FACTORS CONTRIBUTING TO DEGREE ATTAINMENT FOR STUDENTS OF 
TECHNICAL COLLEGES IN GEORGIA

by
RYAN WALTER FOLEY
(Under the Direction of Karen Webber)

ABSTRACT

The degree attainment of college students is a critical issue for all levels of higher education. College officials want to improve retention, progression, and graduation rates for all students. By 2020, it is projected that over 60% of jobs in Georgia will require some form of college education, whether a certificate, associate’s degree, or bachelor’s degree (Complete College America, 2011). Only 42% of the state’s young adults reach that criterion, and Georgia’s level of higher education attainment is not expected to increase notably in this period (Complete College Georgia, 2011). This study uses posthoc data from the technical colleges in the State of Georgia to analyze select student characteristics that contribute to associate’s degree attainment for students. Findings from this study indicate that associate’s degree seeking students who enter college after they turn 25 years old, who have earned a high school diploma, enroll in the health or trades discipline, receive the HOPE Scholarship, and are academically prepared will have the greatest chance for success. Mindful of the complexities of today’s technical college students, institution officials must be aware of the issues related to at-risk students and be ready to quickly revise support programs that can effect positive change.
INDEX WORDS: Degree Attainment, Age, Diploma Type, Discipline, Gender, Hope Scholarship, Pell Grant, Race/Ethnicity, Region, Remedial English and Math, Technical Colleges, Higher Education, and Graduation Factors.
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by

RYAN WALTER FOLEY
Bachelors of Business Administration, Georgia Southern University, 2003
Masters of Business Administration, Georgia Southern University, 2005

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by

RYAN WALTER FOLEY

Major Professor: Karen Webber
Committee: Erik C. Ness
            Robert K. Toutkoushian

Electronic Version Approved:
Maureen Grasso
Dean of the Graduate School
The University of Georgia
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DEDICATION

To my loving parents Chuck and Joyce Foley; my beautiful and supportive wife, Julie Foley; my amazing son, Ryan Foley Jr.; and my family and friends who have believed in my abilities and encouraged me throughout the entire process of earning my doctorate.
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Sincerely,

Ryan W. Foley
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CHAPTER 1

INTRODUCTION

By 2020, it is projected that over 60% of jobs in Georgia will require some form of college education, whether a certificate, associate’s degree, or bachelor’s degree (Complete College America, 2011). Today, only 42% of the state’s young adults reach that criterion, and Georgia’s level of higher education attainment is not expected to increase in this time period (Complete College Georgia, 2011). Georgia’s Higher Education Completion Plan, a joint effort between the University System of Georgia and the Technical College System of Georgia, calls for cooperation and begins to lay the groundwork in three areas:

1. Create new forms of collaboration and accountability among organizations responsible for or reliant on higher education;

2. Continue to work with the Georgia Department of Education to increase the number of college-ready students graduating from high school; and

3. Reevaluate and envision anew the performance of completion-related aspects of higher education (Complete College Georgia, 2011).

Degree and certificate completion rates must be improved to achieve this goal. Currently in Georgia, 57% of students starting a bachelor’s degree graduate within six years. Only 11% starting an associate’s degree in the University System of Georgia graduate within three years. In the Technical College System of Georgia, 20% of students starting an associate’s degree graduate within three years, and 23% of students starting a certificate graduate within two years (Complete College Georgia, 2011).
Out of every 100 students who enroll in a Georgia public college or university, 54 attend a two-year public college. Of the 54 students, 26 return as sophomores, five graduate on time, four more will graduate in three years, and an additional two will graduate in four years. Only 20% of students who enroll in a two-year public college will graduate within four years of enrolling (Time is the Enemy, 2011). This is in large contrast to the 60% who graduate from a four-year public college in Georgia. Less than 30% of students who start at a community college full-time graduate with an associate degree in three years (Time is the Enemy, 2011). The numbers are eye-opening realities for community colleges across the nation. They help to paint a glum picture of how the United States is falling behind its global competitors and even between generations. Unless things change very quickly across the nation, the current generation of college students will be less educated than their parents’ generation (“www.higheredinfo.org,” 2010).

**Statement of the Problem**

Student swirl, or the inconsistent flow in and out of college coursework from term-to-term, institution-to-institution, reflects the nontraditional nature of many community college students (Pilarzyk & Wang, 2010). It is exceptionally difficult to stereotype the common community college students. They vary by demographics, motivation levels, employment statuses, family backgrounds, and financial abilities. All of these variables create stressors that lead to the “swirl.” These stressors, in turn, influence irregular enrollment and lack of academic success (Pilarzyk & Wang, 2010). Community college students are a very racially diverse population, but some similarities exist. Compared to students at four-year colleges, community college students are more likely to be female, black or Hispanic, and from low-income families (Spellman, 2007). When compared to students attending 4-year colleges, most students are 24 or
older and considered nontraditional students. In addition, the majority have another focuses in life, such as employment, social, financial, and family obligations. The demands to juggle multiple life roles cause many students to forfeit their educational career (Spellman, 2007).

A combination of forces have come together to encourage a much more intensive study of community and technical college student success. To gain a greater understanding of the factors underlying persistence toward a degree, some researches such as Holton (1998) have turned to tracking students from admission and creating models to predict degree completion. Others have researched the length of time to graduation for community college students who transfer to four-year universities (Gao, 2002). Yet, we have sparse comprehensive information available on the factors that contribute to community college student success. This study seeks to fill the gap by examining the characteristics of students at technical colleges who graduate with an associate’s degree and understanding what factors influence their degree completion.

**Significance of the Study**

The significance of the study is the potential to generalize student factors that contribute to degree attainment and fill the gap as it pertains to technical college students. As the statewide completion effort continues to evolve, this study will allow institution officials to consider the policies and procedures in place that may contribute to the low degree attainment rates. In addition, it will also provide a knowledge base that will allow an institution to consider the development of new programs or support services to bridge the gap for students that may be identified as having a low probability of degree attainment. As the researcher for this study, I am an administrator at a technical college in Georgia responsible for student support services and will benefit from the findings of this study by enhancing my understanding of student characteristics and their impact on degree attainment.
An important element to keep in mind when reviewing this study is the structure of higher education in the State of Georgia. The Technical College System of Georgia offers Associates of Applied Science (A.A.S.) degrees and in 2007 offered no Associates of Science (A.S.) degrees. The focus of an A.A.S. degree is to prepare people to go directly into the workforce. The curriculum is generally designed with fewer core class requirements than typical A.S. degrees and has additional occupational courses. The A.S. degree is typically designed for students who desire to transfer into a traditional four-year institution or degree. The curriculum has additional core classes and fewer occupational classes. Both associate degrees are generally the same length in time but their curriculum is designed for a different end result in mind. The University System of Georgia has two-year institutions that offer A.S. degrees and are focused on preparing students to transfer. The literature base for degree attainment focuses on bachelor and associate degrees but does not specify the type of associate’s degree. This study provides research focused specifically on the Associates of Applied Science degree.

**Background of Literature**

Community colleges are generally charged with a similar mission across the nation-- to serve the social and cultural needs of the communities of which they are a part (Spellman, 2007). Unlike traditional four-year colleges and universities, community colleges commonly have an “open door” admissions policy that allows academically and socially underprepared students to enroll in postsecondary education. In addition, community colleges have absorbed the job of providing remedial coursework, a delineation that separates them from the four-year sector (Hagedorn, 2010). These institutions are up for the challenge, as they are committed to serving people in their communities, have a commitment to teaching, and have a commitment to workforce development (Spellman, 2007). However, even though community colleges are
focused on their mission, they are in a constant battle to balance services and provide support for all of their students.

Students who enroll in college immediately after high school have a higher retention rate and are more likely to complete their college degrees than those students who postpone enrollment (Berkner, Cuccaro-Alamin, & McCormick, 1996). Economic levels (defined as family income) have a significant impact on whether a student enrolls in college after completing high school. King (2000) and Berkner (2000) note that with the exception of African-American males, as a student’s family income increases, so does their enrollment in college.

In addition, King (2000) found that among white men and women of traditional college age, there was little difference in enrollment (49% enrollment to 51% enrollment). However, the greatest difference in enrollment rates by gender was found for African-American men and women (37% to 63% enrollment, respectively; King, 2000). The difference is slightly less for Asian-Americans, where men attend college at a higher rate (54% men and 46% women); and Hispanics (45% men and 55% women; King, 2000). The gender gap is caused by the disparity of enrollment among African-American males and Hispanic males (King, 2000).

Persistence is a concern for college campuses across the country because of the enormous amount of time that parents, students, and college officials spend on the college selection process. It is puzzling that almost one-half of students who begin two-year colleges depart by the end of their first year (Braxton, Shaw-Sullivan, & Johnson, 1997). Researchers have identified a number of factors that contribute to the persistence of students. Along with student ability and first semester GPA (Pascarella & Terenzini, 2005), financial resources continue to be a major factor that will determine if a student enrolls in and persists through
college (Berkner, 2000; King, 2000; St. John, 1990). Financial aid has a direct effect on persistence, including grants and scholarships. Other persistence indicators include having children (Leppel, 2002), being involved with campus (Astin, 1993; Leppel, 2002), being married (Leppel, 2002), living in a residence hall learning community (Edwards & McKelfresh, 2002), high school GPA (Smith, Edmister, & Sullivan, 2001), degree aspirations and economic status (Smith, Edmister, & Sullivan, 2001; King, 2000), age, race, and ethnicity (Hu & St. John, 2001), gender (Leppel, 2002), and institutional factors including size and type (Astin, Tsui, & Avalos, 1996).

Along with factors mentioned above, first generation college students are at a greater risk of not completing their degrees versus those students whose parents had some advanced education. First generation college students tend to have several risk indicators, including economic status, being more likely to enroll in a two-year institution (51%), and poor academic preparation (Nunez & Cuccaro-Alamin, 1998). However, Nunez and Cuccaro-Alamin (1998) found that students whose parents had some advanced education but did not receive a degree did have a higher rate of degree attainment than those students whose parents had no post high school education. Among first generation college students, men are less likely to attain a degree compared to women. Overall, 64% of the men who were first-generation who enrolled in college earned their degree compared to 67% of the women (Nunez & Cuccaro-Alamin, 1998). However, when these researchers looked deeper and controlled for other variables, Nunez and Cuccaro-Alamin (1998) found even lower degree attainment (57%) for first generation African-American students.

Studies have found that four-year institutions have a higher percentage of graduates compared to two-year institutions (Pascarella & Terenzini, 2005). Students who begin at a two-
year institution are less likely to complete their degrees compared to those students who begin at a four-year institution (Nunez & Cuccaro-Alamin, 1998; Peter & Cataldi, 2005). Students who attend private colleges, small colleges, or gender-specific colleges tend to have higher graduation rates. Students who are engaged in their campus communities through social activities and involvement with faculty, both inside and outside the classroom, also have higher rates of graduation (Astin, Tsui, & Avalos, 1996; Pascarella & Terenzini, 1991, 2005). Highly selective admissions processes also show a higher degree attainment (Pascarella & Terenzini, 1991, 2005). Women who attend a women’s college and African-Americans who attend a predominantly black institution have a higher degree attainment than their counterparts who attend co-educational or predominantly white campuses, respectively (Astin, Tsui, & Avalos, 1996; Kane, 1994; Pascarella & Terenzini, 2005).

The social integration (involvement on campus and with faculty members) of a student had a positive effect on degree attainment (Astin, 1993). In addition to social integration, institutions that provided their students with a student orientation and first year program have had a positive effect on degree completion (Pascarella & Terenzini, 2005).

To assist in student success, institution officials are developing intervention programs to improve the retention rates. Research has shown that learning support or remedial programs improve the retention of underprepared students (Weissman, Sikle, & Bulakowski, 1997). Comprehensive support programs, such as the student support services through the TRIO program, have shown that student participation in the support programs improve persistence (Astin, 1993). For African-Americans and sophomores, faculty interaction had the strongest influence on persistence (Astin, 1993). Sax, Bryant, and Harper’s (2005) study supported previous research that students of both genders who had interactions with faculty were more
inclined to stay at the institution, had self-confidence in their academic work, and acknowledged their leadership ability.

A solid focus on student learning by the institution has also shown an increase in graduation rates. Kuh et al. (2005) believes institutions that have created an environment that enhances educational learning have improved the interaction among faculty and students and students and students. Kuh et al. also found that institutions with high graduation rates have programs that promote student success in all aspects of the college campus in terms of policies and procedures. Another practice of schools with higher graduation rates is their focus to look for ways to improve both the academic and out-of-classroom experiences for their students. Finally, all parts of campus, academic, student affairs, business affairs, and athletics are all engaged in improving the education experience and their student success (Kuh et al., 2005).

