Assessing factors influencing student success at Mississippi's public universities as measured by bachelor's degree completion

Christian David Pruett

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ASSESSING FACTORS INFLUENCING STUDENT SUCCESS AT MISSISSIPPI’S PUBLIC UNIVERSITIES AS MEASURED BY BACHELOR’S DEGREE COMPLETION

By

Christian David Pruett

A Dissertation
Submitted to the Faculty of Mississippi State University in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in Instructional Systems and Workforce Development in the Department of Instructional Systems and Workforce Development

Mississippi State, Mississippi

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Christian David Pruett
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ASSESSING FACTORS INFLUENCING STUDENT SUCCESS AT MISSISSIPPI’S PUBLIC UNIVERSITIES AS MEASURED BY BACHELOR’S DEGREE COMPLETION

By

Christian David Pruett

Approved:

James H. Adams
Major Professor and Associate Professor of Instructional Systems and Workforce Development (Director of Dissertation)

Jerry G. Mathews
Associate Professor of Leadership and Foundations (Committee Member)

Anthony Olinzock
Professor of Instructional Systems And Workforce Development (Committee Member)

Ed Davis
Assistant Professor of Leadership and Foundations (Committee Member)

Linda Cornelious
Professor and Interim Department Head of Instructional Systems and Workforce Development (Graduate Coordinator)

Richard Blackbourn
Dean of the College of Education
Retention and matriculation are topics of heavy debate and inquiry in higher education as rising tuition costs, coupled with declining state support, have fueled the need for increased accountability. In Mississippi, few studies have been conducted that are unique to the public universities in the state in order to analyze success factors in higher education. The purpose of this study was to analyze these success factors at Mississippi’s public universities as measured by successful degree completion within a six-year time period. This study analyzed High School GPA, ACT Scores, Parental Income Levels, Parental Education Levels, Ethnicity, and Gender.

Academic, demographic and socioeconomic data were gathered on two cohorts of resident first-time, full-time students attending a Mississippi Institution of Higher Learning. A total of 5,603 students were included in the study from the fall 2001 and 2002 semesters. Transfer students were not included in the study. A successful completer was defined as completing a bachelor’s degree within six-years of enrollment.
Students still enrolled in the seventh year were not included. In addition, students seeking an Associate’s Degree were also not included.

Descriptive statistics revealed that graduation rates fluctuated depending on high school GPA, ACT scores, income and parental education levels. The most significant differences in graduation rates occurred when analyzing high school GPA and income statistics. These findings were supported when logistic regression analysis was employed. Logistic regression analysis was used to analyze these factors compared to graduation rates for the state, and by type of institution. In Mississippi, there are four regional universities and four research universities. High school GPA and parental income were significant predictors in all three models, while ACT was significant when analyzing data for the system. For research universities, the education level of the father was significant. For regional universities, ethnicity was a significant predictor. In all, universities should develop a deeper understanding of the socioeconomic background of students in order to ensure that proper scaffolding is in place to ensure successful matriculation.
DEDICATION

I would like to dedicate this research to my family.
ACKNOWLEDGEMENTS

The author wishes to express his sincere thanks and gratitude to the many people who were invaluable in ensuring that this dissertation was possible. First of all, I would like to thank Dr. Jim Adams, my committee chairman, for his wisdom, encouragement and support during my course of research and study. Without his assistance, I wouldn’t have reached this point. I would also like to thank the other members of my committee, Dr. Anthony Olinzock, Dr. Ed Davis, and Dr. Jerry Mathews. My meeting with Dr. Olinzock over four years ago helped solidify my decision to begin work on my doctorate. His counsel and advice have served me well over the years. I would also like to thank my colleagues at both IHL and the State Board for Community and Junior Colleges for their support and encouragement during this process.

To my wife, thank you for your patience, understanding and love during this process. You are my inspiration in all things. You are a wonderful person, and I am not sure how I would make it without you. Thank you again for all that you have done for me.

To my Lord and Savior Jesus Christ, I would be nothing without you.
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CHAPTER I
INTRODUCTION

Predicting success in college has been a heavily debated and researched topic in higher education. Tinto (1993) found that no other topic has been researched more extensively in higher education than student retention and progression. For many postsecondary institutions, admissions standards are based upon some type of standardized test scores, as well as indicators of academic achievement at the secondary level. These standards have been developed over time in response to research on the predictability of these variables on student success in college. In addition, research in this area has grown as a result of the increased need for accountability standards, technological innovations, workforce and demographic shifts, and the demands of business and industry to remain competitive in today’s global marketplace.

When analyzing student success over time, other research looked beyond standardized test scores and high school performance in order to gain a greater understanding of steps that these institutions can take to improve retention and graduation. In addition, the value of a college degree has increased dramatically over the past several decades, fueling further research studies on the topic of retention and graduation. In Mississippi, few studies have been conducted specific to student success in four-year public institutions of higher learning.
As previously mentioned, much of the research on student retention and progression has focused on using standardized test scores and academic preparedness as measured by variables such as high school grade point average, courses taken in high school, and extracurricular activities at the secondary level to predict student success. Jenkins (1992) found that ACT scores and high school grade point averages were some of the most commonly used variables in analyzing success in college. Measures of academic preparedness and ability were shown to be significant in predicting student persistence. Kahn and Nauta (2001) and White, Nylin and Esser (1985) indicated that grade point average and standardized test scores were significant predictors of college success. Noble (1991) concluded that ACT scores and course grades in secondary work were the most significant predictors of college success. For many studies, college success was measured in terms of first-year college grade point average and student retention from fall-to-fall. However, there have been studies that have shown an influence in degree completion due to culture, educational attainment levels, and financial aid.

Today, the emphasis on predicting success in college continues to be a topic of heavy investigation as many postsecondary institutions have seen little change in retention and graduation statistics. On average, approximately 80.0 percent of first-time, full-time degree-seeking students return during the fall of their sophomore year, while only 50.0 percent complete a baccalaureate degree within six years (NCES, 2008). Barefoot (2004) suggested that graduation rates for first-time, full-time entering freshman have remained around 50% over the past ten years, with little variation. As a result of these statistics, student retention and persistence have remained at the forefront in
educational research in higher education. Braxton and McClendon (2001) found that retention, student success and bachelor’s degree attainment continue to be areas of great interest to many postsecondary institutions. In further research, Braxton, Hirschy and McClendon (2004) indicated that after decades of extensive research, student success remains a top priority and problem area for many colleges and universities.

Student retention and persistence will continue to be an issue of great concern in higher education as time goes on because of the increased demand for a more highly-skilled labor force. As technology changes and the demand for more highly skilled labor grows, the value of a college degree will continue to rise. In times past, learning a vocation or attaining a high school diploma was sufficient. Over time, this trend has changed and will likely to continue to change. Jassal-Head (2007) found that the college degree has taken the place of the high school diploma. On average, an individual with a college degree will earn $15,011 per year more than someone with a high school diploma (See Figure 1). In addition, the unemployment rate for someone with a bachelor’s degree is 3.3 percent, 2.2 percentage points below an individual with a high school diploma. The job demands for college graduates has also increased, and the value of a degree will translate into more long-term, sustainable careers.

Cabrera, et al. (1999) indicated that the benefits of a college degree are more than just an increase in average salary; a college degree provides opportunities for advancement with increased economic returns over the course of a career. A college degree will open doors for promotions and career advancements not available to individuals without a bachelor’s degree. Hearn and Holdsworth (2002) concluded that
there are also social and cultural benefits to a college degree. Seigman (2005) indicated that education opens the door to many groups of individuals, and the opportunities provided by obtaining a bachelor’s degree extend across demographic and socioeconomic boundaries. According to Parrish (2004), the benefits of higher education extend to children and generations of individuals to come. Labaree (1997) found that individuals completing college degrees had increased rates of civic participation, and economic development efforts were enhanced as individuals within an area become increasingly more educated. In addition, individuals with a college degree tend to have healthier lifestyles (Bowen & Bok, 1998).

Figure 1.1  Earnings and Unemployment Rate by Educational Attainment
Low rates of educational attainment in Mississippi further compound the need for a more highly skilled labor force as Mississippi has one of the lowest educational attainment rates in the nation. In 2000, only 16.9 percent of Mississippians aged 25 and over had college degrees, compared to 24.4 nationally (See Table 1.1). Approximately 40 out of 100 Mississippi high school freshmen will fail to earn a high school diploma. Of the remaining 60 successful completers, approximately 40 will enter an institution of higher learning in Mississippi. With a system average of 50.0 percent graduation rate, there is a definite need for increased matriculation among Mississippi resident students. In addition, the Western Interstate Commission on Higher Education (2008) estimates that the number of high school graduates is only expected to increase by 5% between 1992 and 2022. While there will be variations in growth from year-to-year, the number of high school graduates is expected to remain relatively stable during this time period. Policymakers across the state cannot afford to see further gaps in educational attainment. Mississippi also has the lowest per capita income rates in the nation. In 2007, Mississippi ranked 50th in per capita income with a value of $28,845, well below the national per capita income of $38,611. In addition, 19.3 percent of all persons in Mississippi live in poverty.
Table 1.1

Fast Facts About Mississippi Compared to the United States

<table>
<thead>
<tr>
<th></th>
<th>MS</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School Graduates, percent of population 25+, 2000</td>
<td>72.9</td>
<td>80.4</td>
</tr>
<tr>
<td>Bachelor’s Degree or Higher, percent of population 25+, 2000</td>
<td>16.9</td>
<td>24.4</td>
</tr>
<tr>
<td>Median Income, in dollars, 2004</td>
<td>34,278</td>
<td>44,334</td>
</tr>
<tr>
<td>Per Capita Income, in dollars, 2007</td>
<td>28,845</td>
<td>38,611</td>
</tr>
<tr>
<td>Persons Below Poverty, percent, 2004</td>
<td>19.3</td>
<td>12.7</td>
</tr>
</tbody>
</table>


In order to meet the increased demand for a more highly skilled labor force, the Board of Trustees of State Institutions of Higher Learning has revised its Strategic Plan to focus on increasing the quality and quantity of college graduates in Mississippi (Mississippi Institutions of Higher Learning, 2008). The average six-year graduate rate for Mississippi institutions is currently 49.8 percent, meaning that 50.0 percent of first-time, full-time freshmen fail to receive a bachelor’s degree within a six-year period (National Center for Education Statistics, 2008). As previously mentioned, the leak in the educational pipeline, coupled with relatively stable increases in the number of high school graduates, indicates that the IHL system must make significant strides in increasing retention and graduation rates. In other words, there is a great need to ensure that more students are successful upon entering a four-year university in Mississippi.
In Mississippi, there are eight public institutions of higher learning. Across the IHL system, there are approximately 69,000 students enrolled. Enrollment has increased each year for the past ten years (Mississippi Institutions of Higher Learning, 2007). The system currently awards over 13,000 degrees from certificates to doctoral degrees (Mississippi Institutions of Higher Learning, 2007). According to Figure 1.2, while enrollment is increasing, graduation rates for Mississippi’s universities range from 35.0 percent to 57.8 percent, with a system average of 49.8 percent (Mississippi Institutions of Higher Learning, 2008). The four regional universities across the state are: (a) Alcorn State University, (b) Delta State University, (c) Mississippi University for Women, and (d) Mississippi Valley State University. The four comprehensive universities are: (a) The University of Mississippi, (b) Mississippi State University, (c) The University of Southern Mississippi, and (d) Jackson State University. Of the eight institutions, there are three historically black universities: Jackson State University, Mississippi Valley State University, and Alcorn State University.
In Mississippi, there have been few studies conducted on in-state residents and their performance in postsecondary education. Thornell and Jones (1986) conducted a study on 100 freshmen at Delta State University, a regional university located in Cleveland, Mississippi. The focal point of the study was to analyze the predictive ability of first-year college grade point average using ACT scores and high school grade point average. The results of this analysis found that both ACT scores and high school grade point average were significant predictors of first-year college grade point average, with high school grade point average being a better predictor. Myers and Pyles (1992) conducted an additional study at Delta State University and found that both ACT scores and high school grade point average were significant predictors of first-year college grade
point averages, but ACT Scores alone were not significant predictors. Smith (1999) found that the predictive ability of ACT scores and high school GPA on bachelor’s degree completion varied depending on ethnicity, gender, and Pell status. Overall, high school GPA was found to be a better predictor of college success than ACT scores.

