent in the literature (Singell, Waddell, & Curs, 2006).

This paper relies on linear probability analysis to explore the effect of need-based Pell grants and merit-based Hope Scholarships on degree attainment at Georgia's public colleges and universities. The study presents evidence on how the accumulation of social and cultural capital affects tertiary degree attainment of students who do not qualify for merit- or need-based financial aid. The findings from this research further explore the impact initial eligibility for merit- and need-based aid has on completion.

Limitations

One important limitation of the data is that it only includes students attending Georgia's public universities. Students from Georgia who attend universities in other states as well as those at private colleges and universities in Georgia are not included in the sample. The exclusion of students enrolled in private institutions is both a weakness and strength of this data. Three-quarters of the students enrolled in tertiary institutions in Georgia attend public colleges and universities (NCES, 2014). Excluding the 25% of students enrolled in private colleges and

universities result in conclusions that are applicable to the majority of college students. The fact that an overwhelming proportion of students in Georgia attend public colleges and universities makes conclusions more general. The data include students that transfer from one USG institution to another USG institution. The data was limited in that it did not include completion information on students who transferred to institutions outside of the USG.

The data did not include students' high school grade point average (GPA) as it was not available, but which previous research indicates is a significant predictor of degree attainment. However, considering students must have a minimum GPA 3.0/4.0 to meet HOPE Scholarship eligibility we are able to mitigate this limitation. The absence of family income in the data is also a limitation for drawing conclusions regarding need-based financial aid.

Definition of Terms

College or University: A public four-year, degree-granting institution.

Degree: For the purposes of this study, degree means bachelor's degree.

Degree attainment: The completion of a program of study and graduation with a bachelor's degree.

Four-year institutions: Institutions that offer a bachelor's degree.

Persistence: A student's postsecondary education continuation behavior that leads to graduation.

Retention: The student returns to the institution they attended the previous year**.**

The remaining chapters of this dissertation will include a literature review and theoretical framework (Chapter 2), research methodology and data analysis (Chapter 3), results (Chapter 4) and recommendations (Chapter 5), references and appendices.

CHAPTER 2

REVIEW OF LITERATURE

This chapter provides a review of literature that contributes to the understanding of the impact of need- and merit-based financial aid on degree attainment. A predominant number of the studies focus on a single form of financial aid -- need- or merit-based, leaving a gap in the literature regarding the simultaneous effect of need- and merit-based aid on degree attainment. The studies provide a basis for a general understanding of the impact of financial aid on degree attainment.

Student Preparation

According to Handel (2013), tertiary education attainment at colleges and universities in the United States is relatively low when compared with other industrialized nations. Low college completion rates in America are fueled by the fact that only a quarter of American high school students enroll in tertiary education immediately after completing secondary education (Cabrera & La Nasa, 2000). These numbers decrease even more when coupled with the significant number of students who are reared in a low-income environment who fail to secure the requisite academic credentials to enroll in tertiary education (Arum & Roksa, 2011). In addition, Zhang (2011) suggests that academic preparation as measured by Scholastic Assessment Test (SAT) or the American College Testing (ACT) scores are a strong predictor of college completion.

According to Bettinger, Boatman, and Long (2013), a growing body of research suggests that there is mixed success regarding remedial programs designed to improve tertiary education and student attainment. In contrast to existing models of corrective education, the Education

Commission of the States (2014) maintains that a co-requisite model requiring students to enroll in developmental and college-level courses concurrently have proven to increase academic success in students from disadvantaged backgrounds. Moreover, Swail and Perna (2002) argue that the availability of focused programming is sometimes scarce, which severely compromises access and leaves students without adequate attention to the steps required to be academically, socially and psychologically prepared to be persistent and complete tertiary education. Higher education institutions in a number of states have been able to reduce or eliminate remedial education programs by implementing co-requisite and other academic support programs (Higher Education Opportunity Program [HEOP], 2014; Complete College America [CCA], 2014).

As articulated by McClenney (2013), the socioeconomic environment in the United States makes the goals of the completion agenda one of the most aggressive undertakings in the history of American higher education. Institutions must actively create environments that engage students from academically disadvantaged and low-income communities, creating a heightened sense of belonging (HEOP, 2014; Smith, MacGregor, Matthews, & Gabelnick, 2004).

The Completion Agenda

The current White House administration maintains that by the year 2020, the United States will regain its position as the top producer of students that complete some form of postsecondary education (Kanter, 2011; Robinson, Byrd, Louis, & Bonner, 2012; Mullin, 2013). The bold proclamation of the Obama Administration is consistent with the "Big Goals" articulated by the Lumina Foundation and the Complete College America Initiative (CCAI), suggesting America must improve tertiary education attainment and increase postsecondary

credentials by decreasing educational disparities between socioeconomic classes (Crellin, Kelly, & Prince, 2012; Morris, 2012; Rhoades, 2012; McClenney, 2013).

The need for increasing tertiary education extends beyond the confines of appeasing those focused on inflating their collective national self-image (O'Banion, 2010); however, globalization of the economy has created an increased demand for a more highly educated workforce (Finney & Kelly, 2004). As articulated by Crellin, Kelly, and Prince (2012) and CCA (2014), approximately three out of every five jobs will require some form of credential or tertiary degree by the year 2025.

As of 2014, Georgia, along with 33 other states, elected to align itself with the Completion Agenda (CCA, 2014). Moreover, the University System of Georgia (USG) has adopted the goal of increasing the average attainment rate at public colleges and universities to 60% by 2020 (CCG, 2014). To this end, two institutions within the University System of Georgia reported undergraduate graduation rates of 60% or higher: the University of Georgia and Georgia Institute of Technology.

The attainment goals of Complete College Georgia are problematic considering the pipelines for postsecondary students. The rate of student attainment is complicated considering two-thirds of students entering postsecondary education are not traditional students who recently graduated from high school (Horn & Premo, 1995). Kanter (2011) indicates that in 2010, nearly one quarter of American high school students dropped out of college. These students are from predominately academically- and economically-disadvantaged backgrounds. Data from the Integrated Postsecondary Education Data System (IPEDS) is consistent with earlier reports maintaining the 2010 mean, whereas the six-year graduation rate for Georgia's public colleges

and universities was 32% with individual institution graduation rates ranging from a low of 8% to a high of 81% (NECS, 2014).

In 2010, the mean graduation rate at USG institutions was 39%. The median national graduation rate that year was 35% (NCES, 2014). The graduation rates at Georgia public colleges and universities also fall below the Southern Colleges and Universities' average graduation rate of 42% as reported by Kanter (2011) and Crellin, Kelly, and Prince (2012). Over the 10-year period ending in 2020, Georgia's average attainment rate must double from three in 10 to six in 10 adults earning a postsecondary job- related credential or degree to meet the attainment goals set by CCG (NCES, 2014).

USG institutions with graduation rates below the mean are overwhelmingly state colleges and state universities. Each was initially founded as a two-year college with a focus on increasing student access (USG, 2014). The attainment rates at Georgia's access institutions are consistent with Alon and Tienda's (2005) and Engstrom and Tinto's (2008) assertions that students who do not possess high levels of human capital attend two-year colleges at higher rates and complete tertiary education at lower rates. Moreover, Morris (2005) maintains community colleges have been critical in providing access to first-generation, minority, and non-traditional students.

Robinson et al. (2012) and McPhail (2011) maintain community colleges play a pivotal role in significantly increasing the number of tertiary education credentials espoused through the Completion Agenda. The American Association of Community Colleges further explicates the role of community colleges, suggesting two-year colleges provide access and educational opportunities to students from disadvantaged socioeconomic backgrounds (McPhail, 2011; Robinson et al., 2012).

Morris (2012) asserts the methods required to achieve the goals of the Completion Initiative come in the form of an expanded student pipeline leading to increased enrollment or through the improvement in graduation rates of students who are currently enrolling. Scholarly research by Hearn (1984) and Alon and Tienda (2005) suggest institutions could use selectivity to positively influence graduation rate. Opponents of the Completion Agenda are concerned proponents of radically increasing attainment rates are not focused on tertiary education quality while promoting the goal of making the United States the top producer of adults with postsecondary education credentials (O'Banion, 2010; Kanter, 2011; Arum & Roksa; 2011).

Rhoades (2012) further argues the Completion Agenda may widen existing disparities in postsecondary education achievement between disadvantaged and affluent students. Other critics of the Completion Agenda maintain that there is a lack of evidence supporting the notion that improved attainment will increase an individual's prosperity and suggest the personal return on investment may be negligible (Crellin, Kelly, & Prince, 2012). Kanter (2011) further suggests access to tertiary education resulting from affordability is a considerable threat to the achievement of the Completion Agenda.

Affordability

Research conducted by Hauptman (1997), Barry (1998), and Webber and Boehmer (2008) proposed student and family expectations may result in the demand for tertiary education outpacing the supply, driving up the cost of enrollment. Moreover, Perna and Li (2006) suggest that a large number of individuals perceive college to be unaffordable based on the price institutions publicize in comparison to students' apparent ability to pay. Consistent with prior scholarly research, Hillman (2013) maintains students from low-income families largely make tertiary education choices as a result of perceived affordability regardless of the students'

academic performance. As articulated in *The Journal of Blacks in Higher Education* (2009), disparities in income have influenced tertiary education enrollment among students from varying ethnic groups in meaningful ways.

In contrast to Perna and Li (2006), Barry (1998) maintains variances in individual financial support in the form of student aid impact how families define affordability. While sensitivities to affordability remain, options available for funding postsecondary education are greater and prices vary significantly (Treat & Hagedorn, 2013). Perna and Li (2006) suggest college affordability for lower-middle income students and individuals below the poverty line has declined.

The definition of higher education affordability is viewed differently depending on the lens being used (Wharton, 2001; Finney & Kelly, 2004; Heller, 2011). Heller (2011) defines affordability by comparing the cost of enrollment to the availability of financial aid. Finney and Kelly (2004) describe affordability by considering a family's capacity to pay their expected family contribution (EFC). Wharton (2001) measures affordability by considering the amount of household income required to satisfy the net cost of enrollment. St. John, Shouping, and Webber (2001) consider a student's continuous enrollment as an indicator of affordability. There have been multiple attempts to define affordability; however, the common denominator remains household income (Webber & Boehmer, 2008).

Over a 20-year period ending in 1998, the cost of enrollment at public and private colleges and universities increased more than twice the rate of inflation over the same period (Barry, 1998). It is widely recognized that the rate of the increase in published tuition and fees schedules has far exceeded the general rate at which the cost of goods and services increased over the same period (Hauptman, 1997). However, as prices for goods and services decrease,

household disposable income is assumed to increase, which could positively influence a family's ability to cover the disparity between the federally-defined expected family contribution and a family's discretionary income (Archibald & Feldman, 2010).

Another factor that must be considered when analyzing the Completion Agenda is what Brown (2002) upholds as policymakers' desire to transition away from a funding model favoring the increase of enrollment in favor of an outcome-based model (Performance Based Funding) that rewards postsecondary degree completion. Considering the point of view of Jones (2013), it can be argued that the goals of the Completion Agenda parallel the stated goal of the outcome-based model of higher education by rewarding increases in the number of students earning tertiary degrees. Critics of the outcome-based model suggest gains in providing access to at-risk student populations will diminish as institutions narrow their focus to students who have demonstrated a greater likelihood for success (Jones, 2013).

As a result of changes in tertiary education funding policies in the last decade of the 20th century, institutions that were formerly considered state-funded are now considered state-supported (Barry, 1998; Finney & Kelly, 2004). Expenditures once covered through state appropriation revenue are now covered through increased tuition being charged to students (Barry, 1998). Tuition and fees often experience the greatest percentage increase during recessionary periods when individual incomes are either declining or remain constant (Hauptman, 1997). Competition for limited financial resources among competing public agencies, coupled with calls for financial restraint from the public have resulted in declining financial support to state colleges and universities (Barry, 1998; Hauptman, 1997; Finney & Kelly, 2004).

Financial Aid Policy

Scholarly research by Dynarski (2002) and Arendt (2013) maintain that there is significant evidence of the effect of student aid on tertiary education access while little is known regarding its impact on attainment. Hillman (2013) suggests need-based and merit-based financial aid programs are viable tools for federal and state policymakers to address issues of tertiary education affordability. Moreover, Becker (1993) and Arendt (2013) maintain that the provision of financial aid is critical in aiding underrepresented groups in increasing their human capital in the form of tertiary education attainment. Arendt (2013) further argues that the provision of grants in aid that do not require repayment increases student persistence and contributes to increasing college affordability in underrepresented groups. In addition, Leslie and Brinkman (1987), Heller (1997) and Hu and St. John (2001) argue that economic capital in the form of need- and merit-based financial aid positively impact tertiary education enrollment, persistence and completion.

A growing body of scholarly research regarding students (Heller & Marin, 2002; Singell & Stone, 2002; Heller, 2004; Heller & Marin, 2004; Hossler, 2004; Dynarski, 2004; Cornwell, Mustard, & Sridhar, 2006; Doyle, 2010; Groen, 2011 and Gieser, 2012) asserts that recipients of merit-based aid programs disproportionately come from affluent backgrounds where their probability of college enrollment is greater. Critics of merit-based financial aid suggest lottery-funded merit-based aid is regressive in nature with low-income and lower-middle income families contributing larger amounts of their household income to these programs while receiving smaller portions of their benefits when compared to their higher-income counterparts (Perna & Li, 2006) and (Webber & Boehmer, 2008).

While opposition to need-based grants is found in public policy discussions, limited scholarly research was identified disputing the need for income-based aid intended to promote access to postsecondary education. However, Webber and Boehmer (2008) espouse that the majority of states have elected not to establish policies that provide significant state-funded aid based on student need. Moreover, policymakers rarely approve legislation that considers a combination of need and merit in the provision of student-based financial aid (Finney & Kelly, 2004).

Historically, federal support for higher education in America represents half of the expenditures contributed by state governments (Hauptman, 1997). When considering state and federal government support for higher education, it is important to consider appropriations made directly to institutions and portable aid awarded directly to students (Finney & Kelly, 2004). Federal support for postsecondary education in the form of loans, need-based grants and college work-study programs have provided access to a large number of first-generation and economically=disadvantaged students (Dynarski, 2000; Webber & Boehmer, 2008). Unfortunately, federal need-based grants in aid have not grown in direct relationship to the percentage increase in tuition (Singell, Waddell, & Curs, 2006).