When considering degree attainment, the blend of ideas from Bean and Metzner’s (1985) Attrition Model for Non-traditional Students and Astin’s (1993) input, environment, and outcome (I-E-O) model provide a more comprehensive understanding of why a student persists to graduation rather than drop out. With this study’s focus on student characteristics (inputs), Astin’s (1993) I-E-O model provides additional guidance by considering the student characteristics (gender, race/ethnicity, economic background, high school GPA [through HOPE Scholarship], and major) as the inputs into the model and degree attainment as the outcome. Bean and Metzner’s (1985) model is focused on nontraditional students and suggests that background and defining variables external to the college prevent the social integration of the nontraditional student to the college culture and are most critical to the decision to persist or dropout. Bean and Metzner’s (1985) and Astin’s (1993) research provided the basis to determine
which student characteristic variables affected degree attainment for students of technical colleges in Georgia.

**Research Questions**

By examining data extracted from the Technical College System of Georgia’s Data Center, this study explored the following research questions:

**RQ1.** To what extent do a student’s race/ethnicity, gender, and age predict associate’s degree attainment?

**RQ2.** To what extent does a student’s chosen discipline predict associate’s degree attainment?

**RQ3.** To what extent do differences in the geographic location of a student’s college predict associate’s degree attainment?

**RQ4.** To what extent does taking a remedial English or math course predict associate’s degree attainment?

**RQ5.** To what extent does receiving the Pell Grant or HOPE Scholarship predict associate’s degree attainment?

**RQ6.** To what extent does earning a high school diploma or GED® diploma predict associate’s degree attainment?

**Research Strategy**

Using data obtained from the Technical College System of Georgia, and using the Statistical Package for Social Science (SPSS), version 20, initial analyses examined the data broadly, then used logistic regression was used to determine factors that predict persistence and graduation. Descriptive analyses were completed first to fully understand the dataset. Following descriptive analyses, I examined the relationships of each student characteristic with
the outcome variable of degree attainment. Chi-square analyses determined if there was evidence of a relationship between degree attainment and the independent variables, and led me to a final step using logistic regression to answer the research questions of to what extent do race/ethnicity, gender, age, discipline, diploma type, institutional region, remedial courses, Pell Grant, and HOPE Scholarship predict degree attainment. Findings are shared in Chapter Four, followed by Chapter Five’s discussion and implications in for future work and study of technical college students and their pursuit of the associate’s degree.

Limitations

As the researcher, I have examined the data mindful of possible errors. No errors were found, yet I am unable to ensure the accuracy of the data extracted from college level student information systems. In addition, using the Data Center of the Technical College System of Georgia for the data source limits the variables available to use in the data analysis of this research. The data provided by TCSG did not include all requested information. For example, the data did not differentiate between full-time and part-time students which must be taken into consideration when comparing data nationally. Also, data was not available about through TCSG that indicates a student’s high school GPA which past research shows is a significant predictor of degree attainment.

Definition of Terms

Degree. For the purposes of this study, degree means associate’s degree.

Degree attainment. The completion of a program of study and graduation with an associate’s degree.

Technical college. A two year, degree-granting institution.
Two-year institutions. Institutions that offer an associate’s degree. This will include community colleges and technical colleges.

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

Retention. The student returns to the institution they attended the previous year.
CHAPTER 2
REVIEW OF THE LITERATURE

This chapter provides a review of literature that contributes to understanding degree attainment and student retention of associate’s degree students. Although a predominant number of studies focus on traditional students in baccalaureate degree programs, we do not have an understanding of factors related to college degree attainment for individuals seeking the associate’s degree. These studies provide a basis for understanding degree attainment in general.

Degree Attainment

Research by Nippert (2000-2001) identified 14 variables that account for 22% of the variance in predicting two-year associate’s degree attainment. The 14 variables were gender, their academic record in high school, involvement in campus activities, work status, their GPA in college, income of their parents, social activities, satisfaction with both academics and social aspects of college, number of hours spent on academic pursuits and social pursuits, getting married, and choosing to re-enroll (Nippert, 2000-2001). Out of these 14 variables, only two were directly related to the institutional college GPA, satisfaction with academics and involvements in campus activities. The remaining variables were the students’ inputs and cannot be affected by the college. Student degree attainment is influenced by changes in family status, financial aid, and self-knowledge about academic skills and interests that occur during the first year (Dowd & Coury, 2006).

In an extensive review of the national students through the NELS: 88/2000, Adelman (2006) identified ten variables that were significant for bachelor’s degree attainment. The
following variables were positive contributors to degree attainment: (a) academic resource, (b)
socioeconomic status, (c) first calendar year GPA, (d) earned summer term credits, (e) trend in
GPA, (f) having a higher number of cumulative credits in college-level mathematics, and
having continuous enrollment. The following variables were negative contributors to degree
attainment in the study: (a) attended multiple schools, (b) ever worked part-time, and (c)
withdrawing from classes (Adelman, 2006). The study also found that students who do not
delay in entering college were more likely to complete their degree (Adelman, 2006).

Pace of earning college credit was also important. Adelman (2006) reported that
students who earned less than 20 credits in their first year in college reduced their likelihood
to graduate by 22.4%. On the contrary, students who attended summer school improved their
odds of degree completion by 12% because it increased the number of credit hours and
continuous enrollment. Adelman (2006) also found a negative relationship for students who
worked part-time and degree attainment. Working part-time reduced the likelihood of earning
a degree by 25% (Adelman, 2006). Another negative significant relationship with degree
attainment is attending multiple schools. Although there was no negative relationship found
when students attend a two-year institution and then transferred to a four-year institution,
Adelman found that attending multiple schools while seeking the same degree can reduce the
student’s chance of graduating by 15% (Adelman, 2006). Students considered transfer
students were those that accumulated a certain amount of hours and then progressed to a four-
year institution as part of a plan to attain a degree. The students with multi-institutional
attendance were considered “swirl” students and didn’t follow a plan for degree attainment.
As was found in other studies, as a student’s GPA increases, they have an increased
probability of graduating (Adelman, 2006). The ratio for students withdrawing from classes
or not earning credit in more than 20% of their coursework have a 49% greater chance of not graduating. Even though many students will stop-out, research has shown that continuous enrollment does increase the probability of graduating by 43% (Adelman, 2006).

As researchers examine reasons for degree completion, they must also be aware of data nuances and the possibility of incomplete data. Capaldi, Lombardi, and Yellen (2006), for example, warned that the data collection methods used by institutions can skew the numbers when considering graduation rates. Often, institution officials may exclude students who do not begin the fall semester, are part-time students, or have transferred in from another institution. Once they leave, transfer students are counted against the retention and graduation rates of their native school, yet they are not included in the graduation rates for the institution to which they graduate. This reporting is due to the methodology of the federal government definitions, and these reports exclude a growing large number of transfer students and part-time students (Capaldi, Lombardi, & Yellen, 2006).

Along with individual factors mentioned above, family income levels may also impact graduation rates. Based on income, 34.4% of college students were from families that earned more than $75,000 compared to families that earned less than $25,000, with only 13.7% enrolling in college even though this group made up 23.2% of the graduating high school class in 1998 (Mortenson, 2000b). Families that earned between $50,000 - $75,000 and $25,000 – $50,000 had about the same percentage of students in school at 26 percent (Mortenson, 2000b). Overall, based on family income, the highest postsecondary participation rates include students whose families earned greater than $75,000, however, when controlling for gender and income, women still graduate both from high school and enroll in college at higher rates.
than do men. When controlling for income alone, whites and Asians graduate from high school and enroll in college at higher rates than Blacks and Hispanics (Mortenson, 2000b).

Along with the student characteristics listed above, institutional characteristics have been found to have an effect on bachelor’s degree attainment of students. Volkwein and Szelest (1994) identified five dimensions to evaluate an institution on what can contribute to the degree attainment of their students. The dimensions are (a) the mission of the institution (type of institution and highest degree offered); (b) the size of the institution (enrollment, full-time faculty, library holdings); (c) the wealth of the institution (the ratio of students to faculty, revenue per student, expenditures per student for academic support, student and auxiliary services); (d) the diversity of the institution (on-campus housing, revenue from auxiliary units, the percentage of minority and foreign students and commuters); and (e) the selectivity of the institution (use of percentage of acceptance, SAT scores, faculty quality through salaries).

Astin (2005) developed a stepwise linear regression consisting of 56,818 students (first-time, full-time freshmen from the Fall 1994 incoming class) and found that the difference in graduation rates by institution is highly dependent on the student characteristics of the entering cohort at that institution, and two-thirds of the variance in graduation rates between institutions can be attributed to the differences in the student bodies between the institutions (Astin, 2005). Therefore, the difference in graduation rates between institutions is predominately contributed to the differences in the student bodies (Astin, 2005). Even though these differences are predominantly attributed to the student characteristics, Astin did believe institutions should make every effort to improve their graduation rates through programs and initiatives.

Another factor that studies consistently show affect degree attainment is student stop-out. DesJardins, Ahlburg, and McCall (2002) analyzed the incoming freshman class of over
2300 students at the University of Minnesota-Twin Cities campus in 1991 and again in 1998 and found that 61% of the students at some point did not attend college for at least one academic term. Of the 61%, students who stopped-out were mostly likely to be male from underrepresented minority groups, who were undeclared, had low first term GPAs and ACT scores, had a high level of need for academic assistance and financial aid, and had a high level of loans. The study also found students who do not enroll for more than one academic term are more likely not to graduate (DesJardins et al., 2002). This study also identified students who took college classes while in high school were more likely to graduate from college and found that merit aid can reduce the chance of a student taking an academic term off, therefore, increasing the student’s likelihood of graduating.

Student demographics play a key role in degree attainment for students. Adelman (2006) completed an extensive review of the national longitudinal student through the NELS: 88/2000 and found that students who do not delay in entering college were more likely to complete their degree. At whatever age students begin college, Adelman (2006) believed they are not empty vessels; they come with demographic characteristics and high school experiences (and, if there is a gap of years between high school graduation and postsecondary entry, work experiences and family formation as well) that condition and shade where and how they enter the postsecondary system. Once at an institution, these background characteristics interact with the academic processes and social environment of that institution to yield varying degrees of determination to persist and complete credentials (Adelman, 2006).

In addition to age, gender was proven an essential part of the degree attainment equation (Nippert, 2000-2001). In the United States since 1979, women have graduated and continue to graduate from college at a higher rate than men do. Prior to 1980, men in the United
States earned more associate’s degrees than women did. Since then, women have outpaced men in earning associate’s degrees. In 2003, women earned 58% of all associate’s and bachelor’s degrees in the United States conferred during that year compared to men who earned 42% of degrees (U.S. Department of Education, 2004a).

Another important student characteristic is the race/ethnicity of a student. This characteristic cannot be changed. Adelman (2006) did not find race to have a statistically significant effect on degree attainment in any of the logistic regressions he ran using the NELS:88/2000 to determine what variables are significant in degree attainment based on the criterion of the statistical model. However, Adelman (2006) suggested that it could be acting indirectly through other variables. Adelman’s (2006) research also suggested that minority students, especially black and Hispanic, are less likely than white students to enroll in college and attain a degree (Adelman, 2006).

Degree attainment can also be influenced by the type of secondary degree at student earned. The popularity of the GED®, and other alternative routes to high school certification increased dramatically in the early 1990s (Murnane, Willet, and Tyler, 2000). The proportion of 18-24 year-olds with a GED® or similar high school credential more than doubled from 4.2% in 1988 to 9.8% in 1996. According to the U.S. Census, one in seven young adults classified as a high school graduate holds a GED® (Murnane et al., 2000). The popularity of the GED® has led many states to review and stiffen testing standards (Boesel, 1998), but whether or not individuals who pass the GED® are better prepared to enter higher education has yet to be studied in detail.

However, a study by Schafer and Wilkinson (2008) explored whether obtaining a GED® or a high school diploma increased the likelihood of postsecondary educational attendance and degree attainment. After controlling for gender, race, class, and location, both high school
credential holders (GED® and Diploma) were significantly more likely to attend postsecondary education. In addition, both were also more likely to earn a credential than a dropout was, however this was only significant for GED® holders.