**Statement of the Problem**

Are Race, ACT Composite Score, High School GPA, Parental Income and Parental Education Level statistically significant predictors of college success as measured by graduation rates?

**Significance of the Study**

The current research shows that ACT scores and High School GPA are the two leading predictors of college success as measured by bachelor’s degree completion. In Mississippi, very few studies have been done to verify those findings for resident students in public universities. In addition, parental income and parental education levels have not been used in any prior research for Mississippi. As such, more research is needed in order to identify variables that contribute to college success as measured by matriculation and the completion of a bachelor’s degree within a six-year period. The results of the study will not only contribute to current research, but the results may impact college admission standards used by Mississippi’s public universities. In addition, risk factors may be identified so that institutions can be better prepared to assist students in reaching their long-term educational goals.
**Research Questions**

The following research questions were developed to guide this study:

1. What are the demographic, academic and socioeconomic characteristics of full-time, first-time entering freshmen at Mississippi’s public four-year universities?
2. Are Race, ACT Composite Score, High School GPA, Parental Income and Parental Education Level statistically significant predictors of college success as measured by graduation rates?
3. Are Race, ACT Composite Score, High School GPA, Parental Income and Parental Education Level statistically significant predictors of college success as measured by graduation rates for regional and comprehensive universities?

**Limitations and Delimitations**

The data in this study were delimited to the eight public institutions in the state of Mississippi. Further, only Mississippi first-time freshmen were tracked for the cohorts of 2001-2002 and 2002-2003 over a six-year period. Students still enrolled after the six-year window were not included as part of this study. The data items were limited to those items that were reported through the Management Information System (MIS) database of the Mississippi Board of Trustees of State Institutions of Higher Learning. Students were tracked only at the institution where they matriculated as a first-time, full-time freshman. As such, transfer students within the IHL system were not included.
Definition of Terms

Terms that are technical in nature, subject to multiple interpretations, and/or unique to this study are defined as follows:

(1) **Bachelor’s Degree Completion** – successful completion of a bachelor’s degree within six-years of date of original admission.

(2) **Bachelor’s Degree.** The term “Bachelor’s Degree” is defined as an award that normally requires at least 4 but not more than 5 years of full-time equivalent college-level work. This term also includes bachelor’s degrees in which the normal 4 years of work are completed in 3 years.

(3) **Black, non-Hispanic.** The term “Black, non-Hispanic” is defined as a person having origins in any of the black racial groups of Africa (except those of Hispanic origin).

(4) **Cohort.** The term “Cohort” is defined as all students who enter an institution as degree-seeking, full-time, first-time students in the fall of a given year. (The cohort would be adjusted if it is known that a student has died, entered the military, the foreign service, or is on an official church mission, in accordance with NCES guidelines.)

(5) **Cohort Year.** The term “Cohort Year” is defined as the year in which the cohort is established.

(6) **Completer.** The term “Completer” is defined as a student who receives a degree from a given institution within 150% of normal time for completion of
their degree program. For four year institutions, six years are allowed in which to obtain the degree.

(7) **Comprehensive Universities.** The term “Comprehensive Universities” is defined as those institutions that offer a greater number of programs and higher-level degree programs than the “Regional Universities.” Mississippi State University, The University of Mississippi, and The University of Southern Mississippi are considered “Comprehensive Universities.”

(8) **Regional Universities.** The term “Regional Universities” is defined as those institutions offering a number of degree programs at the Baccalaureate and Master’s level. Alcorn State University, Delta State University, Mississippi University for Women, and Mississippi Valley State University are considered “Regional Universities.”

(9) **Degree-Seeking Students.** The term “Degree-Seeking Students” is defined as students enrolled in courses for credit who are otherwise recognized by the institution as seeking a degree.

(10) **Eight Institutions of Higher Learning in Mississippi.** The term “Eight Institutions of Higher Learning in Mississippi” is defined as the eight public institutions of higher learning under the governance of the Board of Trustees of the Mississippi State Institutions of Higher Learning. These institutions are: Alcorn State University; Delta State University; Jackson State University; Mississippi State University; Mississippi University for Women; Mississippi
Valley State University; the University of Mississippi; and the University of Southern Mississippi.

(11) 150% of Normal Time for Completion. For an institution whose programs are 4 years in length, the term “150% of Normal Time for Completion” from those programs is defined as 6 years (72 months).

(12) Race/Ethnicity. The term “Race/Ethnicity” is defined as categories used to describe groups to which individuals belong, identify with, or belong in the eyes of the community. The categories do not denote scientific definitions of anthropological origins. A person may be counted in only one group. The two groups used in this study are categorized as White, non-Hispanic and Black, non-Hispanic. Students who were in neither category were excluded from the study.

(13) White, non-Hispanic. The term “White, non-Hispanic” is defined as a person having origins in any of the original peoples of Europe, North Africa, or the Middle East (except those of Hispanic origin).

(14) Still Enrolled. The term “Still Enrolled” is defined as a person still continuing a bachelor’s degree after six years.
CHAPTER II
REVIEW OF RELATED LITERATURE

This chapter provides an overview of research on student retention and progression to a bachelor’s degree. The first section analyzes studies related to predicting first-year success using various variables such as standardized test scores and high school performance measures. Secondly, research on persistence to degree is also analyzed, as well as variables of interest in the area of degree completion. Lastly, three theories of persistence are analyzed to establish a conceptual and theoretical framework for this study.

Factors Influencing First-Year Success

The research on the predictive value of standardized test scores and high school academic achievement is extensive. Research on this topic dates back to 1917, when Lincoln used high school grades to predict class standing at Harvard University (Mouw & Khanna, 1993). Chen (2003) found that ACT scores proved to be a significant predictor of cumulative college grade point averages, accounting for 14.1 percent of the variance. Myers and Pyles (1992) conducted a study of 420 first-time freshmen to determine the predictive power of ACT Scores and high school GPA on first-semester college grade point averages. The results of the regression analysis showed that there
was a significant relationship between the variables, with these two variables accounting for 32.0 percent of the variance in college grade point averages.

Wolfe and Johnson (1995) used forward multiple regression to develop a model with the most predictive combination of variables on college grade point average for 201 college students. The results of the study found that high school grade point average had the highest predictive ability, followed by SAT scores and self-control. Overall, high school grade point average and SAT scores accounted for 25.0 percent of the variance in college grade point averages. Bontekoe (1992) conducted a study to assess the predictive ability of ACT scores and high school grade point average on college success for students at Trinity Christian College. Students from the fall semesters of 1988, 1989, 1990 and 1991 were examined. A total of 477 students were evaluated during the course of study. College success was measured by cumulative college grade point average for the first two semesters of college at Trinity. The results of the study found that both ACT scores and high school grade point average were reasonably strong predictors of college success, with high school grade point average accounting for a majority of the variance. ACT scores were more predictive for females compared to males.

Noble and Sawyer (2002) conducted a study using ACT scores and high school grade point averages as predictors of different levels of college grade point averages. Logistic regression was used to find the predictive ability of these variables at the 0.25 levels of college GPA. Overall, both variables were found to be significant predictors at the 2.00, 2.50, and 3.00 levels of first-year GPA. However, high school GPA was found to be the most predictive. Roweton and Bare (1991) analyzed 33 self-reported variables
from the ACT assessment for 558 Nebraska students from two cohorts. High school GPA and ACT subscores were included as part of the 33 variables. Overall, the authors found that both ACT scores and high school grade point average were the two most commons variables in predicting retention rates.

Chou and Huberty (1990) used multiple regression analysis to analyze SAT scores and high school GPA to predict college grade point average for a group of 3,378 freshmen. The results of the regression analysis found that both variables were significant predictors of college success. In addition, once the new model was developed, data from the prior year were analyzed, yielding similar results. Morgan (1992) conducted a study using ACT scores and high school grade point averages for 100 first-time freshmen at an Illinois university. During the course of research, the author found the there was a correlation between ACT scores and college GPA, but the correlation was low. When high school GPA was added, the correlation increased. In addition, the results of the study supported the notion that Illinois universities should consider using a multi-level evaluation approach when making admissions decisions as opposed to relying on one or two variables in isolation.

Fletcher, Gwilt and Smith (1989) analyzed the results of test scores on the ACT, the Pre-Professional Skills Test and the National Teachers Exam for 357 students at a Tennessee University. The university used these exam scores as a determinant for acceptance into Teacher Education Programs. Test scores were analyzed for students between September 1984 and May 1989. The results of the analysis found that while there were strong correlations between these tests, none of the scores were correlated to
first-year college grade point average. Sibert (1989) conducted a follow-up study using data on teacher education graduates at Tennessee Technological University and a small liberal arts college. Sibert examined several scores and metrics including the ACT, the Pre-Professional Skills Test and the National Teacher Exam. The purpose of the study was to measure the predictive ability of these scores on college grade point averages. The author found that scores on the ACT were predictive of college grade point average. In addition, Sibert found that ACT scores were better predictors than the other standardized pre-admission tests. When expanding the analysis to include high school academic standing, Snyder and Elmore (1983) found that ACT scores were predictive of college grade point average, but standing in high school was not.

**Factors Influencing College Graduation**

Studies on the predictive ability of certain variables on first-year college grade point average provide a strong basis for understanding potential success factors in college. Much of the emphasis in these early studies revolved around using high school grade point average and standardized test scores. Camara and Echternacht (2000) analyzed research encompassing a 70-year time frame in order to gauge the ability of SAT scores and high school grade point average to predict success in college. In a majority of studies, these two measures were found to consistently predict college success, especially when used in combination. The authors also found that high school grade point average was typically a more significant predictor. However, both measures were successful at various levels of academic success. In addition to these variables,
many recent studies attempted to broaden the scope of research by adding additional
variables. There are many factors that impact bachelor’s degree completion, including
academic preparedness, socioeconomic status, race, gender and educational attainment
levels within the home (Choy 2002).