Hauptman (1997) indicated the United States contributed a greater proportion of its gross domestic product toward higher education than any other county in the 1990s. The presence of federal funds is unclear because academic support in the form of student aid is not expressed as an expenditure on federal budgets or as revenue on college and university budgets (Hauptman, 1997). Prior to the passage of the Higher Education Act, federal student aid focused on specific groups rather than individuals through the Servicemen's Readjustment Act of 1944 (GI Bill) (Clark, 1998) and the National Defense Education Act (NDEA) (Urban, 2010).

As articulated by Dynarski and Scott-Clayton (2013), Gaston (2004), Hannah (1996), Astin and Oseguera (2004) and TG Research and Analytical Services (2005), the impact of the seven Title Higher Education Acts of 1965 (HEA/Act) was groundbreaking by significantly expanding to tertiary education access by increasing affordability and accountability while solidifying the federal government as the principal source of financial support for college students. Through the acts' 1972 reauthorization, the first federal portable direct need-based (Pell) grant in support of tertiary education aid program was authorized (TG Research and Analytical Services, 2005; Rubin, 2011).

Wavering public support for postsecondary institutions has led to changes in taxpayer funding in higher education (St. John, Shouping, & Weber, 2001; Brown & Gamber, 2002; Webber & Boehmer, 2008). Colleges and universities have responded by supplanting lost revenue by shifting costs to students and their families (Barry, 1998). Hauptman (1997) maintains the cost of enrollment at institutions of higher education has increased while incomes for middle class and lower class families have stagnated. Lower-income families, non-traditional adult students and students who have a history of poor academic performance are categories of students who have been afforded greater access to tertiary education as a result of financial policies that rewarded increased enrollment (Jones, 2013).

Perna and Li (2006) propose low-class and lower-middle-class family incomes grew at a slower rate than those of upper-middle and upper class families. The significant percentage increase in tuition coupled with the minor increase in need-based grants for low-income individuals have eroded the impact that grants have on reducing the net price of college (Hauptman, 1997; Perna & Li, 2006).

Perna and Li (2006) maintain federal and state legislative bodies must work in tandem with university governing boards and administrators to ensure higher education remains accessible and affordable. Postsecondary leaders must collectively work with federal, state and local government decisionmakers in designing policies that foster college affordably while not creating barriers to access (Perna & Li, 2006). When considering policies that provide support to students, agencies should consider programs that support both merit and individuals with the greatest need (Finney & Kelly, 2004). Policymakers may also consider providing support to secondary education programs that improve student preparation for tertiary education. While affordability remains a high profile issue (Perna & Li, 2006), pre-enrollment preparation for the rigors of higher education and the financial barriers of entry should receive increased focus (Engstrom & Tinto, 2008) as well.

Scholars maintain monetary support targeting students seeking tertiary education has come in the form of need-based and merit-based financial aid (Ness & Noland, 2007). Moreover, Singell, Waddell, and Curs (2006) assert both need- and merit-based grants in aid assist with access to tertiary education by decreasing the relative cost of enrollment for families from all socioeconomic backgrounds.

Data recorded in IPEDS suggest significant differences exist in standardized test scores, percentage of need- and merit-based grants in aid, and institution missions among University System of Georgia member institutions. Moreover, the type of grant in aid students received varied significantly between institution categories. Additionally, institutions with greater percentages of students graduating within six years of initial enrollment were awarded higher proportions of state/local grants in aid.

Conversely, institutions with the lowest percentages of students graduating within six years of initial enrollment were awarded higher ratios of need-based grants in aid per student. Institutions initially founded as two-year access institutions routinely observed attainment rates significantly below the median for all Georgia public colleges and universities. Webber and Boehmer (2008) and Arum and Roksa (2011) maintain the rate of attainment should not be surprising considering the students entering college in the 21st century are largely unprepared and require remedial coursework, which extends their time between initial enrollment and graduation.

Higher Education Act Of 1965

Dynarski and Scott-Clayton (2013), Gaston (2004), Hannah (1996), TG Research and Analytical Services (2005) view the impact of the seven title Higher Education Acts of 1965 (HEA/Act) as groundbreaking, asserting that the act took access a step further by increasing higher education affordability and accountability while solidifying the federal government as the principal source of financial support for college students. Prior to the passage of the Higher Education Act, federal student aid focused on specific groups instead of individuals the GI Bill (Clark, 1998; Ness & Noland, 2007) and the National Defense Education Act of 1958 (Urban, 2010).

The Act was initially composed of seven sections referred to as titles, each focusing on a specific component of higher education access (Lowry, 2009). As a result of Title IV's unique position as the primary vehicle used to promote access to postsecondary education by providing student funds, the researchers have elected to study the evolution of this policy area in greater depth. The 1968 reauthorization of the Higher Education Act solidified itself as the dominant student aid program (Lingenfelter & Lenth, 2005).

Significant research has been devoted to Title IV of the HEA (Dynarski & Scott-Clayton, Ewell, 2003; Mercer, 2008; Hannah, 1996; TG Research and Analytical Services, 2005). As articulated by Gilbert and Heller (2013), the overwhelming majority of the funds allocated through the Higher Education Act were appropriated to Title IV of the act. Gilbert and Heller (2103), Lingerfelter and Lenth (2005) and TG Research and Analytical Services (2005) contend that the provision of federal aid through this section of the HEA made this legislation the most impactful and extensive action taken in support of higher education access to that point in American history. The three main components of Title IV were educational opportunity grants, federally-insured loans and college work-study (Ness & Noland, 2007; Gilbert & Heller, 2013; U.S. Department of Education, 2014).

A major diversion from previous legislation designed to promote college access was the creation of the Equal Opportunity Grant (Fong, 2005; Strach, 2009). The Equal Opportunity Grant provided grants in aid directly to institutions that enrolled low-income students (Rubin, 2011). The 1972 reauthorization of the HEA took a considerable step toward reducing the financial barriers to college that had existed for poor students (Johnson, 2014). The most notable amendment to the act approved during this period was the creation of the Basic Educational Opportunity Grant (BEOG), which became known as the Pell Grant in 1980 (Mullin, 2013). The Basic Educational Opportunity Grant was the first federal direct need-based tertiary education aid program (Rubin, 2011).

Ewell (2003) and Fong (2005) maintain that in an effort to diminish the necessity of poor students to secure debt to enroll in college, the 1972 reauthorization emphasized need-based grants in favor of loan programs. Moreover, Baime and Mullin (2010) assert need-based financial aid expresses the federal government's commitment to assist in the provision of tertiary

education to students regardless of socioeconomic background. The 1972 legislation also took a considerable step toward reducing the financial barriers to college that had existed for poor students (Johnson, 2014). Strach (2009) and Gaston (2004) maintain a significant modification that accompanied the 1972 reauthorization was the expansion of Title IV financial aid eligibility to include students attending proprietary institutions.

Eligibility for need-based grants like the Pell Grant is based on the federal or individual institutions' calculation of a student's expected family contribution (EFC) toward the cost of college enrollment (Rubin, 2011; Department of Education, 2014). A family's EFC is determined by information included on the Free Application for Student Financial Aid (FASFA), which is completed by the student and/or his family based on the family's income from the most recently completed tax year (Rubin, 2011; Department of Education, 2014). The Educational Opportunity Grant was renamed the Supplemental Educational Opportunity Grant (SEOG) and became a supplement to the BEOG (Rubin, 2011).

Pell recipients are predominately from families with low socioeconomic status (Wei, Horn and Carroll (2002) who are unable to leverage cultural and economic capital to the same extent as their more affluent counterparts (Andersen & Hansen, 2012). In a *Special Report: Pell Grants: The Cornerstone of African-American Higher Education,* the Journal of Blacks in Higher Education (2009) maintains a quarter of all federal need-based grants in aid are awarded to African American students. Horn and Premo's (1995) findings support those of Wei, Horn and Carroll's (2002): They concluded Pell recipients often display characteristics associated with other academically disadvantaged students who are less prepared for the academic rigor associated with tertiary education.

Dynarski and Scott-Clayton (2013) assert that the success of the 1972 reauthorization resulted in minor changes during the act's 1976 reauthorization. Rubin (2011) maintains changes to the eligibility guidelines for the Basic Educational Opportunity Grant provided broader access to the program. The legislation furthermore raised the maximum grant from $1,400 to $1,800 (Rubin 2011; TG Research and Analytical Services, 2005). The maximum Pell grant for the 2011-12 award year (July 1, 2011, to June 30, 2012) was $5,550 (Department of Education, 2014).

Hearn (1993) asserts that while the total amount of federal aid increased, the percentage of growth radically decreased compared to prior periods. Studies by Johnson (2014), Dynarski and Scott-Clayton (2013) and TG Research and Analytical Services (2005) affirm the practice of transitioning responsibility to families to pay a greater percentage of the cost for tertiary education

Studies by Orfield (1990) and Hansen (1983) uphold that the late 1970s and early 1980s saw the beginning of the change in attitude toward higher education financial aid policy. Johnson (2014), Hearn (1993), and Hartle (1990) underscore the effects of the economic downturns during the presidencies of Jimmy Carter and Ronald Regan, the general public's attitude of shifting away from one of paternalism and factors that led to families contributing a greater percentage of their personal assets to the cost of tertiary education. A study conducted by Hannah (1996) supports previous research espousing a deeply divided Congress and an Executive Branch that did not support additional higher education expenditures characterized the early 1980s. Wavering public support for postsecondary institutions led to changes in taxpayer funding for higher education (St. John, Shouping & Weber, 2001; Brown & Gamber, 2002;

Webber & Boehmer, 2008). Colleges and universities resorted to supplanting lost revenue by shifting costs to students and their families (Barry, 1998).

The 1970s also saw higher education policy focus expand as Hearn and Longanecker (1985) and Lowry (2009) emphasize that policymakers began expanding focus beyond low-income students by removing income caps on guaranteed student loans with the passage of the Middle Income Student Assistance Act (MISAA). Previous postsecondary education policies focused on students of specific groups and students from lower socioeconomic backgrounds to the exclusion of middle-income students (Hansen, 1983; TG Research and Analytical Services, 2005). The Middle Income Assistance Act and The Higher Education Act extended the federal government's involvement by increasing access to tertiary education and address broader issues of tertiary education affordability.

Studies by Johnson (2014), Dynarski and Scott-Clayton (2013) and TG Research and Analytical Services (2005) affirm the practice of transitioning responsibility for families to pay a greater percentage of the cost for tertiary education continued through the reauthorization of the HEA in 1980, establishing the Parent Loans for Undergraduate Students (PLUS) program, which allows parents to borrow funds to cover the costs of postsecondary education on behalf of their children.

The 1986 Amendments to the Higher Education Act limited the amount students were able to borrow to predetermined cost of enrollment ceilings (TG Research and Analytical Services, 2005; Hearn, 1993). Studies by Hannah (1996), TG Research and Analytical Services (2005), Kim and Rury (2007), Reuben and Perkins (2007) and Dynarski and Scott-Clayton (2013) detail the notable impact of the changes in loan provisions that also led to the replacement of need-based grants to low-income students with student debt and a decline in access to student

loans to middle-income students, which represented a reversal in both the principles set forth in the Truman Commission report and policies enacted through the Middle Income Student Assistance Act. The belief that need-based grants that supported tertiary education failed to keep pace with the growth in college costs was further supported by the Perna and Li's (2006) assertion that college affordability for lower-middle income and individuals also declined during the last two decades of the 20th century.

Research conducted by TG Research and Analytical Services (2005) and Hannah (1996) attempted to quantify the impact of the 1992 and 1998 reauthorizations, declaring three quarters of all aid awarded to students seeking postsecondary education is disbursed through Title IV of the HEA. A study by Johnson (2014) confirms research conducted by Lingenfelter and Lenth (2005) and Dynarski and Scott-Clayton (2013), which suggests access remained a concern; however, maintaining existing funding levels grew into overriding public policy apprehension during periods of declining federal budgets.

As previously stated, the initial intent was for the HEA to be considered for reauthorization every six years (Florio, 1980). The next reauthorization of the HEA initially scheduled for 2003 occurred in 2008 after a record 14 extensions over four years (Lowry, 2009; Derthick & Dunn, 2009). The economic aftermath of the Sept. 11, 2001, terrorist attacks and the subsequent wars coupled with domestic issues, including the destruction caused by hurricanes Katrina and Rita, dominated the legislative agenda delaying the review of other policy initiatives (Smole, Naughton, Kuenzi, & Skinner, 2008).

While Barry (1998) suggests that the rise in college costs are a result of natural economic cycles that are self-correcting over time, legislators focused on issues of affordability and accountability when approving the 2008 reauthorization (Johnson, 2014). Consistent with the

abundance of scholarly research, Singell, Waddell and Curs (2006) maintain Pell Grants have increased access to tertiary education at Georgia public colleges and universities. In AY 2004 – 2005, the maximum Pell Grant varied based on a family's expected family contribution with a maximum award of $4,050 (Rubin, 2011). The family with an EFC at or below $3,850 was eligible for some portion of a Pell Grant based on a sliding scale of household income in AY 2005 (Department of Education, 2014).

Need-Based Financial Aid

Strach (2009) maintains the Serviceman's Readjustment Act of 1944 was the federal government's most far-reaching education policy initiative since the Morrill Act of 1890. As articulated by Mettler (2005), NeHighess and Noland (2007) and Mullin (2013), the Serviceman's Readjustment Act of 1944 — more commonly known as the G.I. Bill — marked the true beginning of federal involvement in higher education financing. The GI Bill provided previously underrepresented groups with a wide range of benefits, including access to postsecondary education (Mettler, 2005; Kim & Rury, 2007; Rose, 2012; Mahoney, 2013; Jolly 2013). Herbold (1995) and Turner and Bound (2003) submit that while the GI Bill provides greater access to ethnic minorities, its impact was not as great for racial minorities, especially African Americans.

The low socioeconomic status of many African American families during the middle of the 20th century necessitated that African American ex-servicemen forgo postsecondary education benefits provided by the GI Bill and seek immediate employment to provide for their families (Herbold, 1995). Clark (1998) maintains the lasting impact of the GI Bill was that it created a precedent: Its reauthorization allowed benefits to be provided to veterans of the Korean

and Vietnam wars as well as the passage of the Montgomery GI Bill, which provides post-service benefits to present day veterans.