Financial need is a significant factor in a student’s consideration of college, choice of colleges to which they apply, and of course, it is a significant determiner in persistence to graduation. According to St. John (1990), students who need and who receive financial aid (scholarships, grants, or loans) are more likely to attend and stay in college. Although students from high-economic incomes are less likely to determine which college to attend and stay based on the financial aid awarded, tuition costs and total financial aid packages were determined to influence a student’s decision to attend a specific institution and to stay at that institution or withdraw (St. John, 1990). Similarly, DesJardins et al. (1999) found merit based aid (scholarships/grants) can improve the retention rate of students compared to need based (loans and work-study). DesJardins et al. (2002) found that merit aid can reduce the chance of a student taking an academic term off, which therefore increases a student’s likelihood of graduating.

DesJardins et al. (2002) also found financial aid that is merit-based has an indirect relationship with degree attainment because it improves the likelihood a student will remain enrolled without stopping-out, which is a strong predictor a student will graduate. It was also determined that all other forms of financial aid do not affect graduation rates directly but indirectly. Relatedly, students who receive financial aid, specifically grants, tend to take longer to complete their degrees because they take fewer credit hours per semester, work, and may stop-out for a semester to work (Muraskin, Lee, Wilner, & Swail, 2004; Volkwein & Lorang, 1995).
Dowd and Coury (2006) used the National Center for Educational Statistics (NCES) longitudinal data from National Postsecondary Student Aid Study (1989-1990) and the Beginning Postsecondary Students, Second Follow-up (BPS 90/94) to analyze the impact of student loans on degree attainment at the community college level. In this study, the researchers found the average loan a community college student accepted was $2,500, which suggests the loan not only covers the educational needs but also his or her living costs. Of the 694 students in the final sample, only 27% who accepted a loan graduated with an associate’s degree compared to 45% of the students who did not accept a loan (Dowd & Coury, 2006). These authors found that work-study and grants made no significant difference in completion rates, but that loans had a negative association with persistence and degree attainment for community college students who attended a two-year institution and did not transfer to a four-year institution.

If their goal is to graduate, some scholars believe that Pell Grant recipients should attend the most selective institution in which they can be admitted (Mortenson, 2000a; Muraskin, Lee, Wilner, & Swail, 2004). Financial aid was shown to have the strongest influence on persistence and graduation rates during the first and third year (Muraskin et al., 2004). Even students who received the Pell Grant and had average SAT scores of less than 1000 had a 61.6% graduation rate compared to students who attended a low selective (community or open enrollment) institution at 31% (Mortenson 2000a). At highly selective institutions, students who had an SAT score of 1001 to 1099 had a graduation rate of 69% and students whose SAT score was 1100 or higher had a 78.7% graduation rate (Mortenson 2000a). Private institutions have a higher graduation rate for Pell Grant recipients than public institutions (Mortenson 2000a; Muraskin et al., 2004).
These researchers also found that Pell Grant recipients had the highest graduation rates from institutions that had active advising programs, smaller class sizes, the TRIO Program, Student Support Services, peer tutors, and mentors (Muraskin et al., 2004). All the programs connect students with mentors, either faculty or peers, to help the students adjust to campus or receive help, since research has shown many Pell Grant recipients were under-prepared in high school and tend to have lower test scores (Muraskin et al., 2004).

The effectiveness of merit-based scholarships for two-year students has also received extensive study. Henry, Rubenstein, and Bugler (2004) evaluated the HOPE Scholarship (a State of Georgia Merit Scholarship awarded to all students who are residents of Georgia, graduate from high school with a 3.0 GPA, and maintain a 3.0 GPA while in college) based on students who were at the borderline of receiving the scholarship out of high school against students who did not receive the scholarship. Their study found that borderline students were twice as likely to graduate from college then non-HOPE recepients at two-year institutions and 72% higher at four-year institutions. However, the researchers found that students who received the HOPE Scholarship but lost the scholarship were at no more of an advantage to graduate than the students who were non-recipients of the scholarship (Henry et al., 2004).

While the focus of this study is student characteristics, an institution’s geographic region (urban/rural) can influence degree attainment. In 2000, approximately 16% of adults age 25 and older from rural areas graduated from a four-year college, which is more than double the 1970 rate (Gibbs, 2003). Yet, the rural-urban gap in educational attainment persists, especially with respect to postsecondary enrollment and attainment (Gibbs, 2003). In their analysis of the National Longitudinal Survey of Youth, Blackwell and McLaughlin (1998) found that although rural youth aspired to fewer years of education than their urban counterparts in 1979 (age 14 to
17), they came closer to achieving their goals than urban youth by 1990 (age 25 to 28). Using data from the National Education Longitudinal Study of 1988 (NELS:88), Adelman (2006) also found few rural-urban differences in bachelor’s degree attainment. No research was found differentiating associate’s degree data for rural/urban influences in degree attainment.

Furthermore, little research has explicitly investigated rural-nonrural (urban) differences in postsecondary attainment using longitudinal data (Byun, Meece, & Irvin, 2010). Consequently, relatively little is known about what role attending a rural or urban institution has on associate’s degree attainment. Nevertheless, evidence concerning the role of family background and school resources has important implications for potential rural-nonrural (urban) differences in postsecondary attainment, given the socioeconomic and educational challenges of many rural areas across the U.S. (Byun et al., 2010).

Remedial education also influences a student’s likelihood to attain a degree. Although college attendance is a goal for many individuals, more than 50% of two-year college students in 2012 required some remedial coursework prior to attending regular postsecondary classes (Remediation, 2012). In many instances, remediation helps. Kreysa (2006) found that students who were under-prepared for college and who took remedial classes had no significant difference in graduation compared to students who were not enrolled in remedial classes. In addition, remedial students improved their GPA over time, which then improved their degree completion (Kreysa, 2006). This is consistent with the findings from Adelman (2006), who found that as a student increased their GPA, their graduation completion rate improved.

Adelman (2006), in a study of the academic careers of traditional-age community college students, found that remediation (one dichotomous variable marking any remedial
reading, and one multi-level variable based on type and number of remedial courses) did not affect either transfer or (for students who did not transfer) completion of an associate degree (Adelman, 2005a). Other recent research, using a very sophisticated targeting of students whose need for remediation may differ according to the school they enter, goes beyond the finding that remediation is not a drag on degree completion to demonstrate that, in terms of persistence; remediation yields positive results (Bettinger & Long, 2005). Two studies do not make for a definitive conclusion, but the evidence that students who successfully pass remedial course work gain momentum toward degrees is beginning to build (Adelman, 2006).

A number of studies confirm that student’s selected major has an impact on persistence to graduation. For example, in a University of Iowa study, students who were majoring in engineering and business had higher graduation rates than students in the social science majors (DesJardins et al., 2002). In 23 highly selective institutions, Smyth and McArdle (2004) found that men were more likely to graduate from engineering, science, and mathematic fields than women.

Allied health professions, fine arts, and engineering were found to have a negative effect on graduation rates (Astin, 2005). Declaring a major can improve the graduation rates of students not enrolled in remedial classes by 22%, but changing a major can have a negative impact on persistence and graduation (Kreysa, 2006). Students who declare a professional major in their first year in school have an increased probability of graduating of between 5.6 to 6.1% (Singell & Stater, 2006). The selection of a student’s major can have a significant impact on the likelihood he/she is to persist to degree attainment.
Retention

Directly related to degree attainment is student retention, and a volume of studies have examined the relationship between retention and graduation. Crawford (1999) defined retention at traditional universities as “maintenance of continued enrollment in classes throughout one semester” (p.13). However, factors related to retention at traditional universities are not the same as those of non-traditional, post-secondary educational institutions, specifically two-year colleges (Walleri, 1981). For example, Lotkowski, Robbins, and Noeth (2004) completed a meta-analysis on 400 studies with 109 criteria relating to college persistence and graduation. From the 109 factors, the meta-analysis found 11 factors that had a positive relationship to retention. These factors were academic-related skills, academic self-confidence, institutional commitment, social support, social involvement, institutional selectivity, and financial support. School grade point average, socioeconomic status, and ACT Assessment scores were identified as the strongest academic predictors for persistence and graduation (Lotkowski et al., 2004). The researchers also found that even if a student can master the course materials, if the student lacks in academic confidence, goals, commitment to the institution or social support, they had a higher risk of dropping out.

Additional strong factors related to retention were students who had developed academic-related skills (time management, study skills, and habits), academic self-confidence, and stated academic goals. After completing additional analyses of the variables, the researchers were able to determine that 17% of the variability of college retention can be explained when combining socioeconomic status, high school grade point average, and ACT Assessment scores with institutional commitment, goals, social support, academic self-confidence, and social involvement (Lotkowski et al., 2004).
A basic difference in the two-year institution versus the four-year institution is the interaction associated with an academic community. For the student whose experience is based on a college campus commons, dormitory, and daily collegiate environment, being on campus several hours a day is much different than for the two-year college student who typically has limited interaction with the academic community outside the classroom. The majority of students who attend two-year colleges differ from traditional students in four-year colleges in that they tend to be employed outside the institution and come to campus only at class time or for limited student services (Crawford, 1999).

Previous research has shown that there are many factors that contribute to degree attainment. The majority of the studies have examined baccalaureate degrees and some have examined associate’s degree. However, the span of literature on associate’s degree completion is sparse and because of the recent increases in associate’s degree students, combined with their diverse backgrounds, this topic calls for more research.

**Guiding Conceptual Framework**

Unlike previous frameworks that addressed students more generally or focused on four-year degree students, Bean and Metzner’s Model of Nontraditional Undergraduate Student Attrition was the first theoretical model to specifically address the non-traditional student experience in higher education (Bean & Metzner, 1985). These scholars contend that other theoretical models relied on social integration into the college community and since most non-traditional students were not often socially integrated into the college, another model was needed (Summers, 2003). Since the vast majority of technical college students are nontraditional under Bean and Metzner’s (1985) definition, this model is relevant to and thus helps guides this study.
Shown in Figure 1.1, Bean and Metzner’s model resulted from a thorough review of the literature on nontraditional students and that the linkages between elements were derived from other models of traditional student attrition and behavioral theories (Summers, 2003). They proposed that the dropout decision for non-traditional students is based on four sets of variables: background and defining variables (includes demographical information, high school performance and educational goals); academic performance (measured by high school grade point average); intent to leave (influenced primarily by psychological outcomes and academic variables); and environmental variables (includes commuting, family, and employment).

According to Bean and Metzner’s (1985), environmental variables are presumed to be more important for nontraditional students than academic variables. Therefore the model suggests three scenarios. First, students are more likely to remain in school when both academic and environmental variables are good but would probably leave school when both variables are poor. Secondly, students are more likely to leave school when academic variables are good but environmental variables are poor and the academic variables on retention will not be seen. Thirdly, students are more likely to remain in school when environmental support is good and academic support is poor, the environmental support will compensate for low scores on the academic variables. For example, students with strong academic support will not remain in school if their child care arrangements are inadequate or their work schedules interfere with classes. However, students with good environmental support such as encouragement to stay in school by family and employers will probably remain in school despite poor academic support (Bean & Metzner, 1985).
When considering degree attainment, the blend of ideas from Bean and Metzner’s (1985) Attrition Model for Non-traditional Students and Astin’s (1993) input, environment, and outcome (I-E-O) model provide a more comprehensive understanding of why a student persists to graduation rather than drop out. With this study’s focus on student characteristics (inputs), Astin’s (1993) I-E-O model, illustrated in Figure 1.2, provides additional guidance by considering the student characteristics (gender, race/ethnicity, economic background, high school GPA (through HOPE Scholarship), and major) as the inputs into the model and degree
attainment as the outcome. Bean and Metzner’s (1985) model is focused on nontraditional students and suggests that background and defining variables external to the college prevent the social integration of the nontraditional student to the college culture and are most critical to the decision to persist or dropout. Bean and Metzner’s (1985) and Astin’s (1993) research provided the basis to determine which student characteristic variables affected degree attainment for students of technical colleges in Georgia.

*Figure 1.2* Astin’s (1993) I-E-O Model
Research pertaining to retention, persistence, and graduation is extensive, yet limited information is available on community and technical college students. To limit the scope and to provide needed information, this study focused on exploring the individual student characteristics that influenced the degree attainment among students at technical colleges in Georgia. The methodology section of this study presents the research questions, the data sources, the methods, and variables used to address the research questions.

**Research Questions**

**RQ1.** To what extent do a student’s race/ethnicity, gender, and age predict associate’s degree attainment?

**RQ2.** To what extent does a student’s chosen discipline predict associate’s degree attainment?

**RQ3.** To what extent do differences in the geographic location of a student’s college predict associate’s degree attainment?