**Pre-College Academic Variables**

According to the Mississippi Institutions of Higher Learning (2009), standardized
test scores and high school grade point average are two of the most common measures
used to evaluate students for admission. As such, research was evaluated on standardized
test scores and high school grade point average as a means of predicting college success.
Maxey and Ferguson (1976) evaluated ACT scores at 28 colleges for students who took
the test as either junior or seniors in high school. The results of the analysis found the
there was a correlation of .50 or higher for 25 of the 28 colleges between ACT scores and
college grades. In addition, the study found that college grades were equal or higher for
those students taking the ACT as juniors. Snyder and Elmore (1983) used a sample of
496 students that were admitted to an institution through a special admissions program.
The study used variables such as ACT scores, Descriptive Tests of Language Skills
subtests, class rank in high school, and cumulative grade point average for each year of
college. At the end of the study, there were 138 successful completers within four years.
While the other assessments proved to be significant, the authors found that ACT scores
proved to be better predictors of college success each year.
Sawyer and Maxey (1982) completed a study using data from a sample of 205 colleges in the late 1970s. The results of their analysis showed that ACT scores were significant predictors of academic success and achievement for freshmen groups as small as 50 or more. In addition, ACT scores were better predictors for students in four-year private colleges compared to four-year public colleges. The ACT was also more predictive at the undergraduate level. Loadman and Devile (1990) used correlation and regression techniques to analyze data on teacher education graduates from Ohio State University between 1982 and 1989. There was a correlation between grade point average, ACT scores, and results from the National Teacher Exam. ACT scores proved to be a better predictor of National Teacher Exam scores than grade point average. Given these results, the data suggested that colleges should seek after students with higher ACT scores in teacher education programs.

Smith (1995) conducted a very extensive study analyzing the impact of various indicators on graduation rates. He analyzed data from various cohort groups encompassing over 70 colleges and universities over time. During the course of the study, the results indicated that graduation rates were different for various target groups. In addition, he found that academic preparedness had a major influence on graduate rates, particularly for minority students. Astin (1996) found that graduation rates were different based upon high school grades and SAT scores. In addition, Astin found that graduation rates differed based upon institution attended as a result of varying levels of selectivity. In conclusion, the data showed that both SAT scores and high school GPA were independently predictive of college success; however, combining both variables resulted
in significant increases in predictability. Fleming (2002) found that high school grade point average and secondary coursework grades were the most accurate predictors of academic success.

Choy (2002) found that students taking a more rigorous high school curriculum were more prepared for college, even overcoming parental education levels. Adelman (1999) conducted research based upon a longitudinal study, tracking students over a ten-year period. These students were tracked beginning in the tenth grade. Over the course of the study, the author found that the most significant predictor of academic success was the rigor of coursework taken in high school. Camara and Echternacht (2000) reviewed several studies and found that high school grades were the most significant and accurate predictors of student success.

**Race**

Over time, the influence of race has been shown to impact the predictability of college success. Success among African-American students is of great interest to policymakers and educators in Mississippi given the diverse student population in both secondary and postsecondary institutions. Over the course of the next several years, the number of high school graduates in Mississippi is expected to remain constant. As such, Mississippi’s universities are tasked to increase the effectiveness with which students graduate from college. Given this scenario, an evaluation of current research is needed on the impact of race on degree completion in postsecondary institutions. In Mississippi, African-American students represent approximately 37.2 percent of total enrollment in
four-year public universities (Mississippi Institutions of Higher Learning, 2007). During the course of the past four decades, the proportion of 25 to 29 year old African-Americans across the nation graduating from college increased by 12.6 percentage points. While minority participation continues to increase, African-American students are still disproportionally represented compared to non-minority students. As such, the topic of college success among African-Americans is of great importance to policy makers across the state.

Eimers and Pike (1997) authored a survey given to 799 students at a Carnegie I university with a total undergraduate population of 16,500 students. The administration at the college was interested in increasing enrollment and matriculation for minority students. The results of the survey indicated that minority students were more likely to pursue other avenues instead of enrolling in a postsecondary institution. In addition, minority students were more likely to depart prior to degree completion than non-minorities. DesJardins, Ahlburg, and McCall (2002) conducted a study using 3,070 students enrolled in the University of Minnesota-Twin Cities campus. These students were freshmen in the fall of 2001. The purpose of the study was to consider various academic and socioeconomic variables on early departure and eventual college success. The authors of the study found that minority students were more likely to leave the institution prior to graduation compared to non-minority students. In addition, minority students were less likely to experience successful social and academic integration into the campus environment.
Porter (1989) used data from the *High School and Beyond* study of over 28,000 high school seniors to examine persistence patterns during a six-year period. For the purpose of the study, Porter used the flow of students from year-to-year during this period as the primary definition of persistence. Students were categorized based upon degree completion, those still enrolled after six years, those that left and later returned, and dropouts. After examining the data, Porter found that degree completion rates for Black and Hispanic students lagged behind that of White and Asian students over a six-year period. Porter also found that students were more likely to depart after the first year.

Eimers (2001) conducted research on the notion of college experiences for minority and non-minority students in order to determine whether or not significant differences existed between the two groups. In much of the literature, research has shown the minorities are less likely to matriculate, in part, due to differences in acclimation to college life. The findings of this study refuted that notion to some extent as Eimers found few differences in the relationship between college experiences and student progress for both groups. Eimers indicated that more research is needed to further explore how students from each group tend to acclimate to college life. By understanding these deeper findings, colleges and universities can find ways to ensure a smooth transition to college life using increased recruiting and on-campus experiences. While experiences were similar, Eimers concluded that minorities have fewer opportunities to enroll in college, and they generally have more difficulty succeeding academically.
Braunstein, et al. (2001) analyzed various demographic, achievement and financial variables for a group of students at Iona College. During the course of the analysis, the authors found that minority students were more likely to come from low-income housing, as well as areas in which secondary institutions were less likely to be able to prepare students for college. Leppel (2002) analyzed a cohort of students based upon a study conducted by the National Center for Education Statistics. The author followed this cohort of students to see how many students returned during the second year of college. The results of the study found the minority students were less likely to persist to the second year. Leppel found that for many African-American students, the quality of education received during elementary and secondary years might have been of lower quality compared to other racial groups, causing an immediate disadvantage in higher education.

Perna (2000) used information from the National Educational Longitudinal Study database to examine college investment decisions by various groups. The model analyzed enrollment decisions at four-year institutions for African Americans, Hispanics, and Whites. Investment decisions differed between each of the groups involved in the study as members of each group used different factors and variables in making enrollment decisions. Holding other variables constant, African American students were more likely to enroll in a four-year university immediately after graduating from high school compared to other groups. However, these students were more likely to have less access to information about college and how to work towards a four-year degree. In
addition, Perna found that support at institutions for minority students was lacking in terms of ensuring successful persistence.

Allen (1997) argued that African-American students found greater success when attending Historically Black Colleges and Universities. Johnson and Napier (1987) echoed those findings in a similar study conducted using data on black students at Historically Black Colleges in Mississippi. During the course of this research, the authors found that ACT scores were strongly related to grade point average. In addition, ACT scores were more predictive for female students compared to male students. As such, additional research is needed on the impact of race on degree completion. Given the higher percentage of African-American students coming from low-income homes, income and race must be addressed within the confines of the same study.

Income

The research on the impact of income on student success in comprehensive, and the literature focuses on all aspects of student success from student accessibility, retention and degree completion. Eimers and Pike (1997) found that low income students have less access or ability to enter higher education compared to students from other income groups. Much of this is due to the fact that low-income and minority students attend secondary institutions that are less prepared to ensure that these students are ready to attend college (Carey, 2004). In addition to being less prepared academically, many low-income students have lower standardized test scores, an oft-used gauge of entering ability in postsecondary education (Timpane & Hauptman, 2004). Tinto (2007) indicated that higher education serves as a revolving door for minority students because so many
fail to successfully matriculate. Gladieux (2004) found that attendance and participation in higher education were closely tied to and associated with socioeconomic status. In addition, socioeconomic status would often outweigh academic preparation as the lowest socioeconomic groups had an equal chance of attending and succeeding in postsecondary education as students in higher low-income groups. The author also found that only 60.0% of students in low-income groups attended college. This compares to 90.0% of students from families earning incomes greater than $80,000.

Terenzini, Cabrera and Bernal (2001) found several characteristics of students from families in lower income groups. The authors found that for many of these students, they are more likely to come from homes with less educated parents. These students enroll in postsecondary institutions at lower rates, and they have lower expectations of obtaining a bachelor’s degree. During the college experience, these students tend to be less prepared for college, and the impact of tuition on the family is greater. In addition, low-income students have greater financial assistance needs, and degree completion rates are directly related to student and family income.

Sewell and Shah (1967) used cross-tabular analysis, effect parameters and path analysis to review information collected on 9,007 Wisconsin high school students. These students were surveyed upon entrance and at various times during the respective courses of study until graduation. Socioeconomic status was found to have direct effects on college enrollment decisions. The impact of socioeconomic status differed slightly compared to intelligence for males compared to females. However, socioeconomic status
had direct impact on both groups. Over the course of time, a student’s socioeconomic status had a direct effect on college completion rates.

Baker and Velez (1996) conducted a literature review on the topic of enrollment and persistence for women, minorities, older and part-time students. The review encompassed studies over several years in order to determine patterns and trends relevant to these groups. During the process of research, Baker and Velez found that empirical studies determined that the impact of income and socioeconomic status was fading in terms of enrollment and persistence. However, SES was still an influential variable in enrollment and matriculation. The authors also found that socioeconomic status played a key role in the type of institution attended as more affluent students tended to enroll in four-year and more selective institutions. As a final recommendation, students tended to be more successful in lower SES groups if they enrolled in a community college prior to completing a four-year degree.

Braunstein, McGrath, and Pescatrice (2001) conducted research at Iona College in New York in order to measure the impact of family income and financial aid on student persistence. The study found that students from families in higher income brackets had higher rates of persistence compared to other groups. However, financial aid options had little impact on persistence across income groups. Academic variables were more significant predictors for students in all income groups, indicating a potential leveling of accessibility for all income groups. In addition, McGrath and Braunstein (1997) found that students who failed to persist tended to have lower academic preparation and lower income levels compared to those remaining enrolled. Porter (1989) echoed these findings
indicating that socioeconomic status and academic ability are significant predictors of college persistence. In addition, students who received grants were more likely to continue on with their college studies compared to students not receiving any grants.

Rogers (2005) conducted a dissertation research study and found that family income is one of the best and most significant determinants of degree completion. Mumper (1996) reviewed several studies on students from low-income families and financial aid policies over the past several years. Mumper found that rising tuition costs, coupled with lower federal and state support, have greatly dampened the ability of low-income students to attend college. In addition, the author found that studies show family income as being strongly related to college success and matriculation. As a final recommendation, Mumper advocated the need to funnel funds to the most needy to make college more affordable for low-income students.

