EXAMINING THE FACTORS THAT INFLUENCE THE SUCCESS OF STUDENTS WHO TRANSFER TO A FOUR-YEAR PUBLIC RESEARCH UNIVERSITY

by

Cheryl J. Taplin

May 15, 2019

A dissertation submitted to the

Faculty of the Graduate School of

the University at Buffalo, State University of New York

in partial fulfillment of the requirements for the

degree of

Doctor of Philosophy

Department of Educational Leadership and Policy
Dedication

To my mother may you “Rest in Heaven”

To my husband (Glenn) and children (Ericka and Sterling):

Where would I be without you!
Acknowledgements

Thank you to my husband, Glenn Taplin and my children, Ericka Taplin and Sterling Taplin, for supporting me through this long journey of pursuing my Ph.D., without your support I would not have made it through.

Thank you to my mother who instilled in me a “never give up work ethic”, which through the way she lived her life working hard to support her children was astounding and I will forever be thankful and grateful!

Thank you to the rest of my family, friends and co-workers who were great listeners and continued to encourage me to finish my dissertation – I will be forever grateful!

Thank you to my dissertation committee members, including my advisor, Dr. Nate Daun-Barnett, Dr. Raechele Pope and Dr. William Barba. I would like to also thank Dr. Henry Durand for his countless hours of support and encouragement and wish you were here to see me finish. Dr. Nate Daun-Barnett, I don’t know how I would have ever made it through this process without your continued support and guidance – you are the best and I am forever grateful to you! Dr. Pope thank you so much for agreeing to serve on my dissertation committee and guiding me before and after getting into the Ph.D. program you are the best. Dr. Barba, thank you for serving on my dissertation committee and providing your feedback and guidance as I went through this process.

I would like to thank the Office of Institutional Analysis for providing the data to make this study happen, your valuable insight was incredible!

Finally, I would like to thank Ms. Leah Doherty and Ms. Jacqueline Hollins for being an integral part of this process and my classmates for being there as we went through this process together.
Table of Contents

Dedication ....................................................................................................................... ii

Acknowledgements ......................................................................................................... iii

List of Tables, Graphs and Models ................................................................................... vii

Abstract ........................................................................................................................... ix

Chapter 1: Introduction .................................................................................................... 1

  Background of Study ...................................................................................................... 12
  Research Questions ........................................................................................................ 15
  Significance of the Study ............................................................................................... 16
  Definition of Terms ......................................................................................................... 17
  Organization of Chapters ............................................................................................... 19

Chapter 2: Literature Review ........................................................................................... 20

  Transfer Student Persistence ......................................................................................... 20
  Strands of Transfer Student Success ............................................................................. 22
    Individual Characteristics ............................................................................................ 22
    Role of the Community College .................................................................................. 23
    Role of the Four-Year Institution ............................................................................... 25
  Towards a Model of Transfer Student Success ........................................................... 27
    Tinto’s Integration Model of Student Departure ......................................................... 28
    Bean and Metzner Model of Non-Traditional Student Attrition ............................... 35
    Wang’s Model of Community College Transfers ....................................................... 40
  Conceptual Framework of Academic Success of Transfer Students .......................... 50

Summary .......................................................................................................................... 52
### Chapter 3: Research Methodology ................................................................. 53
- Setting of the Study .................................................................................. 54
- Sample and Institutional Data .................................................................. 54
- Confidentiality ......................................................................................... 57
- Dependent Variables .............................................................................. 57
- Independent Variables ............................................................................ 60
- Statistical and Analytical Methods ......................................................... 67
- Summary ............................................................................................... 71

### Chapter 4: Results .................................................................................. 72
- Descriptive Statistics .............................................................................. 73
- New Transfer Survey Examination ......................................................... 75
- Summary of Data ................................................................................... 77
- Logistic Regression Analysis .................................................................. 79
- Persistence ............................................................................................. 81
- Attaining a Bachelor’s Degree ................................................................. 84
- Transfer Students Leaving ..................................................................... 88
- Summary ............................................................................................... 89

### Chapter 5: Discussion, Implications, Conclusion ................................. 92
- Persistence ............................................................................................. 94
- Attaining a Bachelor’s Degree ................................................................. 96
- Transfer Students Leaving ..................................................................... 101
- Policy Implications ................................................................................ 102
- Recommendations for Future Research ............................................... 105
- Limitations of the Study ....................................................................... 107
- Conclusion ............................................................................................ 108
List of Tables, Models and Graphs