**RQ4.** To what extent does taking a remedial English or math course predict associate’s degree attainment?

**RQ5.** To what extent does receiving the Pell Grant or HOPE Scholarship predict associate’s degree attainment?

**RQ6.** To what extent does earning a high school diploma or GED® diploma predict associate’s 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 Technical College System of Georgia (TCSG). The use of this data allowed me to present a statewide picture of degree attainment in TCSG. In addition, the study sought to inform how student characteristics contribute to degree attainment.

Data and Participants

The TCSG Data Center stores student level data from the student information system of each technical college in the Georgia system. The Data Center is part of the Data, Planning, and Research Division which supports the mission and goals of TCSG through data collection, application development and support, research, strategic planning, and policy analysis. This unit provides data and reporting services for the system's technical colleges and adult education programs, and participates in collaborative data sharing initiatives with other government agencies and educational entities. The focus of this study included students within the Technical College System of Georgia. TCSG is comprised of 25 technical colleges and one technical division at a University System of Georgia institution. To ensure consistent institutional types, the technical division of the University System of Georgia was not included in this study. During Academic Year 2013, TCSG had over 151,000 students enrolled in its colleges across the state. All colleges within TCSG are two-year public degree-granting institutions that offer associate degrees, diplomas, and technical certificates of credit (certificates) and converted from the quarter system to the semester system in fall of 2011.

The study examined a cohort of students that began in fall 2007. The cohort consisted of students who were enrolled for the first time at any of the technical colleges in Georgia and were
not high school students. The cohort represented 2,259 associate degree-seeking students. The 2007 cohort period was used to allow students that graduated within 200% time to be included in the degree attainment study.

Research Strategy

Using data obtained from the Technical College System of Georgia, and using the Statistical Package for Social Science (SPSS), version 20, initial analyses examined the data broadly, then followed by logistic regression analyses to determine factors that predict persistence and graduation.

Descriptive Analyses

The first part of the analysis included a descriptive examination of the students’ characteristics by degree attainment. This provided an overall difference between students who obtained degrees and those who did not graduate. Descriptive analyses included frequency distributions and cross tabulations to address the research questions.

The next part of the analysis assessed the relationships of each student characteristic with the outcome variable of degree attainment to address the research questions. To assess differences, I used a chi-square analysis for these categorical variables. This analysis determined if there is evidence of a relationship between degree attainment and the independent variables.

Regression

The third part of the analysis answered the research questions on the extent to which race/ethnicity, gender, age, discipline, diploma type, institutional region, remedial courses, Pell Grant, and HOPE Scholarship predict degree attainment. A logistic regression model was
developed using the dichotomous dependent variable, degree attainment (yes/no). The following equation was used:

\[
\text{Degree Attainment} = f(\text{independent variables: (Gender; Race/Ethnicity; Discipline; Age; Remedial English; Remedial Math; HOPE Scholarship; Pell Grant; Region; and Diploma Type)})
\]

\[
\logit(p) = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + \ldots + b_k X_k
\]

Where \( p \) is the logged probability of degree attainment, \( b_0 \) is the intercept, and \( X_1, \ldots X_k \) are the variables contributing to the probability of degree attainment (region, gender, race/ethnicity, etc. as shown above).

**Variables and Their Measures**

The variables for this study are from the Data Center of the Technical College System of Georgia and were used to address the research questions for this study. These variables are listed in Table 3.1 and described in detail below.

Table 3.1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Categories/Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable DEGREEATTC</td>
<td>Degree Attainment</td>
<td>No degree attained = 0; Associate’s Degree attained = 1</td>
</tr>
<tr>
<td>Independent Variables AGESTARTOFTERM</td>
<td>Age at Start of Term</td>
<td>Continuous</td>
</tr>
<tr>
<td>DIPLOMAC</td>
<td>Diploma Type</td>
<td>0 = GED®; 1 = High School Diploma</td>
</tr>
<tr>
<td>DISCIPLINEC</td>
<td>Discipline</td>
<td>1 = Education; 2 = STEM; 3 = Business Communications; 4 = Health; 5 = Trades 6 = Other</td>
</tr>
<tr>
<td>GENDERC</td>
<td>Gender</td>
<td>0 = Male; 1 = Female</td>
</tr>
<tr>
<td>HOPEC</td>
<td>Received HOPE Scholarship</td>
<td>0 = No; 1 = Yes</td>
</tr>
<tr>
<td>PELLCC</td>
<td>Received Pell Grant</td>
<td>0 = No; 1 = Yes</td>
</tr>
<tr>
<td>RACEETHC</td>
<td>Race/Ethnicity</td>
<td>1 = Black; 2 = White; 3 = Other</td>
</tr>
<tr>
<td>REGIONCC</td>
<td>Institutional Region</td>
<td>0 = Rural; 1 = Urban</td>
</tr>
</tbody>
</table>
Dependent Variables

The dependent variable for this study was degree attainment.

Degree attainment. The variable was coded: No degree attained = N and associate’s degree attained = Y. This study focused on only those seeking an associate’s degree and did not consider students who have earned a certificate or diploma as having attained a degree. The variable was recoded to: No Degree Attained (Code: 0) and Associate’s Degree Attained (Code: 1).

Independent Variables

The independent variables are:

Age. The age of the students is derived from the birthdate and recoded into three categories for use during the descriptive statistics analysis. The age used represents the age that students were when they started the term in fall of 2007. The variable was recoded to: Age 17-19 (Code: 1), Age 20-24 (Code: 2), and Age 25 and over (Code: 3). (Variable: AGEC). The actual age at the start of the term was used during the logistic regression (Mean: 22, Minimum: 16, Maximum: 60). This variable is continuous (Variable: AGESTARTOFTERM).

Diploma type. This variable was derived from HS/GED® Code and was recoded to represent whether a student obtained a high school diploma or a GED® diploma. Codes 12, 13, 14, 15, and 16 were recoded into one category representing students that obtained a high school diploma (Code: 1). Code 20 was recoded to represent students who obtained a GED® diploma (Code: 0) (Variable: DIPLOMAC).
**Discipline.** The discipline categories are derived from a student’s major code and recoded using the major’s Classification of Instructional Program Code (CIP). The National Center for Education Statistics designed the CIP to provide a taxonomic coding scheme that contains titles and descriptions of primarily post-secondary instructional programs.

CIP codes that begin with 13 were recoded into one category representing the Education category for the discipline variable (Code: 1). CIP codes that begin with 01, 04, 26, 11, 15, 14, 27, 29, 03, 40, and 41 were recoded into one category which represents Science, Technology, Engineering, and Mathematics (STEM) (Code: 2). CIP codes that begin with 52, 09, and 10 were recoded into one category representing the Business and Communications category (Code 3). CIP codes that begin with 51 were recoded into one category which represents the Health category (Code: 4). CIP codes that begin with 46, 22, 47, 12, 48, 43, and 49 were recoded into one category which represents the Trades category (Code: 5). All other CIP codes representing Arts and Humanities, Social and Behavioral Sciences, and Human Services were recoded into one category, which represented the Other category (Code: 6) (Variable: DISCIPLINEC). The Other category was omitted from the logistic regression analysis because of its small size (percentage: 1.2%, n = 26)

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

**HOPE Scholarship.** The HOPE Scholarship variable represented all students who received the HOPE Scholarships during the first term of enrollment. The variable is categorical and represented by Yes (Code: 1) and No (Code: 0) (Variable: HOPEC).
**Pell grant.** The Pell grant variable indicated whether a student received the Pell grant during any term of enrollment and illustrated financial need. The variable is categorical and represented by Yes (Code: 1) and No (Code: 0) (Variable: PELLC).

**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 were 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: 1).
2. **Asian:** A person having origins in any of the original peoples of the Far East, Southeast Asian, the Indian subcontinent, or Pacific Islands. This area includes, for example, China, Japan, Korea, the Philippine Islands, Samoa, India, and Vietnam (Code: 2).
3. **Black:** A person having origins in any of the Black racial groups of Africa (Code: 3).
4. **Native Hawaiian/Other Pacific Islander:** A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands (Code: 4).
5. **White:** A person having origins in any of the original peoples of Europe, North Africa, or the Middle East (Code: 5).
6. **Unknown:** Data not supplied by the student (Code: 6).
7. **Non-resident Alien:** A person who is not a citizen or national of the United States and who is in this country on a temporary basis and does not have the right to remain indefinitely. Nonresident aliens were reported only in this category, rather than in any of the other racial/ethnic categories. On the other hand, resident aliens, who are also
not citizens or nationals of the United State but who have been lawfully admitted for permanent resident (and who hold alien registration receipt cards) were reported only in the appropriate racial/ethnic categories, along with United States citizens (Code: 7).

Table 3.2 provides a summary of variables and coding for race/ethnicity. After initial analysis of the frequencies, the race/ethnicity category Black was recoded to 1, White was recoded to 2, and the following categories were recoded into one combined category called Other (Code: 3) due to small frequencies: American Indian/Native Alaskan, Asian, Native Hawaiian/Other Pacific Islander, Unknown, Non-resident Alien (Variable: RACEETHC). Table 3.2

**Race/ethnicity Coding**

<table>
<thead>
<tr>
<th>Variable</th>
<th>TCSG Code</th>
<th>Recoded</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian/Native Alaskan</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Asian</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Black</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Native Hawaiian/Other Pacific Islander</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>White</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Unknown</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Non-resident Alien</td>
<td>7</td>
<td>3</td>
</tr>
</tbody>
</table>

**Region.** The institutional region variable is derived from the location of the technical college a student attended and its designation based on the Office of Management and Budget (OMB) metropolitan statistical area designation. Metropolitan statistical areas (Urban) are geographic entities defined by OMB for use by Federal statistical agencies in collecting, tabulating, and publishing Federal statistics. An urban area includes one or more counties containing a core urban area of 50,000 or more people, together with any adjacent counties that have a high degree of social and economic integration with the urban core (Cromartie &
The definition of a rural area is all counties outside designated urban areas. Since each technical college is assigned a delivery service area made up of multiple counties and the urban and rural areas are designated by county, this definition provides clear identification of urban and rural areas.

Table 3.3 provides the urban and rural designation for each technical college based on the definitions provided. The variable was categorical and represented by Urban (Code: 1) and Rural (Code: 0) (Variable: REGIONC).

Table 3.3

<table>
<thead>
<tr>
<th>Technical College Name</th>
<th>Urban or Rural Code</th>
<th>Technical College Name</th>
<th>Urban or Rural Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albany</td>
<td>Urban 1</td>
<td>Middle Georgia</td>
<td>Urban 1</td>
</tr>
<tr>
<td>Altamaha</td>
<td>Rural 0</td>
<td>Moultrie</td>
<td>Rural 0</td>
</tr>
<tr>
<td>Appalachian</td>
<td>Urban 1</td>
<td>North Georgia</td>
<td>Rural 0</td>
</tr>
<tr>
<td>Athens</td>
<td>Urban 1</td>
<td>North Metro</td>
<td>Urban 1</td>
</tr>
<tr>
<td>Atlanta</td>
<td>Urban 1</td>
<td>Northwestern</td>
<td>Urban 1</td>
</tr>
<tr>
<td>Augusta</td>
<td>Urban 1</td>
<td>Ogeechee</td>
<td>Rural 0</td>
</tr>
<tr>
<td>Central Georgia</td>
<td>Urban 1</td>
<td>Okefenoke</td>
<td>Rural 0</td>
</tr>
<tr>
<td>Chattahoochee</td>
<td>Urban 1</td>
<td>Sandersville</td>
<td>Rural 0</td>
</tr>
<tr>
<td>Columbus</td>
<td>Urban 1</td>
<td>Savannah</td>
<td>Urban 1</td>
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<td>South Georgia</td>
<td>Rural 0</td>
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<td>Southeastern</td>
<td>Rural 0</td>
</tr>
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<td>Rural 0</td>
<td>Southwest Georgia</td>
<td>Rural 0</td>
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<td>Urban 1</td>
<td>Swainsboro</td>
<td>Rural 0</td>
</tr>
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<td>Griffin</td>
<td>Urban 1</td>
<td>Valdosta</td>
<td>Urban 1</td>
</tr>
<tr>
<td>Gwinnett</td>
<td>Urban 1</td>
<td>West Central</td>
<td>Urban 1</td>
</tr>
<tr>
<td>Heart of Georgia</td>
<td>Rural 0</td>
<td>West Georgia</td>
<td>Urban 1</td>
</tr>
<tr>
<td>Lanier</td>
<td>Urban 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remedial English.** The remedial English variable indicated whether a student enrolled in a remedial English course during any term. Students are required to enroll in remedial English if they test below minimum cut scores designated by each College on a college placement exam.
This variable helped to illustrate the academic preparedness of the students. Table 3.4 provides a summary of the recoding for remedial English and remedial Mathematics. The variable was categorical and represented by Yes (Code: 1) for those who enrolled in a course and No (Code: 0) for those that did not enroll in a course (Variable: REMENGC).