Merit-Based Financial Aid

Early endeavors to offer merit-based financial aid can be traced to the California Master Plan of 1960 that provided no cost tertiary education opportunities at the state's public colleges and universities (Ness & Noland, 2007). Beginning with the last decade of the 20th century, merit-based grants have increasingly become an important source of student financial support (Heller & Marin, 2002). As a recent study by Hu, Trengove, and Zhang (2012) suggests state-sponsored financial aid programs that reward performance and academic achievement have increasingly become prevalent. Moreover, merit-based financial aid has progressively been viewed as a vehicle used by states to induce students to enrollment in postsecondary education in their state of residency, and support degree attainment while rewarding high achieving college bound students (Zhang, 2011). As explicated by Chen (2004) Ness and Noland (2007) and Ness (2010), merit based financial aid is also politically attractive to middle- and high-income voters because its funding is not dependent on increasing taxes.

The inauguration of Zell Miller as the governor of Georgia in 1991 initiated the process of establishing the first state-sponsored merit-based grant in aid program for tertiary education program, the Helping Outstanding Pupils Educationally (HOPE) Program (Dee & Jackson, 1999; Dynarski, 2000; Chen, 2004; Brown, 2007; Georgia State Finance Commission [GSFC], 2014). Prior to the creation of the HOPE scholarship, a majority of merit-based aid was funded directly to individual institutions in attempts to attract students matching a particular profile (Cornwell, Mustard, & Sridhar, 2006; Brown, 2007). As explained by Brown (2007), unlike the federally-funded Pell Grant program, merit-based grants in aid are awarded without consideration for a

student's demonstrated financial need. Moreover, Dee and Jackson (1999) and Chen (2004) maintain that the initial HOPE eligibility requests were based on scholastic performance and in-state residency.

The Georgia Student Finance Commission maintains that the components of the HOPE program that directly impact postsecondary education includes the Zell Miller Scholarship and the HOPE Scholarship Program (GSFC, 2014). The HOPE scholarship is not limited to students attending a public postsecondary institution. Between September 1, 1993, and August 30, 2014, Georgia's public colleges and universities awarded $4.9 billion in merit-based HOPE Program aid to 800,464 students (GSFC, 2014).

A significant body of research Heller and Marin (2002), Dynarski, 2004, Heller (2004) Hossler (2004), Doyle (2010), Groen, (2011), Zhang (2011), and Gieser, (2012) assert recipients of merit-based aid programs disproportionately come from White affluent backgrounds where their probability of college enrollment is greater without the financial support provided by the HOPE Scholarship. Dee and Jackson (1999), Dynarski (2000), Singell and Stone (2002), Chen (2004), and Clotfelter (2004) further support previous assertions suggesting that merit-based aid programs benefit middle-income Caucasian students, while Cornwell, Mustard, and Sridhar (2006) argue that the large number of public Historically Black Colleges and Universities located in Georgia led to significant enrollment gains of minority students after the creation of the HOPE Scholarship. Singell, Waddell, and Curs (2006) provide additional support to Cornwell, Mustard, and Sridhar (2006) arguing that the enrollment of economically-disadvantaged students at Georgia's colleges and universities increased after the creation of the HOPE scholarship.

Cornwell, Mustard, and Sridhar (2006) suggest that the initial eligibility requirements were equally punitive to low-income students as they reduced any HOPE merit-based award

equal to the amount of a student's federal need-based award, effectively decreasing the economic benefit provided to the student. However, Chen (2004) maintains that the creation of the HOPE program created optimism in various classes of students that resulted in increases in college enrollment by students from economically-disadvantaged backgrounds.

Critics of merit-based grant in aid programs maintain these programs divert scarce resources from programs that can aid in promoting access to students from underrepresented and low-socioeconomic groups (Brown, 2007). Opponents further cite that students who elect to enroll in more challenging academic courses as well as disadvantaged and minority students are at a greater risk of not having their scholarships renewed (Dee & Jackson, 1999). Despite the varied lens, both supporters and detractors agree that the HOPE Program increased the number of Georgia high school students electing to enroll in local tertiary education institutions (Chen, 2004; Cornwell, Mustard, & Sridhar, 2006).

Summary Of The Literature On Financial Support

As a part of the literature review, the researcher has identified several factors that influence tertiary education attainment: academic preparation, institutional support from state government and the provision of need-based and merit-based financial aid awarded directly to students. Several overarching factors emerge when assessing (for clarity) the literature regarding human capital factors that influence tertiary education attainment.

First, the literature addresses the complex and unique challenges tertiary education finds itself in today and in the future related to the goals of the Completion Agenda. The literature also addresses the scholarly works that include access, affordability and attainment that dominate the research on the future of postsecondary education (Hansen, 1983; Hearn & Longanecker, 1985; Kane, 1999; Morris, 2005; Heller, 2011; Gilbert & Heller, 2013).

Second, the literature addresses the absence of a single statement that clearly defines postsecondary education affordability (Wharton, 2001; Finney & Kelly, 2004; Heller, 2011). A review of higher education affordability is limited by the absence of data regarding students who opted out or dropped out because of an inability to cover unmet need (Perna & Li, 2006). When considering affordability, policymakers and scholars must consider student support provided by individual institutions that is not tracked by a national database making its impact difficult to access (Finney & Kelly, 2004).

Third, the existing research supports the assertion that federal legislation has provided unprecedented access to first generation low- and middle-income families (Webber & Boehmer 2008; Dynarski & Scott-Clayton, 2013). The literature also supports the assertion that the introduction of merit-based financial aid resulted in increased enrollment and increasingly competitive admissions standards at Georgia's public colleges and universities.

The gap in the literature encompasses the correlation of federal need-based and state merit-based aid on tertiary education attainment. As Dynarski (2000) and Chen (2004) articulate, merit-based grants are popular with the citizenry and policymakers, but little is known regarding their impact on attainment. Moreover, the literature is scarce regarding the impact on attainment of low-income students who were awarded both Pell Grants and HOPE Scholarships (Cornwell, Mustard, & Sridhar, 2006). One of the most significant factors of relevance in this research study is the impact of economic, social and cultural capital on tertiary education attainment at Georgia's public colleges and universities.

Through the analysis of graduation rates, the awarding of federal need-based educational entitlement grants, state level merit-based scholarships and performance on the Scholastic

Aptitude Test (SAT), the researcher can arrive at various conclusions on how these variables impact student outcomes.

Other Studies Employing the Research Methodology

Recent scholarly studies by Cornwell, Mustard, and Sridhar (2006); Singell, Waddell, and Curs (2006); Zhang (2011) and Hu, Trengove, and Zhang (2012) suggest that the enrollment of first-time full-time Georgia residents at Georgia's public colleges and universities increased by more than 5% after the introduction of the HOPE merit-based financial aid program. Moreover, Dynarski, 2004 and Zhang and Ness (2010) cite the spillover effects related to policy diffusion of Georgia's HOPE program as a major factor that led to increased enrollment at public colleges and universities in states that adopted merit-based aid programs after Georgia.

While there are multiple studies that argue that merit aid programs increase both access and enrollment in tertiary education, Dee and Jackson (1999) maintain that there is an absence of scholarly research regarding the impact of merit-aid on degree completion. Zhang (2011) and Hu, Trengove, and Zhang (2012) offer support to Dee and Jackson (1999) arguing that a significant number of students who earn merit-based scholarships fail to remain eligible for them after their first year in college. However, Zhang (2011) did find that degree completion from Georgia's public colleges and universities increased after the introduction of the HOPE scholarships.

Numerous studies that have considered the effect of need-based grants in aid largely find no effect, or only a small positive one, of need-based grant awards on postsecondary education enrollment. Hansen (1983) employed a time- series data analysis and a difference-in-differences approach in comparing enrollment rates of students from varying socioeconomic statuses (SES) before and after federal direct need-based grants in aid were included in the 1972 reauthorization

of the Higher Education Act. He did not find a significant difference in enrollment patterns of financially-disadvantaged students in the decade immediately following the introduction of need-based financial aid. Exercising the identical approach used by Hansen, Kane (1995) limited the research to only look at women and expanded the time period of study. He also found that the introduction of need-based grants did not meaningfully impact enrollment in tertiary education.

Using a binary logistic regression model, Wetzel, O'Toole, and Peterson (1999) studied the impact of economic capitalization on student retention at a large public university. They found need-based grants in aid had a positive effect on student progression toward graduation. Similar to Wetzel, O'Toole, and Peterson, Singell (2001) studied the impact of financial aid on persistence at a particular university. Singell differed from prior research by considering both need- and merit-based grants in aid. He found that both need- and merit-based financial aid improved persistence at a single large public university.

A more recent national study by Wei and Carroll (2002) used a multiple analysis to consider the impact of need-based financial aid on progression toward graduation and college completion. If Wei and Carroll (2002) are correct, federal need-based financial aid recipients at public four-year institutions persisted at relatively the same rate as non-Pell Grant award recipients. Wei and Carroll (2002) utilized data from the 1996 Beginning Postsecondary Students Longitudinal Study to focus on tertiary education enrollment, persistence and completion at a broad cross-section of institutions, including public four-year institutions, private not-for-profit four-year institutions and less than four-year institutions. Horn and Premo's (1995) findings support those of Wei, Horn and Carroll (2002). They concluded that Pell recipients often display characteristics associated with other academically-disadvantaged students who are less prepared for the academic rigor associated with tertiary education.

Using the Ohio Board of Regents dataset, Bettinger (2004) utilized regression-discontinuity design to note an increase in college enrollment rates for students who were eligible for need-based aid. Bettinger also discovered the presence of need-based grants in aid positively impacted student retention. Rubin (2011) extended the discontinuity research conducted by Bettinger (2004) and drew similar conclusions using statistics from a national dataset retrieved from the Educational Longitudinal Study of 2002 (ELS, 2002) where he focused on need-based aid eligibility and college enrollment of traditional students.

A 1995 report from the U.S. Government Accounting Office as well as Rubin (2011) further support previous studies suggesting there is a direct correlative relationship between persistence and need-based grants in aid at public colleges and universities. Limited research was found that focused on the impact of both need- and merit-based financial aid on student attainment. Georgia's unique position as a frontrunner in the provision of state-sponsored, merit-based financial aid (Dee & Jackson, 1999; Chen, 2004; Cornwell, Mustard, & Sridhar, 2006) suggests increased need for this research.

Studies by Hansen (1983); Kane (1995); Wetzel, O'Toole, and Peterson (1999); Wie and Carroll (2002); Bettinger (2004) and Rubin (2011) have considered the single dimension of need-based grants in aid and its impact on access and persistence of academically- and economically- disadvantaged students. In order to gain a broader understanding of factors that influence tertiary education attainment, it is critical that we expand our analysis of factors that influence completion, including the extent students have accumulated social and cultural capital.

Application to the Work

Considering roughly one in five states have implemented merit-aid programs (Ness, 2010) and portable federal need-based aid is available to all students with demonstrated financial

need (Hannah, 1996; Hauptman, 1997; Gaston, 2004; TG Research and Analytical Services, 2005; Dynarski & Scott-Clayton, 2013), this study could prove to be valuable for higher education policymakers, intermediaries, institutional researchers and others.

General Plan of Work

The plan for the work includes entering into a cooperative agreement with the University System of Georgia (USG) where the USG provided student-level data from academic years 2005 through 2010. The agreement with the USG does not contain a quid pro quo clause and allows for conclusions to be drawn regarding relationships based on data-driven evidence free from political influence.

Guiding Conceptual Framework

A substantial body of sociological research (Bourdieu & Passeron, 1977; Becker, 1993; Bourdieu, 1996; Bettinger, 2004; Daire, LaMothe & Fuller, 2007; Andersen & Hansen, 2012; Xu & Hampden-Thompson, 2012; Gieser, 2012; Braucher, 2012; Lata, 2013; Flemmen, 2013) has been devoted to the application of a framework of human capital to tertiary education. Moreover, Becker (1993), Bettinger (2004) Daire, LaMothe, and Fuller (2007) and Rubin (2011) uphold that increasing a person's education is a form of human capital investment. Becker (1993) and Flemmen (2013) further apply the human capital model to tertiary education by combining the cultural, economic, social and symbolic capital framework discussed by Bourdieu (1985; 1989; 1998). Recent studies by Rubin (2011), Braucher (2012) and Gieser (2012) suggest economic capital informs higher education through the provision of student financial aid. Tertiary education is considered a source of cultural capital when used to advance an individual's socioeconomic status (Gieser, 2012).

The notion of human capital is further applied to tertiary education through the application of positive discrimination, suggesting students with higher levels of cultural, economic and social capital persist in tertiary education at a higher rate than students who do not possess these characteristics (Jaeger, 2011; Andersen & Hansen, 2012; Rubin, 2011). In addition, Bourdieu and Passeron (1977) state that social stratifications are further expressed in tertiary education in the form of merit. As expressed by Lata (2013), a student's selection of a college or university changes in direct proportion to the quantity of cultural capital possessed.

When considering how human capital impacts postsecondary education, the researcher must consider how social reproduction theory promotes intergenerational imbalance (Bourdieu & Passeron, 1977; Kraaykamp & Van Eijck, 2010). As explicated by Lata (2013), social capital can be transferred between generations, furthering the inherent benefits of favor. Engstrom and Tinto (2008) embrace the notion that there is a correlation between socioeconomic status (SES) and other forms of human capital shown to impact tertiary education completion. While recent high school graduates comprise one-third of college enrollment (Horn & Premo, 1995), students from high-income families were more likely to persist and complete postsecondary education at greater rates due to higher levels of support.

Economists strengthen the model proffered by sociologists arguing that expenditures on tertiary education increase an individual's career opportunities and earning power (Mincer, 1958; Schultz, 1961; Bitzan, 2009; Park, 2011; Hwang, Liao, & Huang, 2013). Early research by Walsh (1935) and Schultz (1961) maintain that the investment in the education of young people yields lasting economic benefits. Scholarly research by Hwang, Liao and Huang (2013) further supports previous studies arguing that employers are willing to make a greater investment in terms of real wages in employees whose education continues beyond the secondary level.

Bitzan (2009) and Hwang, Liao and Huang (2013) extend previous research to explore the impact of educational attainment (the sheepskin effect) on the wage gap between Caucasian and African Americans. Moreover, Bitzan (2009) found that the return on investment in tertiary education was greater for underrepresented groups when compared to their majority peers.

As articulated by St. John, Shouping, and Weber (2001), Brown and Gamber (2002) and Webber and Boehmer (2008), public sector support for tertiary education has wavered, leading to decreased taxpayer funding of higher education. Colleges and universities responded by supplanting lost revenue through shifting costs to students and their families (Barry, 1998). Dynarski (2002) asserts that little is known about the impact of financial aid on college completion; however, economic capital is a significant factor in decisions related to college choice and enrollment.