Venezia and Kirst (2005) provided an overview of research based upon a Stanford University Study using a sample of 2,000 students, as well as a sample of parents from over 23 different schools over a six-year period. The study consisted of surveys provided to students in the 9th and 11th grades, as well as follow-up surveys with parents. While 88 percent of students indicated a strong interest in attending colleges, stark differences emerged between groups. Students from the low-income groups were more likely to be less prepared academically for college. In addition, 44 to 47 percent of lower SES parents were provided adequate information about college opportunities for their children, compared to over 70 percent of parents from higher SES groups. Since many of
these students are not prepared for college, they are more likely to fail to persist upon gaining entrance into college.

Low-income students complete a bachelor’s degree at lower rates compared to other students, and they also had a tendency to be less likely to attend four-year, selective institutions (Kahlenberg, 2004). Even with financial assistance and strong parental involvement, the loss of income to attend college is too great, so many individuals elect to stay in the work force as opposed to completing college (Pell Institute, 2004). Gladieux (2004) stated that low-income students face additional trials when it comes to attending postsecondary education due to rising tuition costs, lower access to financial aid, and reduced funding for higher education in many states. Cabrera, et al. (1990) analyzed the records of 1,375 students attending four-year institutions across the nation to analyze the impact of financial variables on students goals, commitments and college persistence. Over time, the impact of income and other financial variables on goal commitment and degree completion was negative. In other words, students from low-income families have a tendency to have lower degree completion goals and commitments. The authors found that, as a result, affluent students are more likely to remain in college and complete a bachelor’s degree within six years.

Astin and Osequera (2004) complied data collected over a 38-year period from freshman surveys derived by the Cooperative Institutional Research Program (CIRP). Each fall, over 400,000 freshmen completed the survey from a total of 700 postsecondary institutions. As a means of determining socioeconomic status, the authors confirmed that parental education and income levels were the best indicators of socioeconomic status.
According to the results of the analysis, trends emerged regarding income groups and college attendance. Overall, students in higher income SES groups continued to increase in terms of the proportion of total college enrollments over the past several years, while there were slight decreases in middle-income students. When analyzing data on low-income students, there was little change in college attendance patterns. In other words, when reviewing the percentage of students enrolling in college by income group, low-income students made little change in terms of representation. In addition, higher income students were 500% more likely to enroll in highly selective institutions. As a final note, Astin and Oseguera concluded the inequalities among income groups continued to increase.

Carnevale and Rose (2003) examined studies conducted by the National Center for Education Statistics in order to better understand admission patterns among different income groups. The authors set out to answer a series of questions about students attending more highly selective colleges and universities. According to their findings, students from low-income groups are underrepresented at these institutions of higher learning. While many of these institutions claimed to reach out to these students, enrollment numbers failed to reinforce the notion that low-income students were equally likely to attend selective colleges and universities. The authors recommended using a series of tools to analyze incoming students as opposed to relying on singular marks of academic achievement in the form of test scores. The policy recommendations made by the study included using class rank plans, affirmative action and financial aid policies that encouraged low-income participation.
Berger (1997) furthered research on Tinto’s Student Integration Model by analyzing information on 718 college students. The study analyzed the social integration of each of these students in terms of developing a sense of community and belonging within residence halls. The results of Berger’s analysis showed that income and socioeconomic status also predicted how well a student would adapt to the institutional setting and interact with other students. In Tinto’s analysis, students that fail to successfully integrate socially within the college environment were more likely to depart prematurely.

Income is a key issue for many Mississipians as average income lags well behind the rest of the nation. Income is a variable that cannot be overlooked when analyzing success factors in higher education. Tinto (2007) found that more research is needed that focused on matriculation and persistence for low-income students, as well as the experiences of these students within the college. As a final recommendation, Tinto also advocated that research is needed to find additional policies and actions that can be adopted by states and institutions in order to increase student persistence for low-income students.

**Gender**

Gender is another variable of great interest in the area of researching student success in higher education. Choy (2002) found that after looking at enrollment trends, males are no longer the leading demographic in higher education. Choy analyzed several longitudinal studies conducted by the National Center for Education Statistics. While several findings in the study were significant, Choy indicated that the landscape of higher
education is changing as women are now leading the men in enrollment trends. In Mississippi, a significantly higher percentage of females earn degrees compared to their male counterparts. In 2005-06, females earned a total of 8,465 total degrees in Mississippi’s public universities, while males received 5,522 degrees (Mississippi Institutions of Higher Learning, 2007).

Over time, the percentage of males earning college degrees has continually declined over the past three decades (Postsecondary Education Opportunity, 2002). According to U.S. Department of Education statistics, women have been earning more than 50.0 percent of all bachelor’s degrees awarded since the early 1980s (2000). Freehill (2000) found that compared to males, women were more likely to pursue an academic track in high school. Females were also more likely to enter college immediately after high school graduation. In a majority of cases, females were more likely than men to complete a bachelor’s degree within six years. Research has consistently found that gender was a significant predictor of degree completion (Peltier, Laden, & Matranga, 1999).

Zhu (2004) conducted a study that focused on the pre-college characteristics of college students over a two-year period. A total of 1,729 students were included in the study. Each student completed the CIRP Freshmen Survey. Zhu used logistic regression analysis to determine odds ratios for such variables as gender, time management in high school, college expectation, amount of student loans received and others derived from the CIRP survey. Zhu found that females graduated at significantly higher rates than males over the six-year period. In addition, female students were more likely to graduate in less
than six years. Determination of career development and the expected change in socioeconomic status by females were postulated as being the driving forces behind the differences in degree completion rates by gender.

King (2000) examined the hypothesis that Caucasian, middle-class males were losing ground compared to their female peers in higher education. King focused on the educational pipeline using such indicators as high school graduation, college preparation, college enrollment, and degree attainment. The author concluded that there is strong evidence to support the notion that gender plays a pivotal role in degree completion according to current estimates and figures. Females outperformed males in almost every racial category. King contended that there is a strong need for educators to focus on policy decisions that identify and assist students most likely to be at-risk.

Leppel (2000) used data gathered from the 1990 Beginning Postsecondary Students survey conducted by the National Center for Education Statistics to examine differences in student persistence among various groups. The author found that several variables impacted student persistence such as income, race and academic preparation. During the course of inquiry, Leppel found that women persisted at higher rates compared to men. Women were also more likely to withdraw as a result of academic performance deficiencies than their male counterparts. Family responsibilities also impacted persistence for females. While the differences in persistence were not necessary significant between males and females, the author contended that further research into gender differences was needed.
Parental Education

Given the low educational attainment levels in Mississippi, research was conducted on studies relating the predictability of parental education levels on successful matriculation in college. Over time, educational attainment levels were found to be significant predictors, especially in cases involving first-generation students. First-generation students were less likely to enroll and graduate from postsecondary institutions compared to non-first-generation students (Terenzini, et al., 1996). Horn and Chen (1998) found that, on average, 23.0% of first-generation students were likely to drop out during the first year compared to only 10.0 percent of their counterparts. Terenzini et al. (1996) echoed these sentiments in finding that first-generation students have lower tendencies to enroll continuously from year-to-year. These students were also found to be most likely to fail to return to the original institution attended within three years of admission (Warburton et al., 2001).

For first-generation students still in college after three years, many were less likely to actually complete a bachelor’s degree compared to other students (Choy, 2002). Much of the attrition among first-generation students was a lack of culture at home emphasizing the value of a degree or the knowledge to help students prepare for higher education. For many first-generation students, their parents do not have the necessary knowledge to help children prepare for college or to help them find their way once they arrive on campus. Fear, coupled with a lack of knowledge, can cause the college environment to be quite intimidating, and many parents lack the understanding to help students overcome these hurdles.
King (2002) analyzed data on over 35,000 students using data gathered from two prominent studies conducted by the National Center for Education Statistics. King found that low-income students arrived on campus with hurdles that other students may not face. A series of factors caused low-income students to make choices that adversely impact academic progress. Some of these factors included more time with dependents, increased work schedules to help offset income deficiencies at home, and decisions to attempt to limit the cost of attending colleges. In addition, parents of first-generation low-income students had less overall knowledge and the cultural atmosphere in higher education.

Hossler, Schmit and Vesper (1999) conducted a nine-year longitudinal study on the college going decisions of high school students in Indiana. The authors examined survey data from a large number of students, and conducted follow-up interviews with students and parents. The study inquired into the thought processes behind college decisions, as well as the impact of external sources on these decisions. After the initial review, the authors conducted a follow-up study on a large sample of the participants in order to see the results of many of the pre-college decisions. The authors concluded the many changes took place between the ninth- and twelfth-grade years. In addition, the impact of parental education levels was significant in college-making decisions.

McDonough (1997) conducted an in-depth study examining the college selection process for 12 white females using interviews and other means of data collection. The scope of the study included student perception of college readiness, as well as the impact of family, friends and high school on the college selection process. The students included
in the study came from a variety of academic and socioeconomic backgrounds in order to gain a comprehensive understanding of college choices. The impact of social class, race, and parental education levels on college decisions was significant as student choices varied widely, depending on background and other influences. In one example, McDonough found that first-generation students tended to restrict the list of potential college choices compared to students whose parents attended college. The impact of parental education levels on student choices cannot be overlooked.

**Theories of Persistence**

In order to have a clear theoretical framework, this study borrowed from three key models of student persistence generated by Tinto (1975), Bean (1985) and Astin (1991). These models helped lay the groundwork for the significance of using pre-college variables to analyze student retention and graduation. Tinto’s model focuses on the integration of students into the college environment based upon academic variables and social variables. Bean carried Tinto’s model further by analyzing the impact of external factors such as parental education levels and finances, as well as institutional variables. The final model, developed by Astin (1991), found that pre-college variables not only impact student retention and graduation, but they also play a role in student acclimation.

**Tinto’s Student Integration Model**

After analyzing research from many scholars in the field, Tinto developed one of the leading models used in analyzing retention and graduation in higher education known as the Student Integration Model (1975). This model is based upon research describing
factors that influence a student’s decision to leave college. Tinto’s model assumes a great deal of interaction between academic and social integration variables in student’s decisions on student’s departure and matriculation decisions (Eimers & Pike, 1997). According to the model, as a student prepares to enter postsecondary education, their academic, social and family backgrounds play a pivotal role in determining how well the student will acclimate to the college environment. These pre-college characteristics can be used to aid in predicting whether or not a student will choose to depart the institution prior to acquiring a bachelor’s degree. Determining how well a student will matriculate is based upon the interaction between academic successes and the degree of social integration in the campus environment.