**Remedial Mathematics.** The remedial Mathematics variable indicated whether a student enrolled in a remedial Mathematics course during any term. Students are required to enroll in remedial Mathematics if they test below minimum cut scores designated by each College on a college placement exam. This variable helped to illustrate the academic preparedness of the students. The variable was categorical and represented by Yes (Code: 1) for those that enrolled in a course and No (Code: 0) for those that did not enroll in a course (Variable: REMMATHC).

<table>
<thead>
<tr>
<th>Variable</th>
<th>TCSG Code</th>
<th>Recoded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrolled in Remedial English</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>Did not enroll in Remedial English</td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>Enrolled in Remedial Mathematics</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>Did not enroll in Remedial Mathematics</td>
<td>No</td>
<td>0</td>
</tr>
</tbody>
</table>

**Limitations**

As the researcher, I have examined the data mindful of possible errors. No errors were found, yet I am unable to ensure the accuracy of the data extracted from college level student information systems. In addition, using the Data Center of the Technical College System of Georgia for the data source limits the variables available to use in the data analysis of this research. The data provided by TCSG did not include all requested information. For example, the data did not
differentiate between full-time and part-time students which must be taken into consideration when comparing data nationally. Also, data was not available through TCSG that indicates a student’s high school GPA which past research shows is a significant predictor of degree attainment.

**Definition of Terms**

**Degree.** For the purposes of this study, degree means associate’s degree.

**Degree attainment.** The completion of a program of study and graduation with an associate’s degree.

**Technical college.** A two year, degree-granting institution.

**Two-year institutions.** Institutions that offer an associate’s degree. This includes community colleges and technical colleges.

**Persistence.** A student’s postsecondary education continuation behavior that leads to graduation.

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

**Summary**

A better understanding of the factors that contribute to the degree attainment of students attending technical colleges in Georgia will allow institution officials to identify, create, and/or expand services to increase the graduations rates. In addition, understanding how factors contribute to degree attainment allowed college officials to continue their enhancement of enrollment management techniques that seek to matriculate and retain students.
In order to further examine factors that contribute to associate’s degree attainment in Georgia’s technical colleges, data for select individual demographics and institutional characteristics were analyzed to provide insight into degree attainment. This quantitative study used posthoc data obtained from the Technical College System of Georgia (TCSG) and allowed me to present a statewide picture of degree attainment in TCSG. The analysis focused specifically on a cohort of associate degree seeking students that began their enrollment in fall 2007. The cohort consisted of students who were enrolled for the first time at any of the technical colleges in Georgia and were not high school students. Statistical analyses of the data were conducted using logistic regression analysis. The following research questions guided the analysis:

**RQ1.** To what extent do a student’s race/ethnicity, gender, and age predict associate degree attainment?

**RQ2.** To what extent does a student’s chosen discipline predict associate degree attainment?

**RQ3.** To what extent do differences in the geographic location of a student’s college predict associate degree attainment?

**RQ4.** To what extent does taking a remedial English or math course predict associate degree attainment?
RQ5. To what extent does receiving the Pell Grant or HOPE Scholarship predict associate degree attainment?

RQ6. To what extent does earning a high school diploma versus a GED® diploma predict associate degree attainment?

**Descriptive Analysis**

The total sample consisted of 2,259 students at technical colleges in Georgia. Of this group, 1966 (87%) students did not attain a degree and 293 (13%) students attained an associate’s degree.

**Degree Attainment by Age**

Table 4.1

<table>
<thead>
<tr>
<th>Degree Attained</th>
<th>No Degree Attained</th>
<th>Associate's Degree Attained</th>
<th>Age at Start of Term</th>
<th>Count</th>
<th>% within Age</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>17-19</td>
<td>20-24</td>
<td>25 and over</td>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attained</td>
<td>Count</td>
<td>1129</td>
<td>452</td>
<td>380</td>
<td>1961</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within Age</td>
<td>89.5</td>
<td>88.3</td>
<td>79.0</td>
<td>87.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>50.1</td>
<td>20.1</td>
<td>16.9</td>
<td>87.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>132</td>
<td>60</td>
<td>101</td>
<td>293</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within Age</td>
<td>10.5</td>
<td>11.7</td>
<td>21.0</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>5.9</td>
<td>2.7</td>
<td>4.5</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>1261</td>
<td>512</td>
<td>481</td>
<td>2254</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within Age</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>55.9</td>
<td>22.7</td>
<td>21.3</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.1 provides frequency and percentages breakdowns for students by age. Age represents the age of the student at the start of the 2007 term and is divided into three categories: 17-19, 20-24, and 25 and over. Students between 17 and 19 years represented the largest portion of the students with 55.9% of the total, followed by 20-24 (22.7%), and lastly 25
and over (21.3%). Of the 13% of students that received an associate’s degree, 5.9% were
between ages 17-19, 2.7% were 20-24, and 4.5% were 25 and over. Based on the data,
traditional aged students were 3.2% more likely to attain a degree than those that start college
between the ages of 20-24. In addition, there is strong evidence of a relationship between
degree attainment and age ($x^2(2) = 35.09$, $p \leq .05$).

**Degree Attainment by Diploma Type**

Table 4.2

**Degree Attainment by Diploma Type**

<table>
<thead>
<tr>
<th>Degree Attained</th>
<th>No Degree Attained</th>
<th>Count</th>
<th>GED®</th>
<th>High School Diploma</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School Diploma/GED®</td>
<td>Count</td>
<td>176</td>
<td>1694</td>
<td>1870</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within High School Diploma/GED®</td>
<td>89.8</td>
<td>86.8</td>
<td>87.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>8.2</td>
<td>78.9</td>
<td>87.1</td>
<td></td>
</tr>
<tr>
<td>Associate's Degree Attained</td>
<td>Count</td>
<td>20</td>
<td>257</td>
<td>277</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within High School Diploma/GED®</td>
<td>10.2</td>
<td>13.2</td>
<td>12.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>0.9</td>
<td>12.0</td>
<td>12.9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>196</td>
<td>1951</td>
<td>2147</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within High School Diploma/GED®</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>9.1</td>
<td>90.9</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.2 provides frequency and percentages breakdowns for students by diploma type.

Diploma type is divided into two categories: students that received a GED® and students that
received a traditional high school diploma. Students who received a high school diploma
represented the largest portion of the students, with 90.9% of the total, followed by students who
received a GED® (9.1%). Of the 196 who received a GED®, only 10.2% received an associate’s
degree and only 13.2% of the students who earned a high school diploma received an associate’s
degree. GED® students who obtained a degree represent less than one percent (.09%) of the total number of students in the study, while those who obtained a high school diploma and degree represent 12% of the students. While the difference is significant, it is important to note that that 90.9% of the students in the study obtained a traditional high school diploma. In addition, there is no significant relationship between degree attainment and diploma type ($\chi^2(1) = 1.39, p > .05$) indicating that students are equally likely to attain an associate’s degree or not with a GED® or high school diploma.

**Degree Attainment by Discipline**

Table 4.3

**Degree Attainment by Discipline**

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Count</th>
<th>Education</th>
<th>STEM</th>
<th>Business</th>
<th>Health</th>
<th>Trades</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Degree Attained</td>
<td>% within Discipline</td>
<td>215</td>
<td>397</td>
<td>642</td>
<td>317</td>
<td>370</td>
<td>22</td>
<td>1963</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>88.1</td>
<td>89.2</td>
<td>91.2</td>
<td>80.7</td>
<td>83.3</td>
<td>84.6</td>
<td>87.0</td>
</tr>
<tr>
<td>Associate's Degree Attained</td>
<td>% within Discipline</td>
<td>29</td>
<td>48</td>
<td>62</td>
<td>76</td>
<td>74</td>
<td>4</td>
<td>293</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>11.9</td>
<td>10.8</td>
<td>8.8</td>
<td>19.3</td>
<td>16.7</td>
<td>15.4</td>
<td>13.0</td>
</tr>
<tr>
<td>Total</td>
<td>% within Discipline</td>
<td>244</td>
<td>445</td>
<td>704</td>
<td>393</td>
<td>444</td>
<td>26</td>
<td>2256</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4.3 provides frequency and percentages breakdowns for students by discipline.

Discipline is divided into six categories: education, STEM, business communications, health, trades, and other. Students in the Business Communications discipline represent the largest portion of the students with 31.2% of the total, followed by STEM and Trades that represent 19.7% each, then Health representing 10.8%, and lastly Other, representing 1.2%. Of the 704
students in the Business Communications discipline, 91.2% of them did not attain a degree and only 8.8% attained an associate’s degree. The students in the Health discipline are the most successful, with 19.3% attaining a degree followed by students in the Trades discipline with 16.7% attaining a degree. A chi-square analysis showed strong evidence of a relationship between degree attainment and discipline ($\chi^2(5) = 32.53, p \leq .05$).

**Degree Attainment by Gender**

Table 4.4 provides frequency and percentages breakdowns for student by gender, male and female. Female students represent 53.6% of the sample, and males represent 46.4%. Only 10.4% of male students attained an associate’s degree, compared to 15.2% of the female students. There was a 4.8% difference between the female and male students in degree attainment, which is consistent with previous literature (Nippert, 2000-2001; U.S. Department of Education, 2004a). In addition, there is strong evidence of a relationship between degree attainment and gender ($\chi^2(1) = 11.43, p \leq .05$).

Table 4.4

**Degree Attainment by Gender**

<table>
<thead>
<tr>
<th>Degree Attained</th>
<th>No Degree Attained</th>
<th>Count</th>
<th>% within Gender</th>
<th>% of Total</th>
<th>Count</th>
<th>% within Gender</th>
<th>% of Total</th>
<th>Count</th>
<th>% within Gender</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td>939</td>
<td>89.6</td>
<td>41.6</td>
<td>109</td>
<td>10.4</td>
<td>4.8</td>
<td>1048</td>
<td>100</td>
<td>46.4</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td>1027</td>
<td>84.8</td>
<td>184</td>
<td>15.2</td>
<td>8.1</td>
<td>1211</td>
<td>100</td>
<td>53.6</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td>87.0</td>
<td>87.0</td>
<td>293</td>
<td>13.0</td>
<td>13.0</td>
<td>2259</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Degree Attainment by HOPE Scholarship

Table 4.5 provides frequency and percentages breakdowns for the student by receipt of HOPE Scholarship. HOPE Scholarship is divided into two categories: student that received the HOPE Scholarship (Yes) and those that did not (No). Based on the total number of students, 82.6% did not receive the HOPE Scholarship and only 17.4% of the total did. Of those who did not receive the HOPE Scholarship, 11.4% attained a degree and 20.3% of those who did receive the scholarship attained a degree. This indicates that students who received the HOPE Scholarship are 8.9% more likely to attain a degree compared to those that did not receive the scholarship. A chi-squared analysis showed strong evidence of a relationship between degree attainment and HOPE Scholarship ($\chi^2(1) = 22.74, p \leq .05$).

Table 4.5

Degree Attainment by HOPE Scholarship

<table>
<thead>
<tr>
<th>Degree Attained</th>
<th>No Degree Attained</th>
<th>Count</th>
<th>Received HOPE Scholarship</th>
<th>No</th>
<th>Yes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>1652</td>
<td>88.6</td>
<td>73.1</td>
<td>213</td>
<td>13.9</td>
<td>87.0</td>
</tr>
<tr>
<td>Yes</td>
<td>314</td>
<td>79.7</td>
<td>13.9</td>
<td>80</td>
<td>13.0</td>
<td>87.0</td>
</tr>
<tr>
<td>% of Total</td>
<td>1865</td>
<td>11.4</td>
<td>9.4</td>
<td>394</td>
<td>13.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Associate's Degree Attained

<table>
<thead>
<tr>
<th>Count</th>
<th>Received HOPE Scholarship</th>
<th>No</th>
<th>Yes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.4</td>
<td>20.3</td>
<td>13.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.4</td>
<td>3.5</td>
<td>13.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.0</td>
<td>100</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of Total</td>
<td>82.6</td>
<td>17.4</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

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Degree Attainment by Pell Grant

Table 4.6 provides frequency and percentages breakdowns for students by receipt of the Pell Grant. Pell Grant is divided into two categories: student that received the Pell Grant (Yes) and those that did not (No). Based on the total number of students, 58.5% did not receive the Pell Grant and 41.5% of the total did. Of those that did not receive the Pell Grant, 12.6% attained a degree and 13.5% of those that did receive the grant attained a degree. The difference between the two categories in degree attainment is less than one percent. In addition, there is no evidence of a significant relationship between degree attainment and receipt of Pell Grant ($x^2(1) = .46, p>.05$).