A growing body of research (McPherson & Schapiro, 1991; Kane, 1999; Dynarski, 2000; Ellenwood & Kane, 2000; Heller & Marin, 2002; Singell & Stone, 2002; Wei, Horn, & Carroll 2002; Heller, 2002; Bettinger, 2004; Heller, 2004; Cornwell, Mustard, & Sridhar, 2006; Doyle, 2010; Groen, 2011; Rubin, 2011) demonstrates economic capital in the form of financial aid impacts tertiary education attainment.

Studies by Kane (1999), Ellenwood and Kane (2000) and Doyle (2010) extend the previous literature, suggesting both need- and merit-based aid programs that are free from repayment expand students' human capital and increase access, persistence and attainment for underrepresented groups. Reay (2004), Jaeger (2011) and Andersen and Hansen (2012) noted students from higher social economic backgrounds qualify for merit-based aid programs at a greater rate than students from lower socioeconomic backgrounds.

The argument suggesting institutions must intensify their focus on persistence is strengthened by Rhoades' (2012) assertion that policymakers are progressively transitioning to outcome-based funding models without increasing the allocation of public funds. A study by Johnson (2014) confirms research conducted by Lingenfelter and Lenth (2005) and Dynarski and Scott-Clayton (2013) suggesting access remained a concern; however, maintaining existing funding levels grew into overriding public policy apprehension. During this period, institutions also experienced a severe decline in federal budget allocations.

Studies by Hannah (1996), TG Research and Analytical Services (2005), Kim and Rury (2007), Reuben and Perkins (2007) and Dynarski and Scott-Clayton (2013) detail the notable impact of the changes in financial aid provisions that led to the replacement of need-based grants to low-income students with student debt and a decline in access to student loans to middle-income students. This change represented a reversal in both the principles set forth in the Truman Commission report and policies enacted through the Middle Income Student Assistance Act.

The belief that need-based grants that supported tertiary education failed to keep pace with the growth in college costs was further supported by Perna and Li's (2006) assertion that college affordability for lower-middle income individuals also declined during the last two decades of the 20th century.

If Gieser (2012) is correct, a human capital model provides a valuable framework for analyzing inequalities in tertiary education. Moreover, Flemmen (2013) asserts the human capital theory advanced by Bourdieu (1985; 1989; 1998) offers a structure to evaluate disparities resulting from class. The researcher maintains human capital incongruences and their relationship to both college and university completion rates can be explicated through the lens of students who are awarded both merit- and need-based financial aid.

As articulated by Farkas, Grobe, Sheehan, and Shuan (1990) and Lata (2013), cultural capital is a non-economic quality in the form of educational or intellectual asset, advancing progress outside economic resources. Moreover, Jæger (2011) asserts students from higher socioeconomic backgrounds possess higher quantities of cultural capital. The greater accumulation of cultural capital results in prolonged benefits for students from advantaged backgrounds when compared to their socioeconomically-disadvantaged counterparts (Jaegar, 2011).

Tinto (1987, 1997) expanded previous research regarding human capital by suggesting experiences within the educational and social systems as factors that influence student attainment. Furthermore, Engstrom and Tinto (2008) and Gieser (2012) maintain that increasing student engagement in extracurricular and co-curricular activities positively impacts students' levels of cultural and social capital resulting in higher levels of student attainment.

The present study will integrate aspects of theories espoused by Tinto (1987, 1997), Engstrom and Tinto (2008), Bourdieu and Passeron (1977), Becker (1993), Bourdieu (1996) and Bettinger (2004) into a wide-ranging conceptual model for increased understanding of the correlation between financial aid sources and student attainment. The study will further consider student socioeconomic profile and its impact on access to human capital as a resource contributing to student success (Lareau & Horvat, 1999).

A linear probability model (LPM) approach will be used to analyze the extent a statistically significant relationship exists between student attainment and the awarding of federal need-based grants in aid and/or Georgia merit-based HOPE scholarships. Consistent with Toutkoushian (2005, 2007) asserts quantitative studies utilizing multivariate analysis are

valuable in estimating relationships between variables. Regression affords researchers increased elasticity in the assessment of the correlation of variables (Toutkoushian, 2005).

CHAPTER 3

METHODOLOGY

Research connected to access and enrollment is broad, yet limited scholarly research has been done that examines the impact of both need-based and merit-based financial aid on tertiary education attainment. To limit the range and to provide desired information, this study focused on investigating the individual student characteristics that influenced degree attainment among Georgia residents who enrolled as first-time full-time freshmen at public colleges and universities in Georgia. Exclusively considering student who qualified for need-based or merit-based aid at the time of enrollment further narrows the study. As articulated by Dee and Jackson (1999), approximately half of all students who are initially awarded HOPE Scholarships become ineligible after the first year of enrollment in postsecondary education. The methodology section of this study presents the research questions, data sources and methods and variables used to address the research questions.

Research Questions

RQ1. To what extent does receiving the Pell Grant or HOPE Scholarship predict degree attainment?

RQ2. To what extent does receiving the Pell Grant and HOPE Scholarship predict degree attainment?

RQ3. To what extent does a student's race/ethnicity, gender, age and standardized test score predict degree attainment?

Research Design

Following approval from the University of Georgia's Office of Human Subjects, I conducted a quantitative study using data obtained from the University System of Georgia (USG). This study presents a statewide picture of degree attainment within the USG. In addition, the study seeks to inform how the components of human capital (social, cultural and economic) contribute to tertiary education degree attainment.

Data and Participants

The USG Research and Policy Analysis (RPA) office stores student level data captured by the institutional research offices of each college and university in the Georgia system. The Research and Policy Analysis Office is a part of the Department of Planning within the Division of Administrative and Fiscal Affairs and is tasked with the collection and analysis of data used for making effective data-driven strategic policy decisions. Research and Policy Analysis examines postsecondary education and correlated policy issues at the state and national levels and their influence in Georgia. Through collaborative efforts with the Division of Academic Affairs and other USG divisions, the office recommends and implements tertiary education policy. The focus of this study includes students within the University System of Georgia. During the period reviewed, the USG was comprised of 31 four-year colleges and universities.

During the 2004 – 2005 academic year, there were 37,614 students classified as first-time full-time freshmen included in the University System of Georgia dataset. I include students who enrolled in any college, including community colleges, for the first time in 2004, and I track the students through the 2009-2010 academic year. Students who did not meet the Georgia Residency requirements for 12 consecutive months immediately prior to the first day of classes of the Fall 2004 term would not be eligible to receive the HOPE Scholarship and were excluded.

This exclusion decreased the sample size by 4,342 resulting in 33,272 students being included in this study. The 2004 cohort period was used to allow students that graduated within 150% time to be included in the degree completion analysis.

Research Strategy

Through a collaborative agreement with the University System of Georgia (USG), I have been allowed access to anonymous student data from Georgia's public institutions. The study will be conducted using data obtained from the USG, and using the GNU Regression, Econometric and Time-series Library (GRETL), version 1.9.91, following a linear probability model strategy to determine factors that predict attainment.

As articulated by Mustafa, Riaz, and Perveen (2015), the use of linear probability analysis in scientific research can be traced back to the 19th century. Anghelache, Manole and Anghel (2015) further support previous research arguing that linear probability analysis is well suited to measure the influence independent variable has on dichotomous dependent variables.

Descriptive Analyses

The study will include a descriptive inspection of students' characteristics. This information will also assess individual student attainment rates based on the type of financial aid awarded -- merit- and need-based. Characteristics also include student gender, race/ethnicity, standardized test score and length of student enrollment during the research period. The descriptive characteristics will be used to address the research questions.

The next part of the analysis will evaluate the extent correlative relationships exist between student characteristics and the outcome variable of degree attainment to address the research questions. This analysis will determine if there is evidence of a statistically-significant relationship between degree attainment and the independent variables. Finally, the analysis will

illustrate the extent human capital (economic, social, and cultural) influence degree completion based on institution category: Research University, Comprehensive University, State University, or State College.

Linear Probability

The third part of the suggested analysis will answer the research questions on the extent to which race/ethnicity, gender, Pell Grant, and HOPE Scholarship predict degree attainment. A linear probability model is being developed using the dichotomous dependent variable, degree attainment. The 2004 cohort period was used to allow students that graduated within 150% time to be included in the degree attainment study. The following equation was used:

Degree Attainment = *f (*independent variables: (HOPE Scholarship; Pell Grant; Race/Ethnicity; Gender; Other Financial Aid, Math SAT, Verbal SAT, Institution Group)

DV_DegreeAttained = 0.174 - 0.112*PELLGRANT + 0.403*HOPEGRANT
(0.00418)(0.00542) (0.00481)

n = 33272, R-squared = 0.154

Variables and Their Measures

The variables for this study are from the Research and Policy Analysis Office of the University System of Georgia and will be used to address the research questions for this study.

Table 3.1

Dependent and Independent Variables

Variables	Description	Categories/Coding
Dependent Variable		
DV_DegreeAttained	Degree Attainment	0 = No Degree, 1 Degree Completed
Idependent Variable		
Hope	Merit Based Scholarship	0 = Hope Not Awarded, 1 Hope Awarded
Pell	Need Based Scholarship	0 = Pell Not Awarded, 1 Pell Awarded
ethnic_origin	Race/Ethnicity	1 - Black, 2 - White, 3 - Hispanic, 4 - Asian , 5 - Other
sex_code	Gender	0 = Male, 1 = Female
regents_fund_code	Financial Aid excluding HOPE or Pell	0 - Not Awarded Other Aid, 1 Awarded Other Aid
sat_math	Math SAT	Continuous
sat_verbal	Verball SAT	Continuous
Institution Group	USG institution groups	1 - Research, 2 - Comprehensive, 3 - State University, 4 - State College

Dependent Variables

The dependent variable for this study was degree attainment.

Degree Attainment: The degree attainment variable is dichotomous, meaning a degree was not conferred (Code: 0) or a degree was conferred (Code: 1).

Independent Variables

The independent variables are:

HOPE Scholarship: The HOPE Scholarship variable is categorical representing all students not awarded a merit-based Hope Scholarship (Code: 0) or a merit-based HOPE Scholarship was awarded (Code: 1) during their initial term of enrollment.

Pell Grant: The Pell Grant variable is categorical indicating whether a student was not awarded a need-based Pell Grant (Code: 0) or a need-based Pell Grant was received (Code: 1).

Gender: The gender of the students is categorical data with Male (Code: 0) or Female (Code: 1).

Dependency Status The dependency status variable is categorical. It is based on the students meeting the criteria to be considered dependent as stated in the Free Application for

Financial Aid. If the student was considered independent they (Code 0) if they were considered dependent (Code 1).

Race/ethnicity: The race/ethnicity of students' variable is categorical. It is also based on the federal standards for collecting race and ethnicity data. The following categories will be used to identify the different race/ethnicity groupings:

1. American Indian/Native Alaskan: A person having origins in any of the original peoples of North America, or who maintains cultural identification through tribal affiliation or community recognition (Code: I).
2. Asian: A person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or Pacific Islands. This area includes, for example, China, Japan, Korea, the Philippine Islands, Samoa, India and Vietnam (Code: Z).
3. Black/African American: A person having origins in any of the Black racial groups of Africa (Code: B).
4. Hispanic or Latino: A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race (Code: H).
5. Native Hawaiian/Other Pacific Islander: A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands (Code: P).
6. Unknown: Data not supplied by the student (Code: U).
7. White: A person having origins in any of the original peoples of Europe, North Africa or the Middle East (Code: W).

Table 3.2

Race/Ethnicity Coding

Variable	USG Code	Recoded
American Indian or Alaskan Native	I	5
Asian	Z	4
Black or African American	B	1
Hispanic or Latino	H	3
Native Hawaiian or Other Pacific Islander	P	5
Unkown	U	5
White	W	2

After isolating Black or African American, White, Hispanic or Latino and Asian a total of six students were coded as American Indian or Alaskan Native or Native Hawaiian or Other Pacific Islander. As a result, they were included along with the unknown students in the "Unknown Other" category.

Other Financial Aid: The Other Financial Aid variable is categorical indicating that a student was not awarded financial aid beyond HOPE Scholarships or Pell Grants including student loans (Code: 0) or was awarded financial aid beyond HOPE Scholarships or Pell Grants including student loans (Code: 1).

Table 3.3

Other Financial Listing

USG Fund Code	Long Description
ACCEL	ACCEL Scholarship
ATHLD	Athletic Scholarships - Disbursed
DIRECT	FDL Subsidized Loans
DLPLUS	FDL PLUS Loans
DLUNS	FDL Unsubsidized Loans
FEDLND	Other Federal Loans - Disbursed
FWS	Federal Work Study Awarded
INGTD	Institutional Need-Based Grants - Disbursed
INSCHD	Institutional Non-Need Based Grants - Disbursed
INSTLD	Institutional Loans - Disbursed
LEAP	Leveraging Educational Assistance Partnership Grant
LOAND	External Loans - Disbursed
OTHGTD	External Need-Based Grants - Disbursed
OTHSCD	External Non-Need Based Grants - Disbursed
PERK	Perkins Loans
PLUS	FFELP PLUS Loans
STFD	FFELP Subsidized Loans
STLND	State Loans - Disbursed
UNSTFD	FFELP Unsubsidized Loans
WISE	State Work-Study Awarded

Math SAT: The Math SAT variable is continuous. Students score between 200 and 800 on an examination administered by the Educational Testing Service and used to predict the facility with which an individual will progress in learning college-level arithmetic operations, including, but not limited to, algebra, geometry, statistics and probability.

Verbal SAT: The Verbal SAT variable is continuous. Students score between 200 and 800 on an examination administered by the Educational Testing Service and used to predict the facility with which and individual will progress in learning college-level critical reading, passages and sentence completions.

Institutions by Group: The Institutions by Group variable is categorical. It is based on the University System of Georgia institution groups based on purpose as defined by the Board of Regents. The following categories will be used to identify the different institutional groupings:

1. Research: A statewide scope of influence, a commitment to excellence and responsiveness in academic achievements that impart national or international status.
2. Comprehensive: A commitment to excellence and responsiveness within a scope of influence defined by the needs of a specific region of the state.
3. State University: Commitment to excellence and responsiveness within a scope of influence defined by the needs of an area of the state.
4. State College: A commitment to excellence and responsiveness within a scope of influence defined by the needs of a local area.