Within the model, academic integration is based upon academic variables and achievement, while social integration is related to socioeconomic status and familial background. As a student progresses through higher education, these characteristics weigh heavily on decisions to depart the institution prior to graduation. As the student assimilates into the campus environment, these variables are overcome because the identification with the institution outweighs student backgrounds. Once this identification takes place, the student then commits to the institution. Over time, the commitment made to the institution by the student will lead to degree completion. In its simplest form, a student’s background and ability to succeed academically will work hand-in-hand in determining how well a student adjusts to life in college. Once a student becomes used to the campus environment, if they manage to integrate well within the campus culture, a student will commit to completing what they started. However, if a student does not
identify well within the environment, they will be far more likely to depart. This model
deals primarily with the issue of student departure (Tinto, 1975).

![Figure 2.1 Tinto’s Student Integration Model](image)

**Bean’s Model of Student Retention**

Bean felt that Tinto’s model overlooked a few key variables, so he developed his
own model of student retention that analyzed student variables, environmental variables,
and external variables outside the realm and control of the institution (1985). The main
shortcoming in the Tinto’s model was the influence of external factors such as financial
conditions and the influence of parents and peers (Cabrera et al., 1992). In addition, Bean
incorporated an interaction with the environment itself, an interaction that can often
impact a student’s decision to stay or depart (See Figure 2.2). Bean’s model views a
person’s beliefs as being cyclical. A person’s background and experiences for a student’s
beliefs (Elmers & Pike, 1997). Once these attitudes are developed, a student then uses these attitudes in making critical decisions, such as attrition or matriculation. As such, a student’s outlook on postsecondary education goes deeper than just an academic or social integration, other factors weigh heavily in the decision making process. A student then goes through the process of whether their desire is to be a part of another institution, to change their goals and objectives, or to commit to the institution for graduation.

Figure 2.2  Bean’s Longitudinal Model of the Type of Factors that Impact Retention.
Astin’s Input-Environment-Output (I-E-O) Model

Astin (1991) developed a model that focused on three key elements: inputs, environment and output. The inputs represented background characteristics and pre-college academic factors, while environment factors consist of institutional characteristics and college experiences. The final component, outcomes, contains such issues as college GPA and degree completion (See Figure 2.3). Astin’s model is based on the assumption that inputs and environmental factors interact simultaneously to impact outcomes. In other words, the “boxes” in the model are not mutually exclusive, they work simultaneously to impact departure decisions. This model explores the pre-college characteristics in an extended light as Astin indicated that these variables also impact the college experience, not just departure decisions.

As the student attempts to matriculate on campus, there is merit to analyzing various academic and socioeconomic characteristics on student success in terms of degree completion. These variables provide increased insight into how students acclimate to life on campus. In addition, the environment they experience on campus will also be impacted by these characteristics. As such, they intertwine in a student’s decision to commit to the institution. Colleges and universities can use the information gathered from such studies to analyze a pipeline of student acclimation in order to investigate potential problem areas.
Figure 2.3 The I-E-O Model
Summary

The issue of student retention and predicting student success has been researched for several decades. In many beginning studies, the emphasis centered around determining college success as measured by academic achievement within the first semester or first complete year. In many of those studies, standardized test scores (ACT and SAT), class rank, secondary coursework and high school GPA were found to be correlated with or predictive of first-semester for first-year GPA. There was some debate about each indicator, with some studies finding test scores while others found high school GPA to be more predictive. Most research agreed that a combination of these variables increased the predictability of first-year success. In the end, these variables only accounted for 40.0 percent of less of the total variance.

In time, the issue shifted to analyze college success rates as measured by bachelor’s degree completion. In most cases, academic preparedness were viewed as being predictive of bachelor’s degree attainment. However, the degree of predictability varied depending on race, ethnicity, and socioeconomic status, or some combination of these variables. As was the case in first-year GPA, there are debates that have taken place regarding the impact of these variables on student decisions of departure or commitment. Very few studies analyzed these variables in combination together. Multiple regression was the primary tool in most of these studies, with a few deploying the use of logistic regression.

Three persistence theories were explored in order to provide the framework for this study. Tinto’s model focused on the academic and social integration of students as
measured by background and academic variables. Bean furthered this research by accounting for factors external to the institution and the student such as socioeconomic status. Astin developed the I-E-O model in order to postulate that there is an intermingling of variables that impact student acclimation and success in college. These three models help provide insight into the use of academic, demographic and socioeconomic variables in the prediction of college success. Very few studies have demonstrated the impact of these variables on Mississippi resident studies in Mississippi Institutions of Higher Learning.
CHAPTER III
METHODOLOGY

This chapter focuses on the methods used to obtain the data for this study and the methods of data analysis. Specific areas discussed include overview, design, population, procedures and the analysis of data for each research question.

Overview

The Board of Trustees of State Institutions of Higher Learning developed a new strategic plan that focuses on increasing the quality and quantity of bachelor’s degree recipients in Mississippi. As part of this plan, this study examined the predictability of success in obtaining a bachelor’s degree within six years based upon certain academic and socioeconomic variables. The six-year window was used based upon standards developed by the National Center for Education Statistics for a successful completer.

Research Design

This study used data from the IHL MIS database to analyze academic, demographic and socioeconomic data on Mississippi resident first-time freshmen enrolled in Mississippi’s public universities. The dataset contained information on students in Fall 2001 and Fall 2002. These students were tracked over a six-year time period in order to determine factors critical to the successful completion of a bachelor’s
degree. Students were tracked using a common identifier that was later removed by the Institutions of Higher Learning in order to protect student identity. The data set was analyzed using a statistical software package in order to verify that information was presented for each data element in the data file, as well as to normalize the data and remove outliers. Once the data set was normalized, data were analyzed using Microsoft Excel in order to provide a wealth of descriptive statistics such as means, percent of total and other calculations. Forward logistic forward regression was applied to the database to examine the effect of the independent variables on the dependent variable of baccalaureate degree completion. Forward logistic regression was used because the dependent variable, degree completion, was dichotomous.

**Dependent and Independent Variables**

The independent variables in this study were gender, race, ACT Composite Score, high school grade point average, parental income and parental education levels. The dependent variable in the study was the students’ success or failure in obtaining a degree within the period of six years, or 150% of normal time for completion.

**Population**

The data elements used in this study consisted of information on first-time resident black and white students at the eight institutions of higher learning in Mississippi that completed or failed to complete a bachelor’s degree within six years, a group of 5,603 students, for fall terms 2001 and 2002. The original database included 6,518
students, but 266 students of different ethnic backgrounds were excluded due to a low N. In addition, 383 students were not included as they were still enrolled after the sixth year or were working towards an associate’s degree.

Data Collection

The researcher obtained permission from the Assistant Commissioner of Policy Research and Planning to use the Management Information System (MIS) database of the Mississippi State Institutions of Higher Learning. The MIS is an Oracle database. Three specific files were used: the Student Information File; the FASFA File; and the Degrees Awarded File. The Student Information File provided data on gender, race, ACT score, and high school grade point average; the FASFA file contained data on Parental Income and Parental Education levels; and the Degrees Granted File indicated whether a student has completed a baccalaureate degree.

The files were linked, using the student identification number, and exported from the Oracle database as an Excel worksheet. While data were presented for all students, any identifying information was removed from the Institutions of Higher Learning before transmission so that no individual student information could be determined. Any personally identifiable information was removed prior to analysis. This dataset was converted into a SPSS file in order to conduct the logistic regression analysis.
Data Analysis

SPSS and Excel were the preferred software packages used to analyze the data for each research question to provide descriptive statistics, T-Test and Logistic Regression methodologies.

(1) Descriptive statistics were provided from SPSS for each independent variable. Data were placed in tabular or graphical format based upon pre-determined ranges.

(2) A logistic regression analysis was conducted using an alpha = .05 level of confidence in order to calculate a best-fit model for bachelor’s degree completion for public universities in Mississippi.

(3) A logistic regression analysis was conducted using an alpha = .05 level of confidence in order to calculate a best-fit model for bachelor’s degree completion for regional universities and comprehensive universities.
CHAPTER IV
RESULTS

The purpose of this study was to examine success factors associated with bachelor’s degree completion at Mississippi’s Public Universities. After an extensive review of the literature, even independent variables were identified and used to determine the impact of these variables on degree completion. Data included in the study were gathered from three databases housed at the Mississippi institutions of Higher Learning Executive Office. There were a total of 5,603 records included as some records were removed due to a low N, or data were found to be outliers in comparison to the study distribution. Outliers were those data values identified by SPSS as being outside the normal range of data values within the dataset. The findings of the research are presented here according to the research questions asked in the previous chapter.

Research Question Number One

Research question number one asks: What are the demographic, academic and socioeconomic characteristics of full-time, first-time entering freshmen at Mississippi’s public four-year universities?

Procedure: Frequencies, distributions and averages were calculated using Data Analysis tools in both Microsoft Excel and SPSS in order to provide a comprehensive analysis and breakdown of the independent variables in the study.
The population utilized in the study contained demographic, academic, and socioeconomic data on 5,603 full-time, first-time Mississippi freshmen at Mississippi’s public universities during the fall 2001 and 2002 semesters. These students were tracked over a six-year period in order to determine graduation rates. The six-year graduation mark was set by the National Center for Education Statistics as a uniform methodology used nationally by postsecondary institutions. A freshman was determined to be a completer if they were awarded a bachelor’s degree during this time period. Completers were coded with a 1, and non-completers had a code of zero. Of the total records included in the study, data were found on 2,166 males and 3,437 females. When analyzing the data by race, a total of 2,803 students were white, while 2,800 students were black. Students from racial groups other than white and black were excluded from the study given the low levels of data on these students (See Table 4.1).

The overall graduation rate for the population was 51.3%, slightly above the overall graduation rate for the IHL system of 49.8%. The average ACT composite score for the group was 20.9, and the average high school grade point average was 3.17. As a percent of total, 53.7% of mothers had a college degree or higher, while 40.1% had a high school education. When analyzing data on educational levels for fathers, 43.3% had a college degree or higher, while 41.7% had a high school diploma. The mean parental income was $46,659, well above the median income value in Mississippi of $34,278. Data were broken down in greater detail for each dependent variable.
Table 4.1
Selected Statistics on Independent Variables

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<th>Black</th>
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<table>
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</tr>
<tr>
<td>High School GPA</td>
<td>3.17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education Levels</th>
<th>% High School</th>
<th>% College Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mom_Ed</td>
<td>40.1</td>
<td>53.7</td>
</tr>
<tr>
<td>Dad_Ed</td>
<td>41.7</td>
<td>43.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Degree Completion</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completers</td>
<td>2,876</td>
</tr>
<tr>
<td>Non-Completers</td>
<td>2,727</td>
</tr>
<tr>
<td>Graduation Rates</td>
<td>51.3%</td>
</tr>
</tbody>
</table>

Note: N=5,603
Gender

Data were present for 2,166 males and 3,437 females in the study. In terms of percentages, 38.7% were male and 61.3% were female. For males, 53.1% were white and 46.9% were black. For females, 48.1% were white, compared to 51.9% black (See Table 4.2). The average ACT composite scores were higher for males with an average of 21.5 compared to 20.6 for females. However, females had higher grade point averages with an average of 3.24 compared to 3.05 for males. Parental income levels for males were slightly higher compared to females. Overall, females had higher completion rates in terms of percent and total, as there were 1,830 females completers compared to 1,045 males. Females had a total graduation rate of 53.3%, compared to 48.2% for males (See Figure 4.1). For males and females, the mother had higher education levels compared to males.