Table 4.6

Degree Attainment by Pell Grant

<table>
<thead>
<tr>
<th>Degree Attained</th>
<th>Received Pell Grant</th>
<th>Count</th>
<th>% within Received Pell Grant</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Degree Attained</td>
<td>No</td>
<td>1155</td>
<td>87.4</td>
<td>51.1</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>811</td>
<td>86.5</td>
<td>35.9</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1966</td>
<td>87.0</td>
<td>87.0</td>
</tr>
<tr>
<td>Associate's Degree Attained</td>
<td>No</td>
<td>166</td>
<td>12.6</td>
<td>7.3</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>127</td>
<td>13.5</td>
<td>5.6</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>293</td>
<td>13.0</td>
<td>13.0</td>
</tr>
<tr>
<td>Total</td>
<td>No</td>
<td>1321</td>
<td>100</td>
<td>58.5</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>938</td>
<td>100</td>
<td>41.5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2259</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Degree Attainment by Race/Ethnicity

Table 4.7 provides frequency and percentages breakdowns for students by race/ethnicity. Race/Ethnicity is divided into three categories: black, white, and other. Based on
the total number of students \((n = 2259)\), white students represented 51.7% of the total, black students represented 35.0%, and the remainder were grouped into a category labeled “Other.” Of the total number of degrees attained \((n = 293)\), white students earned 60.4% of the degrees but when considering the total sample of white students, only 15.2% of the students attained degrees. Black students attained 28.6% of the degrees, but only 10.6% of black students attained a degree. Students in the other category represent 11% of the degrees attained. In addition, a chi-squared analysis shows strong evidence of a relationship between degree attainment and race/ethnicity \((\chi^2(2) = 10.21, p \leq 0.05)\).

Table 4.7

*Degree Attainment by Race/Ethnicity*

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Total Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>791</td>
</tr>
<tr>
<td>White</td>
<td>1168</td>
</tr>
<tr>
<td>Other</td>
<td>300</td>
</tr>
<tr>
<td>Total</td>
<td>2259</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Degree Attained</th>
<th>No Degree Attained</th>
<th>Count</th>
<th>% within Race/Ethnicity</th>
<th>% of Total</th>
<th>Count</th>
<th>% within Race/Ethnicity</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree Attained</td>
<td>Associate's Degree</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td></td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Attained</td>
<td>within</td>
<td>of Total</td>
<td>within</td>
<td></td>
<td>of Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Race/Ethnicity</td>
<td></td>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree Attained</td>
<td>No Degree</td>
<td>707</td>
<td>89.4</td>
<td>31.3</td>
<td>84</td>
<td>10.6</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>Attained</td>
<td>991</td>
<td>84.8</td>
<td>43.9</td>
<td>177</td>
<td>15.2</td>
<td>7.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>268</td>
<td>89.3</td>
<td>11.9</td>
<td>32</td>
<td>10.7</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1966</td>
<td>87.0</td>
<td>87.0</td>
<td>293</td>
<td>13.0</td>
<td>13.0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>791</td>
<td>51.7</td>
<td>35.0</td>
<td>100</td>
<td>13.3</td>
<td>100</td>
</tr>
</tbody>
</table>

*Degree Attainment by Institutional Region*

Table 4.8 provides frequency and percentages breakdowns for students by institutional region. Institutional region is divided into two categories: students who attend an institution designated as rural and students who attend an institution designated as urban. Based on the total number of students, 90.3% attended institutions in an urban area, and 9.7% in a rural area.
Interestingly, 32.6% of students designated as rural attained a degree and 10.9% designated as urban attained a degree. In addition, a chi-squared analysis shows strong evidence of a relationship between degree attainment and institutional region ($\chi^2(1) = 82.10, p \leq .05$).

However, when compared to the total number of students, rural students who attained a degree represented only 3.1% and those from an urban institution represented 9.8%.

Table 4.8

*Degree Attainment by Institutional Region*

<table>
<thead>
<tr>
<th>Degree Attained</th>
<th>No Degree Attained</th>
<th>Count</th>
<th>Rural</th>
<th>Urban</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>% within Institution Region</td>
<td>67.4</td>
<td>89.1</td>
<td>87.0</td>
</tr>
<tr>
<td>Associate's Degree Attained</td>
<td>Count</td>
<td>147</td>
<td>1819</td>
<td>1966</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>6.5</td>
<td>80.5</td>
<td>87.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Institution Region</td>
<td>71</td>
<td>222</td>
<td>293</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>32.6</td>
<td>10.9</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>218</td>
<td>2041</td>
<td>2259</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% within Institution Region</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>9.7</td>
<td>90.3</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

**Degree Attainment by Enrolled in Remedial English**

Table 4.9 provides frequency and percentages breakdowns for students who enrolled in remedial English. Enrollment in remedial English is divided into two categories: students who enrolled in remedial English (Yes) and students who did not enroll in remedial English (No).

Based on the total number of students, 88.2% did not enroll in a remedial English class and 11.8% did enroll. Of the students who enrolled in remedial English, 10.9% attained a degree and 13.3% of those who did not enroll attained a degree. A less than one percent difference in
degree attainment was found between those who enrolled and those that did not enroll in a remedial English course. This is not a significant difference. In addition, a chi-squared analysis shows little evidence of a relationship between degree attainment and enrolled in remedial English ($\chi^2(1)=1.19, p>.05$).

Table 4.9

*Degree Attainment by Enrolled in Remedial English*

<table>
<thead>
<tr>
<th></th>
<th>Enrolled Remedial English</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Degree Attained</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Degree Attained</td>
<td>Count</td>
<td>1728</td>
<td>238</td>
<td>1966</td>
</tr>
<tr>
<td></td>
<td>% within Enrolled</td>
<td>86.7</td>
<td>89.1</td>
<td>87.0</td>
</tr>
<tr>
<td></td>
<td>Remedial English</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>76.5</td>
<td>10.5</td>
<td>87.0</td>
</tr>
<tr>
<td>Associate's</td>
<td>Count</td>
<td>264</td>
<td>29</td>
<td>293</td>
</tr>
<tr>
<td>Degree Attained</td>
<td>% within Enrolled</td>
<td>13.3</td>
<td>10.9</td>
<td>13.0</td>
</tr>
<tr>
<td></td>
<td>Remedial English</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>11.7</td>
<td>1.3</td>
<td>13.0</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>1992</td>
<td>267</td>
<td>2259</td>
</tr>
<tr>
<td></td>
<td>% within Enrolled</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Remedial English</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>88.2</td>
<td>11.8</td>
<td>100</td>
</tr>
</tbody>
</table>

*Degree Attainment by Enrolled in Remedial Math*

Table 4.10 provides frequency and percentages breakdowns for the independent variable enrolled in remedial mathematics. Enrolled in remedial mathematics is divided into two categories: students that enrolled in remedial mathematics (Yes) and students who did not enroll in remedial mathematics (No). Based on the total number of students, 79.8% did not enroll in a remedial mathematics class and 20.2% did enroll. Of the students who did enroll in remedial mathematics, 10.1% attained a degree and 13.7% of those who did not enroll attained a degree. A 3.6% difference in degree attainment was identified between those who enrolled and those did not enroll in a remedial mathematics course. This indicates that students who enroll in
remedial mathematics are less likely to persist to graduation than those that did not need to enroll in a remedial mathematics course. The chi-squared analysis showed a significant relationship between degree attainment and being enrolled in remedial mathematics ($x^2(1) = 4.28, p \leq .05$).

Table 4.10

*Degree Attainment by Enrolled in Remedial Math*

<table>
<thead>
<tr>
<th>Degree Attained</th>
<th>No Degree Attained</th>
<th>Enrolled Remedial Math</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Total</td>
<td>1966</td>
<td>1555</td>
<td>411</td>
</tr>
<tr>
<td></td>
<td>% within Enrolled</td>
<td>86.3</td>
<td>89.9</td>
</tr>
<tr>
<td>Degree Attained</td>
<td>Remedial Math</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associate's Degree Attained</td>
<td>% of Total</td>
<td>68.8</td>
<td>18.2</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>247</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>% within Enrolled</td>
<td>13.7</td>
<td>10.1</td>
</tr>
<tr>
<td>Total</td>
<td>2259</td>
<td>1802</td>
<td>457</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>10.9</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>% within Enrolled</td>
<td>79.8</td>
<td>20.2</td>
</tr>
<tr>
<td></td>
<td>Remedial Math</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Logistic Regression Analysis Results**

Following descriptive analyses, a logistic regression analysis was conducted to estimate a model to determine the extent to which certain factors predict degree attainment for students enrolled in the Technical College System of Georgia. A logistic regression was appropriate since the dependent variable of degree attainment is a dichotomous categorical variable in which the responses can only be “no degree attained” or “associate’s degree attained.” The independent variables used in the analysis are listed in Table 4.11. The results of this analysis will address the
six research questions of the study. Shown in Table 4.11, several of the independent variables where coded so that 1 signifies the standard for comparison and 0 indicates no occurrence.

Table 4.11

*Dependent and Independent Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Categories/Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEGREEATTC</td>
<td>Degree Attainment</td>
<td>No degree attained = 0; Associate’s Degree attained = 1</td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGESTARTOFTERM</td>
<td>Age at Start of Term</td>
<td></td>
</tr>
<tr>
<td>DIPLOMAC</td>
<td>Diploma Type</td>
<td>0 = GED®; 1 = High School Diploma</td>
</tr>
<tr>
<td>DISCIPLINEC</td>
<td>Discipline</td>
<td>1 = Education; 2 = STEM; 3 = Business Communications; 4 = Health; 5 = Trades 6 = Other</td>
</tr>
<tr>
<td>GENDERC</td>
<td>Gender</td>
<td>0 = Male; 1 = Female</td>
</tr>
<tr>
<td>HOPEC</td>
<td>Received HOPE Scholarship</td>
<td>0 = No; 1 = Yes</td>
</tr>
<tr>
<td>PELLC</td>
<td>Received Pell Grant</td>
<td>0 = No; 1 = Yes</td>
</tr>
<tr>
<td>RACEETHC</td>
<td>Race/Ethnicity</td>
<td>1 = Black; 2 = White; 3 = Other</td>
</tr>
<tr>
<td>REGIONC</td>
<td>Institutional Region</td>
<td>0 = Rural; 1 = Urban</td>
</tr>
<tr>
<td>REMENGC</td>
<td>Enrolled in a Remedial English Course</td>
<td>0 = No; 1 = Yes</td>
</tr>
<tr>
<td>REMMATHC</td>
<td>Enrolled in a Remedial Math Course</td>
<td>0 = No; 1 = Yes</td>
</tr>
</tbody>
</table>

All variables were reviewed for the number of cases. The arts and humanities, other, and social and behavioral sciences/human services categories of the discipline variable were combined into one category called “Other.” Also, the American Indian, Asian, Native Hawaiian/Other Pacific Islander, Unknown, and Non-resident Alien categories of the race/ethnicity variable were combined into one category called “Other.” These categories were combined based on the limited number of cases available for analysis. In addition, the “Other” category of the discipline variable was not included in the logistic regression model because of its small size ($n = 26$).
Otherwise, all variables were used in the logistic regression model with 22 data points and 2,118 records included in the analysis. The first step tested the overall fit of the model. Through the investigation of the block chi-square, the results are summarized in Table 4.12. The probability value of the block chi-square test ($\chi^2 [14] = 158.49, p = 0.00$) had a value less than the level of significance value of 0.05. The null hypothesis stating that no difference between the models, with only a constant versus the model with the independent variables was rejected. This indicated a significant relationship between the predictor independent variables and the dependent variable.

Table 4.12

*Omnibus Tests of Model Coefficients*

<table>
<thead>
<tr>
<th></th>
<th>Chi-square</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>158.49</td>
<td>14</td>
<td>0.00</td>
</tr>
<tr>
<td>Block</td>
<td>158.49</td>
<td>14</td>
<td>0.00</td>
</tr>
<tr>
<td>Model</td>
<td>158.49</td>
<td>14</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Table 4.13 summarizes the accuracy rate for the controlled logistic regression involving the independent variables.