The data used for this study was from a period prior to the period of consolidation within the University System of Georgia.

- Augusta State University and Georgia Health Sciences University were consolidated in August 2012 creating Georgia Regents University and subsequently renamed Augusta University in 2015;
- Waycross College and South Georgia College were consolidated in January 2013, creating South Georgia State College;
- Macon State College and Middle Georgia College were consolidated in January 2013, creating Middle Georgia State College and
- North Georgia College & State University and Gainesville State College were consolidated in January 2013, creating the University of North Georgia.

While the consolidations of the institutions impact administrative operations, the data related to student attainment is not materially impacted by these efforts.

Table 3.4

USG Institutions by Group Post Consolidation

Name of Institution After Consolidation	Classification	Coding
Abraham Baldwin Agricultural College	State College	4
Albany State University	State University	3
Armstrong State University	State University	3
Atlanta Metropolitan State College	State College	4
Bainbridge State College	State College	4
Clayton State University	State University	3
College of Coastal Georgia	State College	4
Columbus State University	State University	3
Dalton State College	State College	4
Darton State College	State College	4
East Georgia State College	State College	4
Fort Valley State University	State University	3
Georgia College & State University	State College	4
Georgia Gwinnett College	State College	4
Georgia Highlands College	State College	4
Georgia Institute of Technology	Research	1
Georgia Perimeter College	State College	4
Georgia Regents University	Research	1
Georgia Southern University	Comprehensive	2
Georgia Southwestern State University	State University	3
Georgia State University	Research	1
Gordon State College	State College	4
Kennesaw State University	Comprehensive	2
Middle Georgia State College	State College	4
Savannah State University	State University	3
South Georgia State College	State College	4
Southern Polytechnic State University	State University	3
University of Georgia	Research	1
University of North Georgia	State University	3
University of West Georgia	Comprehensive	2
Valdosta State University	Comprehensive	2

Summary

An expanded grasp of the factors that contribute to the degree attainment of students attending public colleges and universities in Georgia will allow policymakers, university system officials and institution administrators to identify, develop and/or grow programs and services to improve graduation rates in support of the Complete College Georgia initiative. In addition, understanding how factors contribute to degree attainment can inform decisions regarding the allocation of financial resources in support of policies intended to support and reward tertiary education attainment.

CHAPTER 4

RESULTS AND ANALYSIS

The focus of this study is on investigating the individual student characteristics that influence degree attainment among students at public colleges and universities in Georgia. The researcher utilized GNU Regression, Econometric and Time-series Library (GRETL), version 1.9.91 to analyze data. Frequencies and percentages were conducted for categorical student demographics. Means and standard deviations were calculated for continuous variables. A series of linear probabilities were analyzed to determine which student characteristics were statistically significant in predicting degree attainment by institution type.

Descriptive Analysis

Frequency and percentages for student characteristics. A total of 33,272 college freshman was included in the archival data set. A majority of students were female (n = 18712, 56%). In addition, most of the students were of white ethnicity (n = 22634, 68%). Most of the participants were enrolled for Bachelor's degrees (n = 21040, 63%). Students were enrolled in four different university classifications: Research University (n = 7701, 23%), Comprehensive University (n = 7500, 23%), State University (n = 8923, 27%), and State College (n = 9148, 28%). Most students did not receive a financial aid award excluding HOPE or Pell (n = 19660, 59%). A majority of students did not receive the Pell Grant (n = 23539, 71%). A majority of students did receive the HOPE Scholarship (n = 23849, 72%). Most students did not receive both the Pell Grant and the HOPE Scholarship simultaneously (n = 27138, 82%). A majority of students did attain a college degree (n = 14307, 43%). Frequencies and percentages of the student characteristics are presented in Table 4.1.

Table 4.1

Frequencies and Percentages for Student Characteristics (All Institution Types)

Demographic	*n*	%
Gender		
Male	14560	44
Female	18712	56
Race		
White	22634	68
Black	7940	24
Asian	12	1
Hispanic	688	2
Other	1998	6
Degree Level		
Associate	9365	28
Bachelor's	21040	63
Career Associate	732	2
One Year Vocational-Related Certificate	1893	6
Less than 1 year	242	1
University Classification		
Research University	7701	23
Comprehensive University	7500	23
State University	8923	27
State College	9148	28
Other Financial Aid Award not HOPE or Pell		
Yes	13612	41
No	19660	59
Pell Grant Attainment		
Yes	9733	29
No	23539	71
HOPE Scholarship Attainment		
Yes	23849	72
No	9423	28
Pell Grant and HOPE Scholarship Attainment		
Yes	6134	18
No	27138	82
Degree Attainment		
Yes	14292	43
No	18980	57

Note. Due to rounding error, percentages may not sum to 100%.

Frequency and percentages for research universities. The number of students receiving financial aid awards, excluding HOPE or Pell, was about evenly distributed with 3565 (46%) receiving loans and 4136 (54%) not receiving loans. A majority of students in research universities did not receive the Pell Grant (n = 6144, 80%). A majority of students in research universities did receive the HOPE Scholarship (n = 7243, 94%). Most students in research universities did not receive both the Pell Grant and the HOPE Scholarship simultaneously (n = 6297, 82%). A majority of students in research universities did attain a college degree (n = 5422, 70%).

Frequency and percentages for comprehensive universities. The number of students receiving financial aid awards, excluding HOPE or Pell was approximately evenly distributed with 3647 (49%) receiving loans and 3853 (51%) not receiving loans. A majority of students in comprehensive universities did not receive the Pell Grant (n = 5697, 76%). A majority of students in comprehensive universities did receive the HOPE Scholarship (n = 6337, 85%). Most students in comprehensive universities did not receive both the Pell Grant and the HOPE Scholarship simultaneously (n = 5995, 80%). A majority of students in comprehensive universities did not attain a college degree (n = 3791, 50.5%).

Frequency and percentages for state universities. The number of students receiving financial aid awards, excluding HOPE or Pell was approximately evenly distributed with 4229 (47%) receiving loans and 4694 (53%) not receiving loans. A majority of students in state universities did not receive the Pell Grant (n = 5989, 67%). A majority of students in state universities did receive the HOPE Scholarship (n = 6246, 70%). Most students in state universities did not receive both the Pell Grant and the HOPE Scholarship simultaneously (n =

7026, 79%). A majority of students in state universities did not attain a college degree (*n* = 5492, 61.5%).

Frequency and percentages for state colleges. A majority of students did not receive financial aid awards, excluding HOPE or Pell (6977, 76%). A majority of students in state colleges did not receive the Pell Grant (*n* = 5709, 62%). A majority of students in state colleges did not receive the HOPE Scholarship (*n* = 5125, 56%). Most students in state colleges did not receive both the Pell Grant and the HOPE Scholarship simultaneously (*n* = 7820, 86%). A majority of students in state colleges did not attain a college degree (*n* = 7418, 81.1%). Frequencies and percentages for student characteristics by institution type are presented in Table 4.2.

Table 4.2

Frequencies and Percentages of Student Characteristics by Institution Type

Demographic	Research University (*n* = 7701)		Comprehensive University (*n* = 7500)		State University (*n* = 8923)		State College (*n* = 9148)	
	N	%	*N*	%	*N*	%	*N*	%
Student Loan Received								
Yes	3565	46	3647	49	4229	47	2171	24
No	4136	54	3853	51	4694	53	6977	76
Pell Grant Received								
Yes	1557	20	1803	24	2934	33	3439	38
No	6144	80	5697	76	5989	67	5709	62
HOPE Scholarship Received								
Yes	7243	94	6337	85	6246	70	4023	44
No	458	6	1163	15	2677	30	5125	56
Pell Grant and HOPE Scholarship Received								
Yes	1404	18	1505	20	1897	21	1328	15
No	6297	82	5995	80	7026	79	7820	86
Degree Attainment								
Yes	5422	70.4	3709	49.5	3431	38.5	1730	18.9
No	2279	29.6	3791	50.5	5492	61.5	7418	81.1

Note. Due to rounding error, percentages may not sum to 100%.

Descriptive Statistics of Academic Preparation Indicators in Research Universities. SAT verbal scores for students in research universities ranged from 200.00 to 800.00, with *M* = 588.44 and *SD* = 85.19. SAT math scores for students in research universities ranged from 200.00 to 800.00, with *M* = 595.05 and *SD* = 90.62.

Descriptive Statistics of Academic Preparation Indicators in Comprehensive Universities. SAT verbal scores for students in comprehensive universities ranged from 280.00 to 800.00, with *M* = 527.69 and *SD* = 62.33. SAT math scores for students in comprehensive universities ranged from 270.00 to 800.00, with *M* = 523.55 and *SD* = 64.47.

Descriptive Statistics of Academic Preparation Indicators in State Universities. SAT verbal scores for students in state universities ranged from 200.00 to 800.00, with *M* = 496.51 and *SD* = 77.33. SAT math scores for students in state universities ranged from 200.00 to 800.00, with *M* = 491.71 and *SD* = 79.97.

Descriptive Statistics of Academic Preparation Indicators in State Colleges. SAT verbal scores for students in state colleges ranged from 200.00 to 800.00, with *M* = 455.33 and *SD* = 82.06. SAT math scores for students in state colleges ranged from 200.00 to 780.00, with *M* = 444.18 and *SD* = 81.73. Descriptive statistics of academic preparation indicators by institution type are presented in Table 4.3.

Table 4.3

Means and Standard Deviations of Academic Preparation Indicators by Institution Type

Variable	*Min*	*Max*	*M*	*SD*
Research Universities				
SAT Verbal	200.00	800.00	588.44	85.19
SAT Math	200.00	800.00	595.05	90.62
Comprehensive Universities				
SAT Verbal	280.00	800.00	527.69	62.33
SAT Math	270.00	800.00	523.55	64.47
State Universities				
SAT Verbal	200.00	800.00	496.51	77.33
SAT Math	200.00	800.00	491.71	79.97
State Colleges				
SAT Verbal	200.00	800.00	455.33	82.06
SAT Math	200.00	780.00	444.18	81.73

Linear Probability Model (LPM) Analysis Results

Research Question One

To what extent does receiving the Pell Grant or HOPE Scholarship predict degree attainment?

Linear Probability Model (Pell Grant/HOPE Scholarship Predicting Degree Attainment)

A series of linear probability analysis were conducted to determine whether receipt of the Pell Grant or HOPE Scholarship were significant predictors of degree attainment. The predictors, Pell Grant or HOPE Scholarship, were entered simultaneously into the model. Results of the LPM by institution type are presented in Tables 4.6 – 4.9.

Research Universities. A linear probability analysis was conducted with Pell Grant and HOPE Scholarship as individual predictors of degree attainment at research universities. Results of the linear LPM indicated there was a significant association between receiving the Pell Grant or HOPE Scholarship and degree attainment in research universities. Pell Grant recipients at Research Universities were 13% less likely to complete tertiary education than non-Pell Grant recipients when controlling for the HOPE Scholarship. HOPE Scholarship recipients were 44% more likely to complete tertiary education than non-Non-HOPE scholarship recipients when controlling for the Pell Grants.

Comprehensive Universities. A linear probability analysis was conducted with Pell Grant and HOPE Scholarship as individual predictors of degree attainment in comprehensive universities. Results of the LPM indicated there was a significant association between receiving the Pell Grant or HOPE Scholarship and degree attainment at comprehensive universities. Pell Grant recipients at Research Universities were 10% less likely to complete tertiary education than non-Pell Grant recipients when controlling for the HOPE Scholarship. HOPE Scholarship recipients were 30% more likely to complete tertiary education than non-Non-HOPE scholarship recipients when controlling for the Pell Grants.

State Universities. A linear probability analysis was conducted with Pell Grant and HOPE Scholarship as individual predictors of degree attainment in state universities. Results of the linear LPM indicated there was a significant association between receiving the Pell Grant or HOPE Scholarship and degree attainment at state universities. Pell Grant recipients at Research Universities were 8% less likely to complete tertiary education than non-Pell Grant recipients when controlling for the HOPE Scholarship. HOPE Scholarship recipients were 32% more likely to complete tertiary education than non-Non-HOPE scholarship recipients when controlling for the Pell Grants.

State Colleges. A linear probability analysis was conducted with Pell Grant and HOPE Scholarship as individual predictors of degree attainment in state colleges. Results of the LPM indicated there was a significant association between receiving the Pell Grant or HOPE Scholarship and degree attainment at state colleges. Pell Grant recipients at Research Universities were 5% less likely to complete tertiary education than non-Pell Grant recipients when controlling for the HOPE Scholarship. HOPE Scholarship recipients were 24% more likely to complete tertiary education than non-Non-HOPE scholarship recipients when controlling for the Pell Grants.

Research Question Two

To what extent does receiving the Pell Grant and HOPE Scholarship predict degree attainment?

Linear Probability Analysis **(Simultaneous Receipt of Pell Grant and HOPE Scholarship Predicting Degree Attainment)**

A series of linear probability analysis were conducted to determine whether simultaneous receipt of the Pell Grant or HOPE Scholarship was a significant predictor of degree attainment. The predictor, Pell Grant and HOPE Scholarship, was entered into the model. Results of the

LPM by institution type are presented in Table 4.7. The table presents the beta values for the full model.

Research Universities. A linear probability analysis was conducted with simultaneous receipt of Pell Grant and HOPE Scholarship as an individual predictor of degree attainment in research universities. Results of the LPM indicated there was a significant association between simultaneous receipt of Pell Grant or HOPE Scholarship and degree attainment in research universities. Simultaneous Pell Grant and HOPE Scholarship recipients were 10% less likely to complete tertiary education than non-Pell Grant and HOPE Scholarship at research universities.

Comprehensive Universities. A linear probability analysis was conducted with simultaneous receipt of Pell Grant and HOPE Scholarship as an individual predictor of degree attainment in comprehensive universities. Results of the LPM indicated there was a significant association between simultaneous receipt of Pell Grant or HOPE Scholarship and degree attainment in comprehensive universities. Simultaneous Pell Grant and HOPE Scholarship recipients were 3% less likely to complete tertiary education than non-Pell Grant and HOPE Scholarship at comprehensive universities.

State Universities. A linear probability analysis was conducted with simultaneous receipt of Pell Grant and HOPE Scholarship as an individual predictor of degree attainment in state universities. Results of the LPM indicated there was a significant association between simultaneous receipt of Pell Grant or HOPE Scholarship and degree attainment in state universities. Simultaneous Pell Grant and HOPE Scholarship recipients were 3% more likely to complete tertiary education than non-Pell Grant and HOPE Scholarship at state universities.