Tables

Table 3.1 Summary Data for transfer student population…………………………… 55
Table 3.2 Variable Names and Descriptions ....................................................... 58
Table 3.3 List of Independent Variables ............................................................... 66
Table 4.1 Descriptive Statistics for Dependent Variables ...................................... 74
Table 4.2a Frequency Distribution of Survey Responses – Self Concept ............... 76
Table 4.2b Frequency Distribution of Survey Responses – College Involvement ….. 76
Table 4.3 Summary of Data .................................................................................. 79
Table 4.4 Hosmer-Lemeshow Test data ................................................................. 80
Table 4.5 Logistic Regression for Persistence ....................................................... 83
Table 4.6 Logistic Regression for Baccalaureate Attainment .............................. 87
Table 4.7 Descriptive Statistics for Transfer Students Leaving ............................ 89

Graphs

Figure 1.1 College Participation Rates by Race ................................................... 5
Figure 1.2 Median Annual Earnings of Full-Time Workers ................................. 6
Figure 1.3 Median Lifetime Earnings by highest Educational Attainment .......... 7
Figure 2.6 Six Year Graduation Rate by Race for 2006 Cohort .......................... 42
Figure 4.1 Number of Years it Took Transfer Students to Graduate ................. 75

Models

Figure 2.1 Tinto’s 1975 Conceptual Model for College Drop-Out ....................... 29
Figure 2.2 Tinto’s 1993 Longitudinal Model of Institutional Departure .............. 30
Figure 2.3 Bean and Metzner’s Model of Non-Traditional Undergraduate Student
Attrition ........................................................................................................... 36
Figure 2.4 A Model of Community College Transfers Baccalaureate Attainment and College Persistence ................................................................. 40

Figure 2.5 Academic Success of Transfer Students at the Four-Year Institution .... 50
Abstract

Researchers have attempted to understand how institutions could retain and graduate more students by proposing models to examine different relationships. A large body of research on college student persistence, retention and graduation has emerged and most of the research has been focused around the freshman experience, with little consideration given to transfer students. With the greater demand for the baccalaureate degree in the knowledge economy, the transfer function from a community college becomes important. The community college—baccalaureate transfer function is one of the most important issues for state policy makers in higher education (Wellman, 2002). Therefore, it is important to examine at the institutional level, those factors that have a significant effect on transfer student success at the four-year institution, as many community college students want to complete a bachelor’s degree but few go to the 4-year institution to do so. This study not only examined those transfer students from the community college, but also transfer students from 4-year institutions.

The purpose of this study was to expand upon persistence theories and relevant studies for transfer students by focusing on their persistence and graduation at a 4-year public research university (PRU), by examining factors related to academic performance, college involvement and financial implications. A separate analysis was completed that examined data from the National Student Clearinghouse (NSC) to track the paths of those transfer students who left PRU before graduating to see if they enrolled in another postsecondary institution. This study analyzed institutional data using the data warehouse at the PRU. The data was collected and analyzed using the statistical software package SPSS.
The results of this study will add to the literature on institutional data that involves looking at indicators for academic success of transfer students. One of the unique contributions of this study was to understand what happens to unsuccessful transfers who leave the 4-year institution (PRU) without a degree. As this study set out to shed light on what should be done at the 4-year institution (PRU) to better serve this population. Further, the information from this study could be used to address the needs of transfer students and ultimately to facilitate the admissions and transfer process at 4-year institutions.
Chapter 1: Introduction

“The success or failure of community college students transferring to four-year institutions is central to many dimensions of state higher education performance, including access, equity, affordability, cost effectiveness, degree productivity, and quality” (Wellman, 2002).

As the United States (U.S.) competes in a global economy that depends on a well-educated citizenry, it is losing ground in regard to educational attainment. The United States, which for generations led the world in college degree completion, now ranks 16th in the world in completion rates for 25 to 34 year olds (American Association of Community Colleges, 2012). As President Obama noted in a 2009 speech to the National Academy of Sciences, “Other countries are now beginning to pull ahead in the pursuit of this generation’s great discoveries. I believe it is not in our American character to follow – but to lead. And it is time for us to lead once again”, which meant regaining the lead in postsecondary degree attainment (Howard, 2012). According to Harvard’s Graduate School of Education, “Pathways to Prosperity” report in 2011, the field has recognized that the attainment of a postsecondary degree is required to earn living family wages and to be capable of breaking the intergenerational cycles of poverty that currently affect so many families and regions across the country (Howard, 2012).