Table 4.13

*Classification Table*

<table>
<thead>
<tr>
<th>Observed</th>
<th>Predicted Degree Attainment</th>
<th>Percentage Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1 Degree attainment</td>
<td>No degree attained</td>
<td>1823</td>
</tr>
<tr>
<td></td>
<td>Associate’s degree attained</td>
<td>260</td>
</tr>
<tr>
<td>Overall Percentage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. The cut value is .500
Table 4.14 summarizes the results of the logistic regression and showed that several variables contributed significantly to the model. Specifically, geographic region, high school diploma type, age, gender, race/ethnicity, discipline, enrollment in remedial math courses, and receipt of HOPE Scholarship had a significant predictive effect on degree attainment. The results for each of the significant independent variables will be discussed below. Table 4.14 shows both the log-odds value (B) as well as exponentiated value (ExpB). For ease of interpretation, the ExpB values are discussed below. The results for each of the significant independent variables will be discussed next.

Table 4.14

<table>
<thead>
<tr>
<th>Logistic Regression Results</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female (v. Male)</td>
<td>0.503</td>
<td>0.163</td>
<td>9.541</td>
<td>1</td>
<td>0.002*</td>
<td>1.654</td>
</tr>
<tr>
<td>Overall Race/Ethnicity</td>
<td></td>
<td></td>
<td>4.201</td>
<td>2</td>
<td>0.122</td>
<td></td>
</tr>
<tr>
<td>White (v. Black)</td>
<td>0.343</td>
<td>0.167</td>
<td>4.2</td>
<td>1</td>
<td>0.04*</td>
<td>1.409</td>
</tr>
<tr>
<td>Other (v. Black)</td>
<td>0.236</td>
<td>0.241</td>
<td>0.959</td>
<td>1</td>
<td>0.327</td>
<td>1.266</td>
</tr>
<tr>
<td>Overall Discipline</td>
<td></td>
<td></td>
<td>19.401</td>
<td>4</td>
<td>0.001*</td>
<td></td>
</tr>
<tr>
<td>STEM (v. Education)</td>
<td>0.398</td>
<td>0.289</td>
<td>1.899</td>
<td>1</td>
<td>0.168</td>
<td>1.489</td>
</tr>
<tr>
<td>Business Comm (v. Education)</td>
<td>-0.036</td>
<td>0.26</td>
<td>0.019</td>
<td>1</td>
<td>0.889</td>
<td>0.965</td>
</tr>
<tr>
<td>Health (v. Education)</td>
<td>0.553</td>
<td>0.259</td>
<td>4.557</td>
<td>1</td>
<td>0.033*</td>
<td>1.739</td>
</tr>
<tr>
<td>Trades (v. Education)</td>
<td>0.744</td>
<td>0.266</td>
<td>7.848</td>
<td>1</td>
<td>0.005*</td>
<td>2.105</td>
</tr>
<tr>
<td>Enrolled Remedial English</td>
<td>0.059</td>
<td>0.231</td>
<td>0.065</td>
<td>1</td>
<td>0.799</td>
<td>1.06</td>
</tr>
<tr>
<td>Enrolled Remedial Math</td>
<td>-0.396</td>
<td>0.188</td>
<td>4.436</td>
<td>1</td>
<td>0.035*</td>
<td>0.673</td>
</tr>
<tr>
<td>Received HOPE Scholarship</td>
<td>0.615</td>
<td>0.166</td>
<td>13.794</td>
<td>1</td>
<td>0.000*</td>
<td>1.85</td>
</tr>
<tr>
<td>Received Pell Grant</td>
<td>0.004</td>
<td>0.148</td>
<td>0.001</td>
<td>1</td>
<td>0.977</td>
<td>1.004</td>
</tr>
<tr>
<td>Age at Start of Term</td>
<td>0.052</td>
<td>0.008</td>
<td>44.137</td>
<td>1</td>
<td>0.000*</td>
<td>1.053</td>
</tr>
<tr>
<td>High School Diploma (v.GED)</td>
<td>0.642</td>
<td>0.268</td>
<td>5.729</td>
<td>1</td>
<td>0.017*</td>
<td>1.900</td>
</tr>
<tr>
<td>Rural (v. Urban)</td>
<td>1.251</td>
<td>0.184</td>
<td>46.449</td>
<td>1</td>
<td>0.000*</td>
<td>3.494</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.809</td>
<td>0.472</td>
<td>103.586</td>
<td>1</td>
<td>0.000*</td>
<td>0.008</td>
</tr>
</tbody>
</table>

a Variable(s) entered on step 1: REGIONC, GENDER, RACEETHC, DISCIPLINE, REMENG, REMMATH, HOPE, PELL, AgeStartTerm, DIPLOMAC.

*Level of significance ≤ 0.05, Pseudo R2 = 13.4% (Nagelkerke)

( ) = Reference Group
Degree Attainment by Age

As shown in Table 4.12, the Exp(B) coefficient for degree attainment by age is 1.053 ($p<.05$). This indicates that for every year older a student is when he/she begins enrollment in the technical college, the odds of attaining a degree while holding everything else constant in the model increases by approximately 5%. This implies that older students have higher odds of attaining an associate’s degree than younger students.

Degree Attainment by Diploma Type

Logistic regression results indicated that TCSG students who received a traditional high school diploma were significantly more likely to attain the associate’s degree than peers with a GED® (Exp(B) =1.90, $p <.02$). This finding indicates that students who obtained a high school diploma are nearly two times more likely than those who have a GED® to attain an associate’s degree. This implies that students with a traditional high school diploma are more likely to attain an associate’s degree than students who earned a GED®, holding all other variables constant.

Degree Attainment by Discipline

As noted earlier, results show significant difference in degree attainment by discipline ($p = 0.001$). Compared to students who enrolled in an education discipline, students enrolled in a health discipline were more likely to attain an associate’s degree (ExpB = 1.739). A similar result is found for the category of trades: the Exp(B) indicates that students who enroll in trades disciplines are more than twice as likely to attain a degree, compared to those who enroll in an education discipline. Results indicated no significant difference in odds of degree attainment rates for students in STEM and business communications discipline categories compared to those in education.
Degree Attainment by Gender

Findings in the logistic regression also indicate that, holding all other variables in the model constant, female students were 65% more likely than male students to attain an associate’s degree. It was expected that females would have a greater likelihood of graduating based on the literature review; therefore, the results for gender were expected.

Degree Attainment by HOPE Scholarship

Shown in Table 4.14, the odds ratio for the effect of HOPE Scholarship (ExpB = 1.85) indicates that students who received the scholarship are 85% more likely to attain an associate’s degree than those who did not receive HOPE. The increased odds are statistically significant ($p = 0.00$). This finding is not surprising since HOPE recipients must have and maintain a higher GPA, and higher GPA is consistently reported to be positively related to degree completion (Adelman, 2006).

Degree Attainment by Race/Ethnicity

Results from the logistic model showed some differences when comparing the effect of race on degree attainment. As shown in Table 4.14, compared to Black students, White students were more likely to attain the degree (ExpB = 1.409, $p = 0.04$). No significant difference was found in the comparison of Black students to those of the Other race/ethnicity. This finding may be due to the relatively small number of students in the Other category. From previous literature, race/ethnicity was found not to have a significant effect on associate degree attainment (it does from baccalaureate degree); therefore, results for this variable were unexpected. However, research suggests that race/ethnicity could be acting indirectly through other variables (Adelman, 2006).
Degree Attainment by the Institution’s Geographic Region

As delineated in Table 4.11, institutions in this sample were categorized as rural or urban in their geographic location. Logistic results shown in Table 4.14 indicated a large difference in degree attainment by geographic region; with an odds ratio of 3.494, students who attended an urban institution were more than three times more likely than those in a rural area to complete their associate’s degree. This finding may be due to the relatively small number of institutions in the rural category, and will be discussed more below.

Degree Attainment by Enrolled in Remedial Math

As discussed above in Chapter 2, remedial coursework in one’s early college career can have a positive impact on degree completion (Kreysa, 2006). In the logistic model for this study, findings did not indicate a significant contribution from student enrollment in remedial English, but enrollment in remedial Mathematics did play a role. As shown in Table 4.14, and holding all other variables in the model constant, the odds of degree attainment were 33% less likely for students who enrolled in at least one remedial mathematics course versus those that did not enroll in a remedial Mathematics course. Informed from prior literature, it was expected that students who did not enroll in a remedial math course would have a greater likelihood of attaining a degree; therefore, results for enrolled in remedial mathematics was expected.

Summary of Results

The data analysis provided valuable insight into the degree attainment of fall 2007 students enrolled in a degree program in the Technical College System of Georgia. The purpose of this study was to determine the extent to which race/ethnicity, gender, age, discipline, institutional region, remedial English and math courses, Pell Grant, and HOPE Scholarship, and diploma type predicted associate degree attainment. The results of the logistic regression showed
that the independent variables of age, diploma type, discipline, gender, receiving the HOPE Scholarship, race/ethnicity, institutional region, and enrollment in a remedial math course significantly predicted the likelihood of attaining the degree. In the next chapter, a summary of the study, an analysis and discussion of the research findings, conclusions, and implications will be discussed, as well as recommendations for action and future study will be presented.
CHAPTER 5
SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Overview of Study

The degree attainment of college students is a critical issue that officials in all types of institutions of higher education consider. College officials want to improve retention, progression, and graduation rates for all students. By 2020, it is projected that over 60% of jobs in Georgia will require some form of college education, whether a certificate, associate’s degree, or bachelor’s degree (Complete College America, 2011). In 2011, only 42% of the state’s young adults met this criterion, and Georgia’s level of higher education attainment is not expected to increase notably in the period to 2020 (Complete College Georgia, 2011). This study used posthoc data from all of the technical colleges in the State of Georgia to examine student characteristics that contributed to the associate’s degree attainment of students. A better understanding of the factors that affect degree attainment can help institution officials know how to best modify programs and allocate resources to ensure high degree attainment rates.

Discussion of Research Findings

Research Question 1: To what extent do a student’s race/ethnicity, gender, and age predict associate’s degree attainment?

Adelman (2006) completed an extensive review of the national longitudinal student data through the NELS: 88/2000 and found that students who enter college immediately following high school were more likely to complete their degree. Findings from my study are similar to those found by Adelman. Of the 13% of students that received an associate’s degree in TCSG’s
fall 2007 cohort, 5.9% were between ages 17-19, 2.7% were 20-24, and 4.5% were 25 and over. Based on cross-tabulations, traditional aged students attained a degree 3.2% more frequently than those who started college between the ages of 20-24. However, my logistic regression analysis revealed that for every year older a student is when he/she begins courses, the odds of attaining a degree versus not attaining a degree while holding everything else constant increases by 1.053 (approximately 5%). This implies that older students have slightly higher odds of attaining an associate’s degree than younger students. While this finding does not parallel that found by Adelman (2006), my sample’s size and or interaction effects that were not examined may have affected the result. It is also likely that Georgia’s older students have matured in their life and career goals to see the associate’s degree as a tangible goal, and are more focused on degree completion. Older students have usually developed self-control, are more mature and less influenced by socialization than traditional students (Bean & Metzner, 1985).

Consistent with national statistics, female students enrolled in associate degrees at technical colleges in Georgia represent somewhat more than half of the total student population. With 53.6% of the total sample being female, my analysis found that only 10.4% of male students attained an associate’s degree and 15.2% of the female students attained a degree. This showed a 4.8% difference between the female and male students in degree attainment, and was confirmed in the logistic regression showing that female students are 65% more likely than male students were to attain an associate’s degree. This finding is consistent with previous studies by Nippert (2000-2001), King (2000), and Nunez and Cuccaro-Alamin (1998) who found women outpacing men in graduation rates. If this trend continues, it is likely to have a major impact on the social norm that is known today. It could eventually lead to women having a comparative advantage over both her career and her family life.
Although previous literature on the effect of race/ethnicity has not been found to have a statistically significant effect on degree attainment (Adelman, 2006), results herein found a significant difference in degree attainment when comparing Black versus White students. Of the total number of degrees attained ($n = 293$), white students earned 60.4% of the degrees compared to 28.6% of the Black students. This finding was confirmed in the logistic regression and parallels previous literature (Mortenson, 2000b). Knowing that Black students may enter degree programs with more risk prompts institutional officials to develop or implement programs that provide the necessary support to improve persistence. For Black students, faculty interaction had the strongest influence in baccalaureate degree attainment (Astin, 1993). However, since some research suggests that race/ethnicity could be acting indirectly through other variables (Adelman, 2006), officials should also be mindful of other factors that can contribute to associate’s degree attainment.