State Colleges. A linear probability analysis was conducted with simultaneous receipt of Pell Grant and HOPE Scholarship as an individual predictor of degree attainment in state

colleges. Results of the LPM indicated there was a significant association between simultaneous receipt of Pell Grant or HOPE Scholarship and degree attainment in colleges. Simultaneous Pell Grant and HOPE Scholarship recipients were 10% more likely to complete tertiary education than non-Pell Grant and HOPE Scholarship at state universities.

Research Question Three

To what extent does a student's race/ethnicity, gender and standardized test score predict degree attainment?

Frequency and percentages for research universities. A majority of students in research universities were female (n = 4216, 55%). The frequency distribution of race in research universities was divided as follows: White (n = 5522, 72%), Black (n = 1105, 14%), Asian (n = 6, 1%), Hispanic (n = 194, 14%), and Other (n = 874, 11%).

Frequency and percentages for comprehensive universities. A majority of students in comprehensive universities were female (n = 4039, 54%). The frequency distribution of race in comprehensive universities was divided as follows: White (n = 5763, 77%), Black (n = 1326, 18%), Asian (n = 2, 1%), Hispanic (n = 145, 2%), and Other (n = 264, 4%).

Frequency and percentages for state universities. A majority of students in state universities were female (n = 5062, 57%). The frequency distribution of race in state universities was divided as follows: White (n = 5465, 61%), Black (n = 2960, 33%), Asian (n = 3, 1%), Hispanic (n = 151, 6%), and Other (n = 344, 4%).

Frequency and percentages for state colleges. A majority of students in state colleges were female (n = 5395, 59%). The frequency distribution of race in state colleges was divided as follows: White (n = 5884, 64%), Black (n = 2549, 28%), Asian (n = 1, 1%), Hispanic (n = 715, 8%), and Other (n = 516, 6%). Frequencies and percentages for student demographics by institution type are presented in Table 4.10.

Table 4.4

Frequencies and Percentages of Student Demographics by Institution Type

Demographic	Research University (n = 7701)		Comprehensive University (n = 7500)		State University (n = 8923)		State College (n = 9148)	
	N	%	*N*	%	*n*	%	*N*	%
Gender								
Male	3485	45	3461	46	3861	43	3753	41
Female	4216	55	4039	54	5062	57	5395	59
Race								
White	5522	72	5763	77	5465	61	5884	64
Black	1105	14	1326	18	2960	33	2549	28
Asian	6	1	2	1	3	1	1	1
Hispanic	194	2	145	2	151	6	715	8
Other	874	11	264	4	344	4	516	6

Note. Due to rounding error, percentages may not sum to 100%.

Linear Probability Analysis with Student Race/Ethnicity, Gender, and Academic Preparation Indicators Predicting Degree Attainment

A series of linear probability analysis were conducted to determine whether students' race, gender, and academic preparation indicators were significant predictors of degree attainment. The predictors – race, gender, and academic preparation indicators – were entered simultaneously into the model. Results of the LPM by institution type are presented in Tables 4.6 – 4.9.

Research Universities. A linear probability analysis was conducted with Pell Grant or HOPE Scholarship entered as individual predictors of degree attainment in research universities, while controlling for receipt of other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity. Results of the LPM indicated that adding academic preparation indicators, gender and race/ethnicity improve the model fit for predicting degree attainment at research universities.

First Block

Results of the linear probability analysis indicated there was a significant association between receiving the Pell Grant or HOPE Scholarship and degree attainment in research universities. Pell Grant recipients at research universities were 10% less likely to complete tertiary education than non-Pell Grant recipients when controlling for the HOPE Scholarship, other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity. HOPE Scholarship recipients were 40% more likely to complete tertiary education than non-Non-HOPE scholarship recipients when controlling for the Pell Grants, other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity.

Race (Black vs. Other) was a significant predictor of degree attainment, suggesting that African American students are 14% less likely to graduate from research universities. Gender was a significant predictor of degree attainment, suggesting female students were 6% less likely to attain a degree than male students. SAT Math scores were a significant predictor of degree attainment, suggesting that for every 100-point increase in SAT Math scores, students were 3% times more likely to attain a degree. Financial aid beyond the receipt of the HOPE Scholarship or Pell Grant was a significant predictor of degree attainment, suggesting that additional financial support increased degree attainment by 6% at research universities when controlling for academic preparation indicators, gender and race/ethnicity.

Second Block

A second linear probability analysis was conducted with simultaneous receipt of Pell Grant and HOPE Scholarship entered as an individual predictor of degree attainment in research

universities, while controlling for receipt of other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity.

Results of the LPM indicated there was a significant association between simultaneous receipt of Pell Grant and HOPE Scholarship and degree attainment in research universities. Simultaneous recipients of Pell Grant and HOPE Scholarship at research universities were 5% less likely to complete tertiary education than non-Pell Grant and HOPE Scholarship recipients when controlling for other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity.

Race was a significant predictor of degree attainment, suggesting that African American students are 18% less likely to graduate from research universities. Gender was a significant predictor of degree attainment, suggesting female students were 7% less likely to attain a degree than male students. SAT Math scores were a significant predictor of degree attainment, suggesting that for every 100-point increase in SAT Math scores, students were 3% times more likely to attain a degree. Financial Aid beyond the receipt of the HOPE Scholarship or Pell Grant was a significant predictor of degree attainment, suggesting that additional financial support increased degree attainment by 7% at research universities when controlling for academic preparation indicators, gender and race/ethnicity.

Comprehensive Universities. A linear probability analysis was conducted with Pell Grant or HOPE Scholarship entered as individual predictors of degree attainment in comprehensive universities, while controlling for receipt of other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity. Results of the LPM indicated that adding academic preparation indicators, gender and race/ethnicity improve the model fit for predicting degree attainment at comprehensive universities.

First Block

Results of the linear probability analysis indicated there was a significant association between receiving the Pell Grant or HOPE Scholarship and degree attainment in comprehensive universities. Pell Grant recipients at comprehensive universities were 10% less likely to complete tertiary education than non-Pell Grant recipients when controlling for the HOPE Scholarship, other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity. HOPE Scholarship recipients were 28% more likely to complete tertiary education than non-Non-HOPE scholarship recipients when controlling for the Pell Grants, other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity.

Race was a significant predictor of degree attainment, suggesting that Caucasian students are 61% more likely to graduate; Hispanic students are 11% more likely; and Asian students are 50% more likely to graduate when compared to other students enrolled at comprehensive universities. Gender was a significant predictor of degree attainment, suggesting female students were 11% less likely to attain a degree than male students. Financial Aid beyond the receipt of the HOPE Scholarship or Pell Grant was a significant predictor of degree attainment, suggesting that additional financial support increased degree attainment by 3% at comprehensive universities when controlling for academic preparation indicators, gender and race/ethnicity.

Second Block

A second linear probability analysis was conducted with simultaneous receipt of Pell Grant and HOPE Scholarship entered as and individual predictor of degree attainment at comprehensive universities, while controlling for receipt of other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity.

Results of the LPM indicated there was a significant association between simultaneous receipt of Pell Grant and HOPE Scholarship and degree attainment at comprehensive universities. Simultaneous recipients of Pell Grant and HOPE Scholarship at comprehensive universities were 3% less likely to complete tertiary education than non-Pell Grant and HOPE Scholarship recipients when controlling for other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity.

Race was a significant predictor of degree attainment, suggesting that Caucasian students are 7% more likely to graduate; Hispanic students are 11% more likely; and Asian students are 55% more likely to graduate when compared to other students enrolled at comprehensive universities. Gender was a significant predictor of degree attainment, suggesting female students were 13% less likely to attain a degree than male students. SAT Math scores were a significant predictor of degree attainment, suggesting that for every 100-point increase in SAT Math scores, students were 1% times more likely to attain a degree at comprehensive universities when controlling for academic preparation indicators, gender and race/ethnicity.

State Universities. A linear probability analysis was conducted with Pell Grant or HOPE Scholarship entered as individual predictors of degree attainment in state universities, while controlling for receipt of other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity. Results of the LPM indicated that adding academic preparation indicators, gender and race/ethnicity improve the model fit for predicting degree attainment at state universities.

First Block

Results of the LPM indicated there was a significant association between receiving the Pell Grant or HOPE Scholarship and degree attainment at state universities. Pell Grant recipients

at state universities were 11% less likely to complete tertiary education than non-Pell Grant recipients when controlling for the HOPE Scholarship, other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity. HOPE Scholarship recipients were 31% more likely to complete tertiary education than non-Non-HOPE scholarship recipients when controlling for the Pell Grants, other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity.

Gender was a significant predictor of degree attainment, suggesting female students were 8% less likely to attain a degree than male students. Financial Aid beyond the receipt of the HOPE Scholarship or Pell Grant was a significant predictor of degree attainment, suggesting that additional financial support increased degree attainment by 11% at state universities. SAT Verbal scores were a significant predictor of degree attainment, suggesting that for every 100-point decrease in SAT Verbal scores, students were 1% times less likely to attain a degree at state universities when controlling for academic preparation indicators, gender and race/ethnicity. Financial Aid beyond the receipt of the HOPE Scholarship or Pell Grant was a significant predictor of degree attainment, suggesting that additional financial support increased degree attainment by 10% at state universities when controlling for academic preparation indicators, gender and race/ethnicity.

Second Block

A second linear probability analysis was conducted with simultaneous receipt of Pell Grant and HOPE Scholarship entered as and individual predictor of degree attainment at state universities, while controlling for receipt of other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity.

Results of the LPM indicated there was a significant association between simultaneous receipt of Pell Grant and HOPE Scholarship and degree attainment at state universities. Simultaneous recipients of Pell Grant and HOPE Scholarship at state universities were 4% more likely to complete tertiary education than non-Pell Grant and HOPE Scholarship recipients when controlling for other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity.

Race was a significant predictor of degree attainment, suggesting that Caucasian students are 7% more likely to graduate; African Americans students are 6% less likely to graduate when compared to other students enrolled at state universities. Gender was a significant predictor of degree attainment, suggesting female students were 11% less likely to attain a degree than male students. Financial Aid beyond the receipt of the HOPE Scholarship or Pell Grant was a significant predictor of degree attainment, suggesting that additional financial support increased degree attainment by 10% at state universities when controlling for academic preparation indicators, gender and race/ethnicity.

State Colleges. A linear probability analysis was conducted with Pell Grant or HOPE Scholarship entered as individual predictors of degree attainment in state colleges, while controlling for receipt of other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity. Results of the LPM indicated that adding academic preparation indicators, gender and race/ethnicity improve the model fit for predicting degree attainment at state colleges.

First Block

Results of the LPM indicated there was a significant association between receiving the Pell Grant or HOPE Scholarship and degree attainment in state colleges. Pell Grant recipients at

state colleges were 4% less likely to complete tertiary education than non-Pell Grant recipients when controlling for the HOPE Scholarship, other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity. HOPE Scholarship recipients were 23% more likely to complete tertiary education than non-Non-HOPE scholarship recipients when controlling for the Pell Grants, other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity.

Race was a significant predictor of degree attainment, suggesting that African American students are 10% less likely to graduate; Asian students are 66% more likely to graduate when compared to other students enrolled at state colleges. Gender was a significant predictor of degree attainment, suggesting female students were 4% less likely to attain a degree than male students. SAT Math scores were a significant predictor of degree attainment, suggesting that for every 100-point decrease in SAT Math scores, students were 1% times less likely to attain a degree at state colleges when controlling for academic preparation indicators, gender and race/ethnicity. Financial Aid beyond the receipt of the HOPE Scholarship or Pell Grant was a significant predictor of degree attainment, suggesting that additional financial support increased degree attainment by 8% at state colleges when controlling for academic preparation indicators, gender and race/ethnicity.

Second Block

A second linear probability analysis was conducted with simultaneous receipt of Pell Grant and HOPE Scholarship entered as and individual predictor of degree attainment at state colleges, while controlling for receipt of other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity.

Results of the LPM indicated there was a significant association between simultaneous receipt of Pell Grant and HOPE Scholarship and degree attainment at state colleges. Simultaneous recipients of Pell Grant and HOPE Scholarship at state colleges were 10% more likely to complete tertiary education than non-Pell Grant and HOPE Scholarship recipients when controlling for other financial aid not Pell Grant or HOPE Scholarship, academic preparation indicators, gender and race/ethnicity.

Race was a significant predictor of degree attainment, suggesting that Asian students are 8% more likely to graduate; African Americans students are 16% less likely to graduate when compared to other students enrolled at state colleges. Gender was a significant predictor of degree attainment, suggesting female students were 4% less likely to attain a degree than male students. SAT Verbal scores were a significant predictor of degree attainment, suggesting that for every 100-point increase in SAT Verbal scores, students were 1% times more likely to attain a degree at state colleges when controlling for academic preparation indicators, gender and race/ethnicity. SAT Math scores were a significant predictor of degree attainment, suggesting that for every 100-point decrease in SAT Math scores, students were 1% times less likely to attain a degree at state colleges when controlling for academic preparation indicators, gender and race/ethnicity. Financial Aid beyond the receipt of the HOPE Scholarship or Pell Grant was a significant predictor of degree attainment, suggesting that additional financial support increased degree attainment by 6% at state colleges when controlling for academic preparation indicators, gender and race/ethnicity.