![Graduation Rates by Gender](image)

Figure 4.1 Graduation Rates by Gender.
Table 4.2
Selected Statistics by Gender

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>2,166</td>
<td>3,437</td>
</tr>
<tr>
<td>Completers</td>
<td>1,045</td>
<td>1,830</td>
</tr>
<tr>
<td>Non-Completers</td>
<td>1,121</td>
<td>1,607</td>
</tr>
<tr>
<td>Graduation Rates</td>
<td>48.2%</td>
<td>53.3%</td>
</tr>
<tr>
<td>White</td>
<td>1,150</td>
<td>1,653</td>
</tr>
<tr>
<td>Black</td>
<td>1,016</td>
<td>1,782</td>
</tr>
<tr>
<td>Average HS GPA</td>
<td>3.05</td>
<td>3.24</td>
</tr>
<tr>
<td>Average ACT Score</td>
<td>21.5</td>
<td>20.6</td>
</tr>
<tr>
<td>Average Income</td>
<td>$48,780</td>
<td>$45,324</td>
</tr>
<tr>
<td>Mom_Ed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% High School</td>
<td>36.5</td>
<td>42.4</td>
</tr>
<tr>
<td>% College Degree</td>
<td>59.9</td>
<td>51.5</td>
</tr>
<tr>
<td>Dad_Ed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% High School</td>
<td>46.7</td>
<td>41.1</td>
</tr>
<tr>
<td>% College Degree</td>
<td>40.2</td>
<td>42.7</td>
</tr>
</tbody>
</table>
Race

Of the total records, 2,803 were white and 2,800 were black. When analyzing this variable in terms of percent of total, each group represented 50.0% of the total. The average ACT composite scores were higher for white students with an average of 23.4 compared to 18.4. In terms of high school grade point average, white students had a higher average (3.35) compared to black students (2.99) on a four-point scale (See Table 4.3). Income distributions for both groups were very divergent as the average income for white students was $61,578, compared to $31,726 for black students. Overall, white students had higher completion rates in terms of percent and total, as there were 1,617 white completers compared to 1,258 black completers. White students had a total graduation rate of 57.7%, compared to 45.0% for black students. Parental education levels were much higher for white students compared to black students.

![Figure 4.2  Graduation Rates by Race.](image)
<table>
<thead>
<tr>
<th></th>
<th>White</th>
<th>Black</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>2,803</td>
<td>2,800</td>
</tr>
<tr>
<td>Completers</td>
<td>1,617</td>
<td>1,258</td>
</tr>
<tr>
<td>Non-Completers</td>
<td>1,186</td>
<td>1,542</td>
</tr>
<tr>
<td>Graduation Rates</td>
<td>57.7%</td>
<td>45.0%</td>
</tr>
<tr>
<td>Male</td>
<td>1,150</td>
<td>1,016</td>
</tr>
<tr>
<td>Female</td>
<td>1,653</td>
<td>1,784</td>
</tr>
<tr>
<td>Average HS GPA</td>
<td>3.35</td>
<td>2.99</td>
</tr>
<tr>
<td>Average ACT Score</td>
<td>23.4</td>
<td>18.4</td>
</tr>
<tr>
<td>Average Income</td>
<td>$61,578</td>
<td>$31,726</td>
</tr>
<tr>
<td>Mom_Ed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% High School</td>
<td>37.7</td>
<td>42.6</td>
</tr>
<tr>
<td>% College Degree</td>
<td>58.5</td>
<td>49.0</td>
</tr>
<tr>
<td>Dad_Ed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% High School</td>
<td>38.9</td>
<td>44.4</td>
</tr>
<tr>
<td>% College Degree</td>
<td>54.3</td>
<td>32.3</td>
</tr>
</tbody>
</table>
**ACT Composite Scores**

After conducting analysis on ACT Composite Scores, three groups were created. The first group represented those with ACT scores of less than 19. The second group contained results for ACT scores ranging from 19 to 22, and the final group ranged from 23 and above (See Table 4.4 and Figure 4.3). For the first group, the average high school grade point average was 2.79, and average parental income was $32,669. For the 18 to 22 group, the average high school GPA was 3.19, with an average parental income of $47,150. For the final group, the average high school GPA was 3.58, with an increase in average parental income to $61,674. When reviewing standardized test scores, there were significant differences in the number of black students in the lower ACT group compared to white students, with the opposite occurring at the highest ACT range.

Graduation rates increased as ACT scores increased, with the lowest ACT group having a graduation rate of 37.6%. The average increased to 51.5% in the next group, and 66.3% in the highest group.

![Graduation Rates by ACT Composite Score](image)

Figure 4.3  Graduation Rates by ACT Composite Score.
Table 4.4

Selected Statistics by ACT Scores

<table>
<thead>
<tr>
<th></th>
<th>&lt;19</th>
<th>19-22</th>
<th>&gt;22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completers</td>
<td>745</td>
<td>946</td>
<td>1,185</td>
</tr>
<tr>
<td>Non-Completers</td>
<td>1,236</td>
<td>890</td>
<td>601</td>
</tr>
<tr>
<td>Graduation Rates</td>
<td>37.6%</td>
<td>51.5%</td>
<td>66.3%</td>
</tr>
<tr>
<td>White</td>
<td>349</td>
<td>941</td>
<td>1,513</td>
</tr>
<tr>
<td>Black</td>
<td>1,632</td>
<td>895</td>
<td>273</td>
</tr>
<tr>
<td>Male</td>
<td>714</td>
<td>651</td>
<td>801</td>
</tr>
<tr>
<td>Female</td>
<td>1,267</td>
<td>1,185</td>
<td>985</td>
</tr>
<tr>
<td>Average HS GPA</td>
<td>2.79</td>
<td>3.17</td>
<td>3.58</td>
</tr>
<tr>
<td>Average Income</td>
<td>$32,669</td>
<td>$47,150</td>
<td>$61,674</td>
</tr>
<tr>
<td>Mom_Ed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% High School</td>
<td>44.8</td>
<td>38.2</td>
<td>36.9</td>
</tr>
<tr>
<td>% College Degree</td>
<td>46.8</td>
<td>55.8</td>
<td>59.4</td>
</tr>
<tr>
<td>Dad_Ed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% High School</td>
<td>45.6</td>
<td>41.1</td>
<td>38.0</td>
</tr>
<tr>
<td>% College Degree</td>
<td>32.8</td>
<td>43.6</td>
<td>54.6</td>
</tr>
</tbody>
</table>
High School GPA figures utilized within the confines of this study were collected from the Student File of the IHL MIS System. These figures were reported to IHL from the individual universities based upon data derived from the student’s high school transcript. High School GPA data were broken down into three groups: (1) <3.00; (2) 3.00 to 3.49; and (3) 3.50 and above. In the highest grade point average group, there were higher numbers of whites and females compared to their counterparts (See Table 4.5 and Figure 4.6). Graduation rates were higher for groups with higher grade point averages, the same held true for ACT scores. Parental income levels were higher in groups with higher grade point averages. Parental education levels were also higher in terms of percent with college degrees in the upper GPA groups.

Figure 4.4  Graduation Rates by High School GPA.
Table 4.5
Selected Statistics by High School GPA

<table>
<thead>
<tr>
<th></th>
<th>&lt;3.00</th>
<th>3.00-3.49</th>
<th>&gt;3.49</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completers</td>
<td>610</td>
<td>893</td>
<td>1,373</td>
</tr>
<tr>
<td>Non-Completers</td>
<td>1,388</td>
<td>806</td>
<td>533</td>
</tr>
<tr>
<td>Graduation Rates</td>
<td>30.5%</td>
<td>52.6%</td>
<td>72.0%</td>
</tr>
<tr>
<td>White</td>
<td>657</td>
<td>824</td>
<td>1,322</td>
</tr>
<tr>
<td>Black</td>
<td>1,341</td>
<td>875</td>
<td>584</td>
</tr>
<tr>
<td>Male</td>
<td>944</td>
<td>605</td>
<td>617</td>
</tr>
<tr>
<td>Female</td>
<td>1,054</td>
<td>1,094</td>
<td>1,289</td>
</tr>
<tr>
<td>Average ACT Score</td>
<td>18.2</td>
<td>20.4</td>
<td>24.3</td>
</tr>
<tr>
<td>Average Income</td>
<td>$38,143</td>
<td>$45,896</td>
<td>$56,268</td>
</tr>
</tbody>
</table>

Mom_Ed

<table>
<thead>
<tr>
<th></th>
<th>&lt;3.00</th>
<th>3.00-3.49</th>
<th>&gt;3.49</th>
</tr>
</thead>
<tbody>
<tr>
<td>% High School</td>
<td>43.0</td>
<td>37.8</td>
<td>39.1</td>
</tr>
<tr>
<td>% College Degree</td>
<td>50.3</td>
<td>55.7</td>
<td>55.7</td>
</tr>
</tbody>
</table>

Dad_Ed

<table>
<thead>
<tr>
<th></th>
<th>&lt;3.00</th>
<th>3.00-3.49</th>
<th>&gt;3.49</th>
</tr>
</thead>
<tbody>
<tr>
<td>% High School</td>
<td>44.2</td>
<td>41.0</td>
<td>39.7</td>
</tr>
<tr>
<td>% College Degree</td>
<td>36.7</td>
<td>43.6</td>
<td>49.9</td>
</tr>
</tbody>
</table>
Parental Income

Parental income figures were gathered from the data reported on the Free Application for Federal Student Aid (FASFA). After extensive data analysis, parental income figures were divided into four groups: (1) <$20,000; (2) $20,000 to $34,999; (3) $35,000 to $75,000; and (4) >$75,000. White students were represented in higher numbers in the higher income groups compared to black students (See Table 4.6 and Figure 4.5). Average ACT scores and high school GPAs were higher in groups with higher parental income levels. Students in the <$20,000 category had an overall graduation rate of 41.0%, compared to 44.9% in the next group. While there was a slight increase in graduation rates between the first two income groups, rates increased more dramatically as income increased to $35,000 and above.