**Research Question 2**: To what extent does a student’s chosen discipline predict associate’s degree attainment?

Fall 2007 TCSG students in the business communications discipline represented the largest portion of the students with 31.2% of the total, followed by STEM and trades who represented 19.7% each, followed by health representing 10.8%, and lastly students in other disciplines representing 1.2%. Of the 704 students in the business communications discipline, 91.2% did not attain a degree, and only 8.8% attained an associate’s degree. The students in the health discipline were the most successful, with 19.3% attaining a degree followed by students in the trades discipline with 16.7% attaining a degree. According to previous the literature, allied health professions, fine arts, and engineering were found to have a negative effect on graduation rates (Astin, 2005). This study confirmed the previous findings, with the exception of the health
discipline. Only the health and trades categories were found to have a significant effect on degree attainment, holding all other variables constant. With an odds ratio of 1.739 ($p<.033$) students enrolled in health disciplines were more likely to attain the associate’s degree than those who enrolled in an education discipline. This result is likely due to the cohort-based nature of associate degree level health programs. Many of the health programs at the associate degree level are competitive admission programs and are able to control their enrollment by limiting access only to students who have achieved superior grades in a set of prerequisite courses. Due to the increasing age of citizens in the region and country, students may recognize the need for additional workers in the health care field, and see a variety of degree programs that are related to the health care field.

Similar to health program, students enrolled in a trades discipline were more than twice as likely as those who enrolled in an education discipline to attain an associate’s degree. This finding, too, may be related to students and institution officials’ knowledge of increasing demands for workers with specific skills related to technology, machine repair, and electrical systems technology just to name a few.

**Research Question 3:** To what extent do differences in the geographic location of a student’s college predict associate’s degree attainment?

Based on the total number of fall 2007 TCSG students, 90.3% attended institutions in an urban area and 9.7% in a rural area. Interestingly, 32.6% of students designated as rural attained a degree and 10.9% designated as urban attained a degree. However, when compared to the total number of students, rural students who attained a degree represented only 3.1% and those from an urban institution, who represented 9.8%. The study concluded that students who attended an institution indicated as being in an urban area were 3.5 times more likely than those in a rural
area to attain an associate’s degree. According to the literature, the difference in graduation rates by institutional types is highly dependent on the student characteristics of incoming students (Astin, 2005). Findings herein may also be affected by the large percentage of students in an urban institution (90% versus 10% rural), but may also be affected by individual reasons and motivation for degree completion, albeit not included in the current analytic model. The technical college locations in Georgia are designed so that a student would not have to drive more than 30 minutes to be on a campus. The overarching mission of the technical college is to provide workforce development for each of their individual service delivery areas. Students generally do not move to different parts of the state to attend another technical college unless a unique program is offered, and their need to remain in their geographic area may contribute to their motivation to complete the degree.

**Research Question 4**: To what extent does taking a remedial English or math course predict associate’s degree attainment?

The effect on enrolling in remedial English or mathematics courses on degree attainment was different. The cross-tabulation revealed that of the students enrolled in remedial English, 10.9% attained a degree compared to 13.3% of degree recipients who did not enroll in a remedial English class. Since, this variable was not statistically significant in the logistic regression model, very little predication toward degree attainment can be made using this variable and is supported by the literature review (Kreysa, 2006).

Unlike remedial English, the results obtained for students taking remedial mathematics were completely different. Findings showed that students who enrolled in remedial mathematics were less likely to persist to graduation than those who did not need to enroll in a remedial math course. The odds of degree attainment were 33% less likely for students who enrolled in at least
one remedial mathematics course compared to students who enrolled in no remedial math courses. This finding may indicate that students in remedial math needed even more remedial work prior to success at completing a degree. Little difference was expected between students who enrolled in remedial mathematics versus those who did not based on the literature review (Kreysa, 2006); therefore, results for this variable were unexpected. Overall, the results support the national results of degree attainment of full-time students enrolling in math remedial education (Complete College Georgia, 2011).

**Research Question 5:** To what extent does receiving the Pell Grant or HOPE Scholarship predict associate’s degree attainment?

Based on the total number of students in this study, 58.5% did not receive the Pell Grant and 41.5% of the total did. Of those who did not receive the Pell Grant, 12.6% attained a degree compared to 13.5% of degree completers who received the grant. It is not surprising, then, that receipt of the Pell Grant was not a significant predictor in the logistic regression equation, confirming previous literature of a grant's low predictive value in degree attainment (Dowd & Coury, 2006).

Based on the total number of students in this study, 82.6% did not receive the HOPE Scholarship, compared to 17.4% who did. Of those who did not receive the HOPE Scholarship, 11.4% attained a degree and 20.3% of those who received the scholarship attained a degree. This indicated that students who received the HOPE Scholarship were 8.9% more likely to attain a degree compared to those who did not receive the scholarship. Unlike results found for Pell grant receipt, results of the regression analysis indicated that students who received the HOPE scholarship are 85% more likely than those who did not receive HOPE to attain an associate’s degree. This finding may be affected by the relatively small number of students who received the
scholarship, but is consistent with that reported by DesJardins et al., (2002). On the surface, and knowing that students who receive the HOPE scholarship have at least a 3.0 grade point average in high school, these findings are logical, and affirm the value of this merit-based scholarship for high-ability students in reaching degree completion.

**Research Question 6:** To what extent does earning a high school diploma or GED® diploma predict associate’s degree attainment?

Students who received a traditional high school diploma represented the largest portion of the students with 90.9% of the total, followed by students who received a GED® (9.1%). Of the 196 who received a GED®, only 10.2% received an associate’s degree and only 13.2% of the students who earned a high school diploma received an associate’s degree. GED® students who obtained a degree represented less than one percent (.09%) of the total number of students in the study, while those who obtained a high school diploma and degree represented 12% of the students. The logistic regression results indicated that students who obtained a high school diploma are 1.900 times more likely than those who obtained a GED® to attain an associate’s degree, holding all other variables constant. This finding is counter to previous literature that found both high school diploma and GED® diploma holders are equally likely to attain a degree versus not attaining a degree (Wilkinson, 2008). Perhaps this finding is related to the goals that students in TCSG with a GED® have. It is possible that students with a GED® enroll in TCSG institutions for specific skill enhancement that does not require an associate’s degree but rather a certificate or diploma. Additional study that examines the career goals and courses enrolled for GED® students in warranted.
Conclusions

Findings herein show that a number of factors contributed to the associate’s degree attainment of TCSG students, including demographic factors, select disciplines, enrollment in remedial math courses, receipt of the HOPE Scholarship, and geographic location of the institution. The findings in this study contribute to the overall information concerning student characteristics of degree attainment and specifically for technical college students. Findings from this study confirm previous studies that show that a large number of students attend college, but a small percentage of the students will earn an associate’s degree. Since the HOPE Scholarship requires students to graduate high school with a minimum GPA of 3.0, it is not surprising that the receipt of HOPE Scholarship has a positive effect on associate degree attainment. Of the students who earn an associate’s degree, the majority are women, aged 25 and over, in a health discipline. The question remains regarding what institution officials can do to improve the graduation rates of other students. Based on the findings herein, students’ characteristics vary, and this difference contributes to the complexity of finding a simple solution for a campus, a system, or a state. Because there are no easy answers, these findings affirm the call for institution officials to develop several strategies for students to meet the individual needs of this increasingly-diverse population of postsecondary students.

Findings from this study indicate that students who enter college after they turn 25 years old, who have earned a high school diploma, enroll in the health or trades discipline, receive the HOPE Scholarship, and be academically prepared by not enrolling in a remedial math course will have the greatest chance for success. To meet all these criteria would be difficult for students because some of the variables are out of their control. However, findings prompt institution officials to examine current policies and programs and develop more specific retention
programs for all students. For example, officials may wish to consider programs that provide targeted student support to traditional aged students under the age of 25 to increase the likelihood of persistence. Officials need to publicize how their programs can help students attain skills for today’s workforce that can hold the greatest promise for employment. Another example would be for officials to review current admissions requirements, consider the need and value for remedial courses, and evaluate the impact of more selective admissions requirements on associate’s degree students.

**Implications**

The findings in this research study provide insight and understanding into the differences in associate degree attainment of students. Mindful of the complexities of today’s technical college students, institution officials must be aware of the issues related to at-risk students. In addition, they must regularly review the demographic characteristics and career goals of students, examine institutional success measures such as retention and graduation, and be ready to quickly revise support programs that can effect positive change. This diverse student population will require quick-thinking, knowledgeable officials who can implement a combination of factors that will improve the graduation rates of students.

Institutions cannot specifically change the demographic background of the students who enroll in their institutions. However, institution officials can develop a supportive environment and develop policies and procedures that will benefit the degree attainment of these students. From these research findings, it may include ensuring that students select a discipline in which they can be academically successful. This may require additional emphasis on academic and career advising to new students. Along with identifying the correct discipline for good fit,
institutions can help students by developing effective math remedial programs that enable students to be successful.

Institutions and public policies should look for ways to assist students from lower incomes to finance their college education. This may require schools to make available additional scholarships or grants based on financial need and not just merit-based programs, such as the HOPE Scholarship and individual institutional scholarships typically based on entrance exams.

The past research and this current study show that states and the government need to look at education as a whole and not as secondary and higher education separately. The concept of improving postsecondary degree attainment in the United States is complex. Additional research is needed to consider student career goals, how one can balance life roles, and how much personal motivation contributes to achieving the associate’s degree. There are students who have many factors that challenge them, particularly those in rural areas and/or those who must work full-time, or have young children and cannot afford daycare. Institutions that can ensure additional financial aid and support services such as career and personal counseling may enable tangible ways to help students see the possibility of associate’s degree attainment. In addition, and confirmed by Astin (1993) and Pascarella and Terenzini (2005), students are more likely to remain engaged in their academic studies when they interact with faculty and feel connected to others at the institution. Campus activities such as lunch with select senior administrators and/or faculty members, social events, and career fairs can help students feel socially connected as well as receive important connections to potential employers.

As an administrator for student support services, these results help confirm many of the thoughts I had based on my experiences with students. The results help identify factors that have
negative relationships with degree attainment; therefore, allow me to focus on these factors to learn more about what resources and/or services can be developed to help students overcome possible future issues. The results also help provide a general knowledge base for me as a professional and will enable me to ask better questions and develop stronger support services for students.

**Recommendations**

Based on the researcher’s findings and observations, the following are recommended for future research and inquiry. Institution officials should examine their student populations and analyze graduation data based on students’ demographic variables, academic and financial aid needs. Officials may find that by adjusting current policies or developing new initiatives, they may meet the needs of today’s generation of students more effectively. While they may not be able to change the demographics, socioeconomic class, academic preparedness out of high school, or other factors, institution officials can evaluate the practices of similar institutions that have a higher graduation rate for students. Institution officials should consider the types of programs offered, initiatives, and/or the cultural climate at the institution. Institutions may want to look further into rethinking the need for English remedial programs and/or design of Mathematics remedial programs. In addition, students in rural geographic regions may not have access to transportation, and thus be more interested in online and hybrid courses to reduce the need to go to a physical campus.

Overall, the independent variables in the logistic model presented above explained a relatively small portion of the variation in student degree attainment. This, of course, can result from a number of factors. One explanation is that variables used focused solely on the student characteristics and did not include substantial environmental or academic attributes. Future
research could look to narrow this gap by including these variables, along with motivation variables in the study. Educational researchers may consider working more with sociology researchers to look at more than just the basic variables considered in this study. This would provide a broader perspective that may assist education in gaining a greater understanding of the complexities surrounding degree attainment.

It is important to note that the coefficients (B) illustrate the net effect of the variables and further study is needed in order to fully understand why each variable is reacting the way it is. For instance, the Pell Grant results could be the financial need students have because of receiving the Pell Grant working against the Pell Grant as part of a financial aid package. The net effect could be representing the two forces moving in opposite directions creating a variable that isn’t significant in this model.

In addition to adding quantitative variables, a next study may include interviews with students who attained a degree and those who did not to provide more in-depth of the factors that contribute to degree attainment. As a limitation of this study, the analyses presented herein include some categorical variables (e.g., race/ethnicity variables) and did not include possible interactions of predictor variables. Findings shown did not indicate concern for interaction effects, yet it is possible that groupings for race or discipline could mask some effects. Lastly, it is recommended that further study include individual differences by college. This information will help professions to understand their unique college data and adjust services accordingly.
Summary

Findings in this research provided another insight into the variables that influence the degree attainment of technical college students in the State of Georgia. Future studies should look more closely at the environmental and academic variables. This would continue to provide more resources to institutions of higher education to develop programs to meet the needs of their students.
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