Table 4.5

Results of the Linear Probability Analysis *between Receipt of Pell Grant and HOPE Scholarship, Receipt of Other Financial Aid not* HOPE *or Pell, and Degree Attainment*

OLS estimates All USG Institutions
Dependent variable: DV_DegreeAttained

	(1)	(2)	(3)	(4)
Const	0.1738**	0.2010**	0.4262**	0.4097**
	(0.004183)	(0.01188)	(0.003002)	(0.01230)
PELL Grant	-0.1121**	-0.1164**		
	(0.005424)	(0.005902)		
HOPE Scholarship	0.4026**	0.3719**		
	(0.004813)	(0.005015)		
Female		-0.06107**		-0.08040**
		(0.005058)		(0.005364)
Black vs Other		-0.1153**		-0.2253**
		(0.01155)		(0.01213)
White vs Other		-0.02323**		-0.001524
		(0.01074)		(0.01149)
Hispanic vs Other		-0.03370*		-0.04277**
		(0.01970)		(0.02148)
Asian vs Other		0.2317**		0.2841**
		(0.1047)		(0.1273)
SAT Verbal		-0.0002027		0.0006384**
		(0.0002143)		(0.0002322)
SAT Math		0.001285**		0.002261**
		(0.0002075)		(0.0002257)
Other Financial Aid		0.1164**		0.1340**
		(0.005253)		(0.005547)
Pell and HOPE			0.01842**	0.03105**
			(0.007019)	(0.007162)
N	33272	33272	33272	33272
Adj. R^2	0.1542	0.1731	0.0002	0.0512
	lnL-2.103e+04	-2.065e+04	-2.381e+04	-2.294e+04

Standard errors in parentheses

* indicates significance at the 10 percent level

** indicates significance at the 5 percent level

Table 4.6

Results of the Linear Probability Analysis *between Receipt of Pell Grant and HOPE Scholarship, Receipt of Other Financial Aid not* HOPE *or Pell, and Degree Attainment: Research Universities*

OLS estimates: Research Universities
Dependent variable: DV_DegreeAttained

	(1)	(2)	(3)	(4)
Const	0.3189**	0.2962**	0.7213**	0.6460**
	(0.02130)	(0.02748)	(0.005651)	(0.01934)
PELL GRANT	-0.1310**	-0.1023**		
	(0.01335)	(0.01466)		
HOPE GRANT	0.4377**	0.3993**		
	(0.02147)	(0.02163)		
BlackVsOther		-0.1399**		-0.1765**
		(0.02138)		(0.02180)
WhiteVsOther		0.01228		0.02915*
		(0.01622)		(0.01664)
HispanicVsOther		-0.01157		0.0002283
		(0.03460)		(0.03556)
AsianVsOther		0.01755		-0.03105
		(0.1553)		(0.1926)
Female		-0.06411**		-0.07306**
		(0.01026)		(0.01051)
SAT Verbal		0.0002418		0.0003851
		(0.0003420)		(0.0003519)
SAT MATH		0.002710**		0.003041**
		(0.0003440)		(0.0003524)
Other Financial Aid		0.06422**		0.06821**
		(0.01029)		(0.01059)
PELL_AND_HOPE			-0.09452**	-0.05391**
			(0.01409)	(0.01545)
N	7701	7701	7701	7701
Adj. R^2	0.0688	0.0942	0.0063	0.0454
	lnL-4612	-4502	-4863	-4704

Standard errors in parentheses

* indicates significance at the 10 percent level

** indicates significance at the 5 percent level

Table 4.7

Results of the Linear Probability Analysis *between Receipt of Pell Grant and HOPE Scholarship, Receipt of Other Financial Aid not* HOPE *or Pell, and Degree Attainment: Comprehensive Universities*

OLS estimates: Comprehensive Universities
Dependent variable: DV_DegreeAttained

	(1)	(2)	(3)	(4)
const	0.2665**	0.2520**	0.5008**	0.4573**
	(0.01309)	(0.03337)	(0.006459)	(0.03281)
PELLGRANT	-0.09723**	-0.1014**		
	(0.01302)	(0.01410)		
HOPEGRANT	0.2975**	0.2753**		
	(0.01396)	(0.01430)		
Female		-0.1056**		-0.1308**
		(0.01141)		(0.01153)
BlackVsOther		0.02059		-0.002413
		(0.03228)		(0.03337)
WhiteVsOther		0.06087**		0.07331**
		(0.02980)		(0.03085)
HispanicVsOther		0.1087**		0.1063**
		(0.04863)		(0.05056)
AsianVsOther		0.5030**		0.5545**
		(0.04295)		(0.04298)
SATVerbal		0.0007378		0.001600**
		(0.0006198)		(0.0006290)
SATMATH		0.0004996		0.001338**
		(0.0005794)		(0.0005904)
Other Financial Aid		0.02660**		0.005747
		(0.01196)		(0.01209)
PELL_AND_HOPE			-0.03098**	-0.02517*
			(0.01440)	(0.01509)
N	7500	7500	7500	7500
Adj. R^2	0.0536	0.0656	0.0005	0.0214
	lnL-5235	-5184	-5441	-5357

Standard errors in parentheses

* indicates significance at the 10 percent level

** indicates significance at the 5 percent level

Table 4.8
Results of the Linear Probability Analysis *between Receipt of Pell Grant and HOPE Scholarship, Receipt of Other Financial Aid not* HOPE *or Pell, and Degree Attainment: State Universities*

OLS estimates: State Universities
Dependent variable: DV_DegreeAttained

	(1)	(2)	(3)	(4)
Const	0.1871**	0.1874**	0.3773**	0.3636**
	(0.008215)	(0.02743)	(0.005783)	(0.02736)
PELLGRANT	-0.08661**	-0.1141**		
	(0.01023)	(0.01133)		
HOPEGRANT	0.3227**	0.3114**		
	(0.009455)	(0.009659)		
Female		-0.08160**		-0.1086**
		(0.009883)		(0.01026)
BlackVsOther		0.01688		-0.06419**
		(0.02672)		(0.02710)
WhiteVsOther		0.04512*		0.06755**
		(0.02572)		(0.02619)
HispanicVsOther		-0.01211		-8.445e-05
		(0.04456)		(0.04658)
AsianVsOther		0.3111		0.3850
		(0.2390)		(0.2756)
SATVerbal		-0.001534**		-0.0008988*
		(0.0004675)		(0.0004929)
SATMATH		-0.0004381		0.0003113
		(0.0004556)		(0.0004796)
Other Financial Aid		0.1060**		0.1018**
		(0.01045)		(0.01095)
PELL AND HOPE			0.03386**	0.03993**
			(0.01269)	(0.01310)
N	8923	8923	8923	8923
Adj. R^2	0.1034	0.1225	0.0007	0.0293
	lnL-5744	-5644	-6228	-6094

Standard errors in parentheses

* indicates significance at the 10 percent level

** indicates significance at the 5 percent level

Table 4.9
Results of the Linear Probability Analysis *between Receipt of Pell Grant and HOPE Scholarship, Receipt of Other Financial Aid not* HOPE *or Pell, and Degree Attainment: State Colleges*

OLS estimates: State Colleges
Dependent variable: DV_DegreeAttained

	(1)	(2)	(3)	(4)
const	0.1009**	0.1491**	0.1752**	0.2156**
	(0.005156)	(0.01871)	(0.004299)	(0.01922)
PELLGRANT	-0.04791**	-0.03769**		
	(0.007765)	(0.008541)		
HOPEGRANT	0.2415**	0.2283**		
	(0.008317)	(0.008359)		
Female		-0.03607**		-0.04769**
		(0.007930)		(0.008171)
BlackVsOther		-0.1077**		-0.1611**
		(0.01834)		(0.01896)
WhiteVsOther		-0.004513		0.01475
		(0.01812)		(0.01891)
HispanicVsOther		-0.04276		-0.05768*
		(0.02955)		(0.03087)
AsianVsOther		0.6661**		0.8147**
		(0.02029)		(0.02001)
SATVerbal		-5.268e-05		0.0007347**
		(0.0003384)		(0.0003534)
SATMATH		-0.0009695**		-0.0007758**
		(0.0003225)		(0.0003367)
Other Financial Aid		0.08425**		0.06669**
		(0.009641)		(0.009920)
PELL_AND_HOPE			0.09589**	0.1022**
			(0.01293)	(0.01274)
N	9148	9148	9148	9148
Adj. R^2	0.1001	0.1201	0.0073	0.0478
	lnL-3921	-3814	-4370	-4175

Standard errors in parentheses

* indicates significance at the 10 percent level

** indicates significance at the 5 percent level

Summary of Results

The various linear probability analyses provided insight into the degree attainment of fall 2004 students enrolled in a degree program in the University System of Georgia. The purpose of this study was to determine the degree need- and merit-based financial aid predicted degree attainment. The results consistently indicated that recipients of merit-based financial aid were consistently more likely to complete tertiary education at a higher rate than non-recipients of merit-based aid. Moreover, recipients of need-based financial aid were less likely to graduate than non-recipients of need-based aid. In the next chapter, a summary of the study, an analysis and discussion of the research findings, conclusions, and implications will be discussed. Recommendations for action and future study will be presented.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Overview of Study

Tertiary degree completion is a central issue for policymakers, college and university administrators and higher education advocacy groups. Wavering public support of higher education has resulted in legislative bodies increasingly funding postsecondary institutions based on outcomes (e.g., graduation) in lieu of historical models that focus on inputs (Brown & Gamber, 2002). Consistent with the increased focus on degree attainment as a measure of productivity, the University System of Georgia began the Go Back Move Ahead initiative with the goal of increasing tertiary attainment rates at public colleges and universities. (Complete College Georgia, 2014).

This study used data provided by the USG to investigate the relationship between need- and merit-based financial aid and student outcomes for first-time full-time freshmen enrolled in Georgia's public colleges or universities. Understanding the significance of financial, social and economic capital as factors influencing degree completion will assist legislative bodies and institution administrators when developing policies and designing programs that support increased tertiary education attainment. As articulated by Hu, Trengove, and Zhang (2012), it is important to distinguish between overall degree production from public colleges and universities in Georgia and degree production by students who are residents of the state of Georgia. This study focuses on students who are residents of the state of Georgia at the time of initial enrollment.

Conclusions

Dynarski (2000) conducted an in depth study of the Current Population Survey (CPS) and found that the introduction of merit-aid programs resulted in increased tertiary education enrollment by students from middle- and upper-income families. Using data from the University of Oregon's Admissions Office, Singell (2001) conducted research that further supports Dynarski's (2000) finding that middle-income students who do not require a significant amount of financial support enrolled in tertiary education at a higher rate than their lower-income peers. Consistent with Dynarski (2000) and Singell (2001), my study found 72% enrolled in Georgia's public colleges and universities were eligible for a HOPE Scholarship at the time of initial enrollment; 28% were not.

The descriptive statistics in my study further suggest that the majority of the recipients of merit-based financial aid attend Georgia's research and comprehensive universities. This finding is consistent with Singell's (2001) assertion that affluent students enroll at research institutions at higher rates than their lower-income peers. As articulated by Singell (2001), student grade point average and standardized test scores are commonly accepted predictors of academic preparation. My research also found that the average SAT score by institution type was in direct relationship to the percentage of HOPE scholarship recipients enrolled. Based on a perfect score of 1600, the students included in the study had mean SAT scores of 1183 at research institutions, 1050 at comprehensive universities, 987 at State Universities and 899 at State Colleges. Understanding the minimum requirements for receipt of state funded merit aid in Georgia, I was able to conclude that all HOPE Scholarship recipients enrolled with a minimum high school grade point of 3.0/40. Considering SAT scores and grade point averages as both predictors of tertiary education success, I was able to infer that students enrolled at research and comprehensive

universities arrive better prepared for the rigors associated with higher education when compared to their peers enrolled at State Universities and State Colleges.

As articulated by Brown (2007), there is a strong positive relationship between standardized test score and family income. Descriptive statistics from my study reveal that 72% (23,849) of the student in the cohort examined qualified for Georgia merit-based scholarship program, and 29% (9,733) of the students qualified for Federal need-based Pell Grants; 71% did not. My research also found that 6,326 of the 9,733 (65%) students receiving need-based grants attend State Universities and State Colleges. Based on the frequencies and consistent with previous research, I was able to conclude that the majority of the students in the Fall 2004 cohort come from middle- and upper-income families. Extending the conclusions further, it is reasonable to conclude that students attending Georgia's research and comprehensive universities come from more affluent backgrounds than their peers at State Universities and State Colleges.

Findings from my study were also consistent with previous studies (McPherson & Schapiro, 1991,; Dynarski, 2000; Heller & Marin, 2002; Singell & Stone, 2002; Wei & Carroll, 2002; Bettinger, 2004; Heller, 2004; Rubin, 2011) suggesting that financial aid impacts student tertiary education completion.

Discussion of Research Findings

Research Question 1: To what extent does receiving the Pell Grant or HOPE Scholarship predict degree attainment?

Table 5.1

Research Findings/Conclusion - HOPE

Finding	• There is a statistically significant relationship between initial eligibility for the HOPE Scholarship or Pell Grant and degree

	completion at Georgia's public colleges and universities. • 72% of the first-time full-time freshmen in the Fall 2004 were eligible for a HOPE Scholarship at the time of initial enrollment; 28% were not. • The majority of the recipients of merit-based financial aid attend Georgia's research and comprehensive universities.
Conclusion	HOPE Scholarship recipients possess elements of human capital that are shown to be predictors of degree completion • Minimum GPA 3.0/4.0 • SAT Score (Avg.) o Research Universities SAT 1183 o Comprehensive Universities 1051 o State Universities SAT 988 o State Colleges SAT 899 Students enrolled at research and comprehensive universities arrive better prepared for the rigors associated with tertiary education when compared to their peers enrolled at state universities and state colleges.
Literature	• Dynarski (2000) found that the introduction of merit-aid programs resulted in increased tertiary education enrollment by students from middle- and upper income families. • Singell (2001) found middle-income students who do not require a significant amount of financial support enrolled in tertiary education at a higher rate than their lower income peers. • Brown (2007) found HOPE scholarship recipients possess high levels of human capital. • Singell (2001) - student grade point average and standardized test score are commonly accepted predictors of academic preparation. • Brown (2007) - HOPE scholarship recipients possess high levels of human capital. • Brown (2007) - there is a strong positive relationship between standardized test scores and family income.

Zhang (2011) and Hu, Trengove, and Zhang (2012) found that completion rates increased 3-4% for recipients of merit-aid scholarships in general and for students in STEM majors in particular. The results of my linear probability analysis were consistent with Zhang's (2011) findings suggesting that recipients of merit-aid scholarships at research institutions are 40% more likely to graduate than non-recipients of merit based aid. The frequency data also indicate that

students enrolled at research universities scored higher on the standardized tests than students enrolled at all institutions suggesting that consistent with Brown (2007) students at research universities possess greater levels of human capital than their peers.

Table 5.2

Research Findings/Conclusion - Pell

Finding	• Need-based financial aid significantly impacts degree completion. • 29% (9,733) of the students in the cohort examined qualified for Federal need-based Pell Grants; 71% did not. • Students receiving need-based grants (6,326) overwhelmingly attend state universities and state colleges.
Conclusion	• Needy students enrolled at the most competitive institutions at lower levels than their affluent peers. • Middle and upper income students that do not meet the academic requirements to earn a merit-based scholarship and whose financial status does prohibit the receipt of need-based financial aid complete tertiary education at a greater rate than their low-income peers.
Literature	• Bettinger (2004) argues that need-based aid may impact both enrollment decisions and student retention • Premo (1995) and Wei and Carroll (2002) found that recipients of need-based financial aid often display characteristics associated with students who are less prepared for the academic rigor associated with tertiary education. • Wie and Carroll (2002) suggest the availability of financial aid positively influenced persistence.