Figure 4.5   Graduation Rates by Parental Income.
Table 4.6
Selected Statistics by Parental Income

<table>
<thead>
<tr>
<th></th>
<th>&lt;$20,000</th>
<th>$20,000-$34,999</th>
<th>$35,000-$75,000</th>
<th>&gt;$75,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completers</td>
<td>594</td>
<td>550</td>
<td>965</td>
<td>767</td>
</tr>
<tr>
<td>Non-Completers</td>
<td>855</td>
<td>673</td>
<td>796</td>
<td>403</td>
</tr>
<tr>
<td>Graduation Rates</td>
<td>41.0%</td>
<td>44.9%</td>
<td>54.9%</td>
<td>65.7%</td>
</tr>
<tr>
<td>White</td>
<td>280</td>
<td>448</td>
<td>1,106</td>
<td>969</td>
</tr>
<tr>
<td>Black</td>
<td>1,169</td>
<td>775</td>
<td>655</td>
<td>201</td>
</tr>
<tr>
<td>Male</td>
<td>513</td>
<td>448</td>
<td>711</td>
<td>494</td>
</tr>
<tr>
<td>Female</td>
<td>936</td>
<td>775</td>
<td>1,050</td>
<td>676</td>
</tr>
<tr>
<td>Average ACT Score</td>
<td>18.8</td>
<td>19.9</td>
<td>21.9</td>
<td>23.3</td>
</tr>
<tr>
<td>Average HS GPA</td>
<td>2.99</td>
<td>3.06</td>
<td>3.26</td>
<td>3.36</td>
</tr>
</tbody>
</table>

Mom_Ed

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>% High School</td>
<td>53.3</td>
<td>41.5</td>
<td>38.4</td>
<td>17.2</td>
</tr>
<tr>
<td>% College Degree</td>
<td>34.7</td>
<td>52.2</td>
<td>57.5</td>
<td>50.4</td>
</tr>
</tbody>
</table>

Dad_Ed

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>% High School</td>
<td>48.4</td>
<td>44.6</td>
<td>43.5</td>
<td>19.1</td>
</tr>
<tr>
<td>% College Degree</td>
<td>22.4</td>
<td>35.7</td>
<td>49.0</td>
<td>47.2</td>
</tr>
</tbody>
</table>
**Parental Education Levels**

As previously mentioned, parental education levels were gathered from self-reported data on the Free Application for Federal Student Aid (FASFA) form. A majority of students in the study had parents with a high school diploma or college degree, with only 194 students having mothers with less than a high school diploma, and 272 with fathers having less than a high school diploma (See Table 4.7 and Figure 4.6). Overall, 40.1 percent of mothers had a high school diploma, while 53.8% had a college degree. For fathers, 41.7% had a high school diploma, and 43.3% had a college degree.

High school GPA and ACT Scores increased on average as parental education levels increased. In homes with one or more parents with less than a high school diploma, graduation rates average between 40.1% and 41.8%. As education levels increased, graduation rates also increased.

![Graduation Rates by Parental Education](image)

Figure 4.6  Graduation Rates by Parental Education Levels.
Table 4.7
Selected Statistics by Parental Education Levels

<table>
<thead>
<tr>
<th></th>
<th>Mom_Ed</th>
<th>Dad_Ed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Middle/Jr. High</td>
<td>High School</td>
</tr>
<tr>
<td>Students</td>
<td>194</td>
<td>2,249</td>
</tr>
<tr>
<td>Average GPA</td>
<td>3.14</td>
<td>3.15</td>
</tr>
<tr>
<td>Average ACT Score</td>
<td>18.0</td>
<td>20.5</td>
</tr>
<tr>
<td>Completers</td>
<td>81</td>
<td>1,080</td>
</tr>
<tr>
<td>Non – Completers</td>
<td>113</td>
<td>1,169</td>
</tr>
<tr>
<td>Graduation Rates</td>
<td>41.8%</td>
<td>48.0%</td>
</tr>
<tr>
<td></td>
<td>272</td>
<td>2,337</td>
</tr>
<tr>
<td>Average GPA</td>
<td>3.11</td>
<td>3.15</td>
</tr>
<tr>
<td>Average ACT Score</td>
<td>19.6</td>
<td>20.6</td>
</tr>
<tr>
<td>Completers</td>
<td>109</td>
<td>1,093</td>
</tr>
<tr>
<td>Non – Completers</td>
<td>163</td>
<td>1,244</td>
</tr>
<tr>
<td>Graduation Rates</td>
<td>40.1%</td>
<td>46.8%</td>
</tr>
</tbody>
</table>
Research Question Number Two

Research question number two asks: Are Race, ACT Composite Score, High School GPA, Parental Income and Parental Education Level statistically significant predictors of college success as measured by graduation rates?

Forward logistic regression was conducted to determine which independent variables (High School GPA, ACT, Parental Income, Parental Education Levels, Ethnicity, and Gender) were predictors of degree completion. Forward logistic regression places each independent variable in the model in steps in order to determine the significance of each variable in relation to correctly predicting group members (successful or non-successful completer). Data screening led to the removal of 145 cases, providing a total data size of 5,603 records (See Table 4.8). The results of the logistic regression are displayed in Table 4.8. The null model contained a constant with a beta value of .053 and a p value of .047. High School GPA was determined to be significant (p=.000) during Step 1, with an Odds Ratio of 3.655. Parental income was added to the model in Step 2, with a p value of .000 and an odds ratio of 1.000. Of the parent education values, only those of the father were found to be significant (p=.000) and added to the model in Step 3, with an odds ratio of 1.158. In Step 4, ACT scores were added with a p value of .043 and an odds ratio of 1.019. Ethnicity was added in Step 5 (p=.005), with a ratio value of .795. Gender and the education levels of the mother were not found to be statistically significant with p-values of .193 and .683, respectively. The final model contained a chi-square of 889.740 with a significance value of .000. Overall, the model correctly classified 65.6 percent of cases.
### Table 4.8
Summary of Logistic Regression Analysis of Success Factors in Degree Completion

#### Forward Logistic Regression

Step 5: Variables in the Equation

<table>
<thead>
<tr>
<th>Variable</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>High_School_GPA</td>
<td>1.296</td>
<td>.065</td>
<td>399.202</td>
<td>1</td>
<td>.000</td>
<td>3.655</td>
</tr>
<tr>
<td>Parent_AGI</td>
<td>.000</td>
<td>.000</td>
<td>63.639</td>
<td>1</td>
<td>.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Dad_Ed</td>
<td>.147</td>
<td>.039</td>
<td>13.972</td>
<td>1</td>
<td>.000</td>
<td>1.158</td>
</tr>
<tr>
<td>ACT</td>
<td>.019</td>
<td>.009</td>
<td>4.090</td>
<td>1</td>
<td>.043</td>
<td>1.019</td>
</tr>
<tr>
<td>Ethnic</td>
<td>-.230</td>
<td>.074</td>
<td>9.647</td>
<td>1</td>
<td>.002</td>
<td>.795</td>
</tr>
<tr>
<td>Constant</td>
<td>-5.096</td>
<td>.221</td>
<td>530.513</td>
<td>1</td>
<td>.000</td>
<td>.006</td>
</tr>
</tbody>
</table>

#### Classification Table

<table>
<thead>
<tr>
<th>Observed</th>
<th>Predicted</th>
<th>Percent Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1,693</td>
<td>1,034</td>
</tr>
<tr>
<td>1</td>
<td>899</td>
<td>1,977</td>
</tr>
<tr>
<td>Overall Percentage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

63
Research Question Number Three

Research question number three asks: Are Race, ACT Composite Score, High School GPA, Parental Income and Parental Education Level statistically significant predictors of college success as measured by graduation rates for regional and comprehensive universities?

Research Universities

Forward logistic regression was conducted to determine which independent variables (High School GPA, ACT, Parental Income, Parental Education Levels, Ethnicity, and Gender) were predictors of degree completion at Regional Universities in Mississippi. This category includes Jackson State University, Mississippi State University, University of Mississippi and University of Southern Mississippi. There were a total of 4,534 records (See Table 4.9). The beginning block and Step 5 results are displayed in Table 4.9. The null model contained a constant with a beta value of .122 and a p value of .000. High School GPA was determined to be significant (p=.000) and added to the model during Step 1, with an Odds Ratio of 4.184. Parental income was found to be significant with a p value of .000 in Step 2, with a ratio of 1.000. The education level of the father was the final variable added to the model in Step 3. Gender, the education levels of the mother, ethnicity and ACT were not found to be statistically significant with p-values of .676, .288, .072 and .210, respectively. Overall, the model correctly classified 66.6 percent of cases.
Table 4.9
Summary of Logistic Regression Analysis for Research Universities

Forward Logistic Regression

Step 3: Variables in the Equation

<table>
<thead>
<tr>
<th>Variable</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>High_School_GPA</td>
<td>1.431</td>
<td>.063</td>
<td>509.742</td>
<td>1</td>
<td>.000</td>
<td>4.184</td>
</tr>
<tr>
<td>Parent_AGI</td>
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<td>.000</td>
<td>57.887</td>
<td>1</td>
<td>.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Dad_Ed</td>
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<td>.045</td>
<td>11.792</td>
<td>1</td>
<td>.001</td>
<td>1.167</td>
</tr>
<tr>
<td>Constant</td>
<td>-5.245</td>
<td>.243</td>
<td>469.671</td>
<td>1</td>
<td>.000</td>
<td>.005</td>
</tr>
</tbody>
</table>

Classification Table

<table>
<thead>
<tr>
<th>Observed</th>
<th>Predicted</th>
<th>Percent Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1,280</td>
<td>60.1</td>
</tr>
<tr>
<td>1</td>
<td>666</td>
<td>72.3</td>
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<tr>
<td>Overall Percentage</td>
<td></td>
<td>66.6</td>
</tr>
</tbody>
</table>
Regional Universities

Forward logistic regression was conducted to determine which independent variables (High School GPA, ACT, Parental Income, Parental Education Levels, Ethnicity, and Gender) were predictors of degree completion at Regional Universities in Mississippi. This category includes Alcorn State University, Delta State University, Mississippi University for Women and Mississippi Valley State University. There were a total of 1,069 records (See Table 4.10). The beginning block and Step 5 results are displayed in Table 4.10. The null model contained a constant with a beta value of -.239 and a p value of .000. High School GPA was determined to be significant (p=.000) and added to the model during Step 1, with an Odds Ratio of 2.742. Parental income was found to be significant with a p value of .000 in Step 2, with a ratio of 1.000. Ethnicity was added to the model in Step 3 with a p-value of .027 and an odds ratio of .704. Gender, the education level of the mother and father, and ACT were not found to be statistically significant with p-values of .071, .188, .095 and .331, respectively. Overall, the model correctly classified 63.0 percent of cases.
Table 4.10
Summary of Logistic Regression Analysis for Regional Universities

Forward Logistic Regression

Step 3: Variables in the Equation

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
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<tbody>
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<td>71.896</td>
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<td>.000</td>
<td>2.768</td>
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<td>Parent_AGI</td>
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<td>0.000</td>
<td>9.356</td>
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<td>1.000</td>
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<td>Ethnic</td>
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<td>Constant</td>
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<td>1</td>
<td>.000</td>
<td>0.031</td>
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</table>

Classification Table

<table>
<thead>
<tr>
<th>Observed</th>
<th>Predicted</th>
<th>Correct</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP</td>
<td>0</td>
<td>450</td>
<td>148</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>248</td>
<td>223</td>
</tr>
<tr>
<td>Overall Percentage</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summary

As previously mentioned, Microsoft Excel and SPSS were used to provide detailed analysis of factors influencing success at Mississippi’s public universities as measured by bachelor’s degree completion within a six-year period. Data from the descriptive analysis revealed that graduation rates increased as ACT scores, GPA, income and education levels increased. In order to gain a better understanding of these trends, forward logistic regression was used to analyze the influence of each of these factors on degree completion. ACT scores, high school GPA, parental income, ethnicity, and the education level of the father were found to be significant predictors. When analyzing data by type of institution, differences emerged. For research universities, high school GPA, parental income and the education level of the father were significant, while high school GPA, parental income and ethnicity were significant predictors of bachelor’s degree completion.
CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to assess success factors in Mississippi’s Public Universities as measured by degree completion using academic and socioeconomic variables. After an extensive review of the literature and preliminary data analysis, seven dependent variables were identified to be included as part of the study. The dependent variables used were High School GPA, ACT Scores, Ethnicity, Gender, Parental Education Levels and Parental Income. These variables were analyzed in order to determine their influence on degree completion within a six-year period for all public universities in Mississippi, as well as by type of institution. A total of three research questions were asked to analyze descriptive statistics and logistic regression statistics in order to gain a more in-depth understanding of variable interaction and prediction.