My research found that students receiving need-based Pell grants completed tertiary education at lower rates than students who did not receive need-based financial aid. My findings are consistent with both Wei, Horn and Carroll's (2002) and Bettinger's (2004) assertions that Pell Grant recipients have decreased levels of social, cultural and economic capital that decrease student retention rates. The research also found a positive relationship between the receipt Pell grants and HOPE Scholarships and degree completion for students

attending state colleges. This suggests that increases in economic capital may have a positive effect on degree attainment for students from academically and economically disadvantaged backgrounds..

Research Question 2: To what extent does receiving the Pell Grant and HOPE Scholarship predict degree attainment?

Table 5.3

Research Findings/Conclusion - Pell Grant and HOPE

Finding	• There was not a significant association between receipt of the Pell Grant and HOPE Scholarship and degree attainment. • 18% (6,134) of first-time full-time freshmen qualified for both the HOPE Scholarship and Pell Grant at the time of initial enrollment; 82% did not.
Conclusion	• After the student's initial year, a large proportion of the students display the characteristics of a student who is solely Pell eligible.
Literature	• Dee and Jackson (1999) suggest that less than half of students remain eligible for the HOPE Scholarship

There is an overall gap in the literature exploring the affects of need- and merit-based financial aid in general and at non-research institutions. However, my study attempts to fill the gap in the literature finding that the concurrent receipt of the HOPE Scholarship and the Pell Grant was a significant predictor of degree attainment at non-research colleges and universities.

A linear probability analysis was conducted with simultaneous receipt of the Pell Grant and HOPE Scholarship as a predictor of degree attainment at Georgia's public colleges and universities. Twenty-three percent (7701) of the students in my study were simultaneous recipients of both the HOPE Scholarship and Pell Grant. When segregated by institution type, the data showed that 18% of the students in the study who enrolled at research institutions were simultaneous recipients of a HOPE Scholarship and Pell Grants, 20% of the students in the study

who enrolled at comprehensive institutions were simultaneous recipients of a HOPE Scholarship and Pell Grants, 21% of the students in the study that enrolled at state universities were simultaneous recipients of a HOPE Scholarship and Pell Grants, while 15% of the students that enrolled at state colleges were simultaneous recipients of a HOPE Scholarship and Pell Grants.

Singell (2001) conducted an analysis that considered the affect of student loans and need- and merit-based financial aid on persistence in a large public research university, finding that merit-based financial aid had the greatest impact on student retention while the impact of need-based financial aid varied based on the student's socioeconomic status. My research found that students who received both Pell Grant and HOPE Scholarship recipients were 5% less likely to attain a degree at one of Georgia's research universities, 2% less likely to attain a degree at one of Georgia's comprehensive universities, but 3% more likely to attain a degree at one of Georgia's state universities and 1% more likely to attain a degree at one of Georgia's state colleges than students who were not simultaneous recipients of the HOPE Scholarship and Pell Grant. I concluded that students who met the academic characteristics to earn merit-aid, while simultaneously meeting the financial characteristics of the economically disadvantaged, may not possess the cultural and social capital to persist at research and comprehensive universities at the same rates as their more affluent peers. This finding further reinforces findings by Weo, Horn, suggesting that students from disadvantaged backgrounds require additional support in order to increase persistence and complete tertiary education.

Research Question 3: To what extent does a student's race/ethnicity, gender, standardized test score predict degree attainment?

Table 5.4

Research Findings/Conclusion - Race/Ethnicity, Gender, Standardized Test Score

Finding	• There was a significant association between race, gender, SAT Verbal scores, SAT Math scores, and degree attainment. • For every 100-point increase in SAT Math score, students enrolled at a research university were 3% times more likely to attain a degree • For every 100-point increase in SAT Math score, students enrolled at a comprehensive university were 1% times more likely to attain a degree • Female students were less likely to attain a degree than male students.
Conclusion	• Georgia's public colleges and universities should expect significant demographic changes in their enrollment with significant increases in Hispanic and students from non-Caucasian or African American ethnicities. • Students with higher levels of social, cultural and economic capital as measured by SAT Score, GPA, and financial support complete tertiary education at higher rates than their peers from academically- and financially-disadvantaged background.
Literature	• Adams, Solís, and McKendry (2014) - the nationwide public four-year colleges and university enrollment average for Caucasian students is 59%, African American students averaged 16% and all other student enrollment averaged 25% • Murdock and Hoque (1999) conducted a study that predicted changes in tertiary enrollment by 2050 that would result in Caucasian students averaging 56% of the total enrollment, African American students averaging 16% of the total enrollment and students of other ethnicities averaging 28% • Stromquist (2013) and Adams, Solís and McKendry (2014) discovered that women earned 57% of all undergraduate degrees conferred in 2009. • Sherman (1991) and Carter (2006) - assessment of student achievement prior to enrollment is a strong predictor of student success. • Sherman, Giles, and Williams-Green (1994) and Carter (2006) maintain that financial support remains a primary predictor of student tertiary education persistence.

The descriptive statistics of the 33,272 in the fall 2004 indicate that 68% of the students were Caucasian, 24% were African American and 2% were Hispanic, 1% were Asian and 6%

were of unknown ethnic backgrounds. Fifty-six percent of the students enrolled in Georgia's colleges and universities were female and 44% were male. In 2009, the nationwide public four-year colleges and university enrollment average for Caucasian students was 59 percent, African American student enrollment averaged 16 percent and all other student enrollment averaged 25 percent (Adams, Solís, & McKendry, 2014). Murdock and Hoque (1999) conducted a study that predicted tertiary enrollment of Caucasian students in higher education would decrease to 56 percent of the total population, while African American student enrollment would average 16 percent and all other student enrollment would average 28 percent by 2050. This predicted shift in tertiary enrollment suggests that if the University System of Georgia's enrollment aligns with national trends, the enrollment of African American students will remain constant while the percentage of Caucasian students will decrease with the percentage of Hispanic and student from other nationalities rising.

Higher education gender and diversity studies conducted by Stromquist (2013) and Adams, Solís, and McKendry (2014) discovered that women earned approximately 57 percent of all undergraduate degrees conferred in 2009. Findings from my study paralleled those of Stromquist (2013) and Adams, Solís, and McKendry (2014), finding that 56 percent of the students enrolled in Georgia's colleges and universities were female. When further isolating demographic information by institution type, the ranges at Georgia's public colleges and universities remained consistent with national trends. finding that 55 percent of the students enrolled at research universities were female, 54 percent of the students enrolled at comprehensive universities were female, 57 percent of the students enrolled at state universities and 59 percent of the students enrolled at state colleges were female.

According to Adelman (1998), female students complete degrees in STEM majors at

lower rates than their male counterparts. My findings are consistent with previous studies, finding that females students are 6% less likely to complete degrees at research universities when compared to their male peers.

My study also considered the standardized test scores as a predictor of tertiary degree attainment. A 2001 study by Singell argues that the cumulative math and verbal SAT scores, coupled with a student's grade point average (GPA), were accurate predictors of a student's readiness for the rigors of tertiary education. A student's high school grade point average was not included in the data set used for my study; however, the students' SAT scores were available. Findings from my study were consistent with Singell (2001), indicating that a 100 point increase in a student's math SAT increased the probability of degree completion by 3% at a research university. Moreover, a 100 point increase in a student's math SAT increased the probability of degree completion by 3% at a comprehensive university.

Conclusions

Findings herein demonstrate that need-based and merit-based financial aids coupled with socioeconomic factors are strong predictors of degree completion at Georgia's public colleges and universities. The findings in this study contribute to the overall body of literature concerning the effect of financial aid on tertiary degree attainment at public colleges and universities. The findings further confirm that access and enrollment alone do not result in higher undergraduate degree attainment.

Findings from this study confirm that while a significant number of students do not retain HOPE Scholarships (Dee & Jackson, 1999), recipients of merit-based financial aid who enroll in postsecondary education with higher levels of human capital are better prepared for the rigors of college level scholarship than non-recipients of merit-based financial aid. Considering high

school grade point average is one predictor of degree completion, it is not surprising that the HOPE Scholarship recipients, which requires that a student have a minimum GPA of 3.0/4.0, are more likely to complete tertiary education than non-recipients of HOPE Scholarships. It is also not surprising that students who have mastered mathematical concepts, as evidenced by the math SAT scores, complete tertiary education at higher rates at all institutions types. Previous research suggests that students who master critical reasoning, critical thinking, and writing are better prepared for the rigors of tertiary education (Arum & Roksa, 2011).

This study confirms previous research that suggests that a family's socioeconomic status results in the possession of greater quantities of social, cultural and economic capital that contribute to their tertiary education success. We are also able to conclude that middle- and high-income students that do not qualify for merit aid have a greater probability of degree completion than their lower-income peers. The findings from this study also extend the research indicating that need-based financial aid provides increased economic capital to low-income students seeking tertiary education. This increased financial support, coupled with social, cultural and academic integration programs, may lead to increased degree attainment for low-income students.

Findings from this study confirm existing research (Lord, Camacho, Layton, Long, Ohland, & Wasburn, 2009) arguing that while women enroll in tertiary education at a greater rate, men complete tertiary degrees at research institutions at a higher rate. Perhaps the shifting demographics in the American population will require policymakers and campus administrators to adopt programs and policies to promote increases in currently underrepresented groups.

Implications

The findings of this study offer insight and understanding into factors that predict

undergraduate degree attainment. Quantifying how cultural, social and economic capital influences the probability that a student completes a degree is difficult. Moreover, the changing national demographics of the college aged population, coupled with the changing views of the role of government in funding higher education, requires policymakers and administrators to be increasingly flexible and creative.

The most critical research implication related to the impact of merit- and need-based financial aid is that simply increasing a student's economic capital will not improve tertiary degree completion rates. This conclusion was evident when analyzing the effect the simultaneously earning of merit-based and the awarding of need-based aid had on degree attainment. As reported earlier, increases in social and cultural capital in the form of academic preparation prior to enrollment as well as integration into curricular, co-curricular and extra-curricular activities post enrollment were also critical to increasing tertiary education degree attainment.

Previous scholarly literature as well as this study suggests that degree completion is driven by the extent to which they become integrated into the culture of a college or university through social and academic interactions (Tierney, 1992). It can also be argued that social and academic integration are psychological factors that impact tertiary education and degree attainment (Tinto, 1975). While the assessment of student achievement prior to enrollment (Sherman, 1991; Carter, 2006) and institutional culture (Tinto, 1987) are considered significant predictors of educational success, Sherman, Giles, and Williams-Green (1994) and Carter (2006) maintain that financial support remains a primary predictor of student tertiary education persistence.

Learning communities, first generation affinity groups, tutoring, mentoring and student

orientation programs have frequently been cited as components of successful student degree completion programs. An engaged faculty as well as workshops and seminars designed to improve students' time management and test taking skills are also activities the literature suggests as factors contributing to student retention.

The services described above are examples of what Boudreau and Kromrey (1994), Myers (2003), Austin (1993), Tinto (1993) and Berger (2000) maintain are developed to meet varying needs of students and what the literature refers to as wrap-around services. Moreover, we should consider increasing both financial and non-financial support to initiatives targeted increased degree attainment for students from economically- and educationally-disadvantaged backgrounds that are recipients of need-based financial aid. For instance, the State of New York has replaced many of its remedial programs with co-requisite programs and academic support programs designed to assist students from academically- and economically-disadvantaged backgrounds. Therefore, focusing on the students educational challenges while simultaneously providing social integration programming may be appropriate as a opportunity to increase degree attainment rates.

Increasing degree attainment is a worthy goal. However, many important questions need to be considered by researchers when developing recommendations targeted at achieving these lofty objectives. Researchers could consider how to address anticipated changes in migration patterns and demographic changes in the higher education landscape.

As a postsecondary education administrator and former lecturer for first-year experience programs, the research and findings assist in reinforcing student stop-out patterns I have witnessed throughout my career. In addition, it provides evidenced based research that will assist in my participation in developing a strategic plan aimed at increased degree attainment.

Recommendations

Based on the research findings resulting from the linear probability analyses, the following are recommended for future research and inquiry. Policymakers may want to consider allocating student support resources based on demonstrated needs of a particular institution type and student population. It may be found that existing programs that are targeted to meet the needs of particular ethnic groups could be expanded to benefit students from a broader socioeconomic background. Institutions may consider expanding first-year experience and first-generation programs that support retention and degree completion. Further, the University System should consider opportunities to increase the number of women in STEM-related fields and develop opportunities to support their persistence and completion of degrees in these male dominated fields. Institution officials should examine migration patterns to assess the changing needs of the student body based on local and national population shifts. The University System of Georgia should consider studying success programs implemented by other tertiary education systems that have improved the graduation rates of students who proved to be academically-unprepared and/or financially- undercapitalized at the time of enrollment.

The independent variables in the linear probability model explained a subset of the variation in student degree attainment. The study was unable to account for the impact that a student's commitment to attaining a degree, which Terenzini, Lorang, and Pascarella (1981) argue is critical in predicting degree completion. Gordon (1974) upholds that it is difficult to draw inferences from the assessment results from system-wide programs due to the diversity of student populations between institutions. Moreover, predicting the behavior of the traditional 18-22 year old student enrolled in a post-secondary education program has inherent risks (Sedlacek, 1999; Sherman, Giles & Williams-Green, 1994). However, as expressed by Noel,

Levitz, and Saluri (1985), after considering youthful unpredictability, the success of programs designed to promote academic success can be measured by the individual institution's commitment to student persistence.

Higher education researchers may consider engaging economic and sociology researchers to further explore how the independent variables included in this study impact undergraduate degree attainment. An expanded perspective would assist decision makers in developing programs and policies that will positively impact tertiary degree attainment rates. For instance, this study did not measure the net expected family contribution after accounting for the receipt of the Pell Grant or HOPE Scholarship. Understanding families' out-of-pocket expenditure would assist in evaluating the cost/benefit decisions a family makes when choosing between pursuing a postsecondary education and entering the workforce.

Summary

Findings in this study offer an alterative lens into the predictors that impact degree attainment within the University System of Georgia. Future research should look more closely at institution specific variables. This would assist policymakers, individual colleges and universities in allocating resources more effectively and in developing programs to further promote degree completion.

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