Research Question 1

The first research question asked for a complete breakdown of descriptive statistics as a means of gaining a deeper understanding of the academic, demographic and socioeconomic factors associated with degree completion. When analyzing each variable, clear trends emerged in terms of differences. These trends are described in detail below:
1. Females represented the largest population of degree completers, echoing the research findings of Choy (2002), the U.S. Department of Education (2000) and Postsecondary Education Opportunity (2002). Females also had higher rates of graduation compared to males within a six-year period. This finding reinforced the sentiments of Zhu (2004) and Leppel (2000) that females matriculated at higher rates compared to their male counterparts. Females reported higher grade point averages, while males reported higher ACT scores.

2. When analyzing data on ethnicity, white students had higher rates of graduation, as well as significantly higher income levels compared to black students. These results were in line with research conducted by DesJardins, Ahlburg and McCall (2002), that indicated that minority students were less likely to matriculate within six-years, and many minority students arrived on campus from low-income families or homes with lower incomes compared to non-minority students. In addition, black students had lower ACT scores and high school grade point averages, indicating lower rates of academic preparation as outlined by Braunstein, et. Al (2001).

3. High school GPA and ACT scores were used as measures of academic readiness for this study. As indicated by prior research, graduation rates increased as GPA and ACT scores increased. Astin (1996) and Choy (2002) found that ACT and high school grade point averages had
significant impacts on graduation rates. According to Smith (1999), high school GPA had the most significant impact on college graduation rates, a finding echoed by this study. As students entered college more prepared academically, they were more likely to matriculate. High school GPA proved to be a more significant indicator than ACT scores.

4. Income and educational levels were significant in terms of the impact to degree completion. Rogers (2005) found that income was the most significant factor in college graduation. The results of this study hold that income is certainly a significant variable. However, income was not the most significant influence as measured by probabilities. The results of this study show that income and background should be considered in policies designed to help students matriculate.

Research Question 2

Research question two asked about the predictive ability of various academic, demographic and socioeconomic variables on bachelor’s degree completion for resident first-time freshmen at Mississippi’s public universities. Based on the logistic regression analysis for all public universities in Mississippi, the following conclusions were made:

1. High school grade point average proved to be the most significant predictor of successful matriculation, echoing the findings of Smith (1999) that of all academic variables, high school GPA was the most significant in predicting matriculation. A relatively small change in high school GPA
provided a dramatic increase in the likelihood of bachelor’s degree completion within a six-year period. In a state that relies heavily on ACT scores, the results of this study advocate that institutions use a more comprehensive assessment for admissions and support services. In many cases, results on the ACT assessment are used in placement activities. ACT scores may not be enough in terms of making these placements.

2. Given the percentages of white and black students, ethnicity proved to be significant, as indicated by the findings of Eimers (2001) and Perna (2000) that different racial groups had varying rates of matriculation in postsecondary education. Mississippi is a very diverse state in terms of student population, and institutions must ensure that diversity is accounted for when making decisions about how to admit and support students.

3. This study echoed the findings of Rogers (2005), Kahlenburg (2004), and Gladieux (2004), that income was a significant predictor of college success. Mississippi in one of the poorest states in the nation, and many students attending Mississippi’s universities are from homes in the lower socioeconomic brackets. In some cases, research has shown that students from these backgrounds often face an additional challenge, one that stems from the quality of secondary education received.

4. ACT scores are a significant predictor, but the impact to the odds ratio was fairly small. As such, less emphasis should be placed on this variable as there are additional factors that must be considered.
5. In a state with many first-generation students, universities must also consider the trials and tribulations of students from families of less educated parents. Parental education levels were found to be significant predictors, particularly in terms of the education levels of the father. Mississippi is home to many students from single-parent homes, and institutions must be prepared to consider a complete picture for applicants and students, moving away from using a few measures of assessment.

**Research Question 3**

Research question three asked about the predictive ability of various academic, demographic, and socioeconomic variables on bachelor’s degree completion for resident first-time freshmen in Comprehensive and Regional Universities. Based on the logistic regression analysis for these public universities in Mississippi, the following conclusions were made:

1. For research universities, the same trend held true as for the state as a whole in terms of the predictive ability of high school GPA, parental income, and education levels. ACT scores were not found to be individually predictive for students attending these universities, a finding that is somewhat contradictory compared to the emphasis placed on ACT scores at these institutions for admissions, scholarships, and tutoring/support services.
2. Ethnicity was significant for regional universities, a finding that is echoed by the diverse student populations at these institutions.

3. Regardless of the type of institution, parental income is an oft-overlooked factor when considering the needs of current and future students. Universities must place more emphasis in getting additional information on students in order to ensure that their needs are met more efficiently.

**Recommendations for Future Research**

The following recommendations for future research are offered:

1. The findings of this study supported prior research that family income is a significant predictor of college success. Rogers (2005) found that family income was the most significant predictor of college success. As such, more research is needed into the differences between students in various income groups (i.e. accreditation level of secondary institution, level of courses taken in high school, and amount of family support for postsecondary education)

2. One area not mentioned within the confines of this study was degree objectives. More research is needed in order to determine if degree focus is a significant factor in student success.

3. The finding that ethnicity was a significant predictor of student success echoed that of Eimers (2001). During his research, Eimers indicated a
need to better understand student acclimation to campus life. Future research should include information on student acclimation to the campus environment.

4. This study was limited to first-time, full-time Mississippi students seeking a four-year degree at the original institution. More research is needed to determine success factors for non-traditional students.

5. Future research should include using a more broadened definition of successful degree completion by accounting for transfer students as opposed to focusing only on native students. In addition, future research should include students that begin at one institution and successfully complete a degree at another institution.

6. Future research should incorporate findings from private universities and two-year colleges in order to gain a more in-depth understanding of success factors in other college settings.

7. Given declining levels of educational funding in Mississippi, more research is needed on the impact of declining public support on enrollment decisions and student success at in-state universities.

8. This study should be replicated over an extended period time in order to determine if changes occur over time.
Summary

Degree completion and student success have been areas of great debate and concern among administrators and policymakers in education. As previously mentioned, few topics in higher education have received more focus and attention. The increased need for accountability, coupled with rising tuition costs, will continue to drive the need for colleges and universities to better understand their constituent groups. With an average graduation rate of approximately 50.0 percent, Mississippi’s college and universities must become more efficient in allowing students to be successful in the academic setting. In Mississippi, few studies have been conducted to speak to the needs of resident students in higher education.

While there are clear differences in graduation rates for various groups, there is a distinct need to focus efforts on academic preparation for all students, especially those from areas with secondary institutions that fail to meet accountability standards. In addition, understanding the needs of a diverse student population from many different socioeconomic backgrounds will ensure that colleges and universities can be prepared to meet those needs. There is a clear need for increased education for Mississippi secondary students in order to ensure that they are equipped to make education decisions regarding enrollment and matriculation in college. Increased scaffolding is also needed to ensure that students from diverse backgrounds can be successful in a four-year setting. Results from the logistic regression equation indicated that focusing solely on high school grade point average and standardized test scores does not provide an adequate picture of student
success at Mississippi universities. Additional support factors must be provided so that students from all backgrounds can acclimate to college life.
REFERENCES


Noble, J., & Sawyer, R. (2002). *Predicting different levels of academic success in college using high school GPA and ACT composite score.* ACT Research Report Series. (ERIC Document Reproduction Service No. ED 469 746)


APPENDIX A

IHL APPROVAL LETTER
January 5, 2009

Mr. Christian Pruett
Graduate Student, Mississippi State University
126 Twin Trails
Pearl, MS 39208

Dear Christian:

As per your request, I hereby authorize the use of Management Information System (MIS) data from the Office of Policy Research and Planning with the Mississippi Institutions of Higher Learning for your dissertation research. You may use the data set sent to you by Jim Hood, Director of Institutional Research and Analysis. The data will be sent to you in an Excel spreadsheet format, and all identifying information will be removed. The records will contain academic, demographic and socioeconomic data on Mississippi First-Time, Full-Time Freshmen enrolled in Mississippi’s four-year public institutions.

As part of this authorization, please provide to my office regular updates of reports from data analysis during the course of investigation. The purpose of these updates is to ensure that sample sizes are sufficient to prevent the identification of individual students as a result of statistical columns containing information on three or fewer students. In these events, please ensure that no figures are presented, and any applicable date columns are flagged and footnoted with a disclosure statement outlining the reason for a lack of information.

If you have any questions or comments, please feel free to contact my office at (601) 432-6742.

Sincerely,

[Signature]

Phil Pepper
Assistant Commissioner, Policy Research and Planning

Cc: DB, JH
APPENDIX B

IRB APPROVAL LETTER
March 17, 2009

Christian Prueett
128 Twin Trails
Pearl, MS 35208

RE: IRB Study #09-054: Assessing Factors Influencing Student Success in Mississippi's Public Universities as Measured by Degree Completion

Dear Mr. Prueett:

The above referenced project was reviewed and approved via administrative review on 3/17/2009 in accordance with 45 CFR 46.101(b)(4). Continuing review is not necessary for this project. However, any modification to the project must be reviewed and approved by the IRB prior to implementation. Any failure to adhere to the approved protocol could result in suspension or termination of your project. The IRB reserves the right, at anytime during the project period, to observe you and the additional researchers on this project.

Please note that the MSU IRB is in the process of seeking accreditation for our human subjects protection program. As a result of these efforts, you will likely notice many changes in the IRB’s policies and procedures in the coming months. These changes will be posted online at http://www.crc.msstate.edu/humanethics.php.

Please refer to your IRB number (#09-054) when contacting our office regarding this application.

Thank you for your cooperation and good luck to you in conducting this research project. If you have questions or concerns, please contact me at cwilliams@research.msstate.edu or call 662-325-5220.

Sincerely,

Christine Williams
IRB Compliance Administrator

cc: James (Jim) Adams