Today, the United States faces a crisis across the educational landscape where high school completion rates are dropping, achievement gaps persist, with significant disparities for students from low-income families and for minority students. Greater numbers of students are enrolling in U.S. colleges and universities, yet the proportion of individuals earning a postsecondary degree or credential continues to decline (NCSL, 2015). The proportion of adults with postsecondary degrees is not keeping pace with that of other industrialized nations, and the
United States is facing an education deficit that threatens our global competiveness and economic future. In keeping with President Obama’s goal for the United States to be the world leader in the percentage of citizens who are college graduates, a national agenda called the college completion agenda was developed for the purpose of meeting the ambitious goal of the United States regaining its position in producing the highest number of college graduates in the world by 2020 (The White House, 2010a).

Increasing college success has emerged as an important national strategy for ensuring a strong global economy and workforce for the future. Many prominent organizations and foundations have come together, including the U.S. Department of Education, to raise awareness of the need for a better-educated population and to find ways to increase college completion (Matthews, 2010). The many organizations heading initiatives to increase college completion rates are calling on institutions of higher education to commit to this college completion agenda (College Board, 2011). A number of initiatives that have begun is related to improving postsecondary attainment across the country. The College Completion Agenda, sponsored by the College Board (2012), in collaboration with the National Conference of State Legislatures (NCSL), is one such initiative and their goal is to increase the proportion of 25- to 34-year olds who hold an associate degree or higher from 43% to 55% by the year 2025 in order to make America the leader in education attainment in the world. The College Completion Challenge is another initiative sponsored by the American Association of Community Colleges (AACC), Association of Community College Trustees, the Center for Community College Student Engagement, the League for Innovation in the Community College, the National Institute for Staff and Organizational Development and Phi Theta Kappa Honor Society, whose goal is to promote the development and implementation of policies, practices and institutional cultures that
will produce 50% more students with high quality degrees and certificates by 2020, while increasing access and quality. “Complete to Compete” is another initiative sponsored by the National Governors Association with funding partners Bill and Melinda Gates Foundation, Lumina Foundation for Education and USA Funds. The goals of their efforts are to raise national awareness about the need to increase college completion and productivity, the consequences of inaction; create a set of common higher education completion and productivity measures that governors could use to monitor state progress. They would also like to compare performance to other states between institutions; develop a series of best practices and a list of policy actions governors can take to achieve increased college completion. They also want to provide grants to states to design policies and programs that increase college completion and improve higher education productivity by holding a learning institute for governors’ senior advisors in education, provide workforce and economic development programs focusing on successful state strategies to graduate more students and meet workforce demands. Those are a few of the many initiatives to assist with meeting the college completion agenda on a national level.

A bachelor’s degree is no longer considered a potential stepping-stone to a better life; it is fully acknowledged as the gatekeeper to a myriad of social and individual benefits, ranging from income, employment stability, and occupational prestige to engagement in civil and political activities (Cabrera, et.al, 2003). As educational attainment levels have remained constant, more Americans have aspirations of earning a college degree. The number of American youth with aspirations of being a college graduate is higher now than ever before (Alfonso, 2004; Kirst & Venezia, 2004). A study by the U.S. Department of Education (2006) found that nearly 90% of high school sophomores wanted to attend college and over 70% expected to complete a
bachelor’s degree (Ingels, et al., 2005). The percentage of high school seniors expected to earn a college degree has doubled over the past 30 years from 35% in 1981-82 to 69% in 2003-04 (U.S. Department of Education & National Center for Education Statistics, 2006). The rising higher educational aspirations are consistent across students of all racial/ethnic and economic backgrounds.

The United States has made great progress in expanding access to higher education. Similarly, the overall college participation rate has increased over the past 35 years. The rate of college enrollment immediately after high school increased from 50.7% in 1975 to 68.1% in 2010 (Aud, et al., 2012). In 1975, over 9,600,000 million students were enrolled in degree granting higher education institutions, compared to over 18,079,000 million in 2010 (Aud, et al., 2012). Postsecondary educational enrollment is expected to increase to almost 21 million in 2019 (Aud, et al., 2012). Although the overall college participation rates of all 18 to 24 year olds has increased for all racial/ethnic groups, the gap continues to increase between underrepresented minorities and their counterparts (Figure 1.1). In 1980, 28% of White 18 to 24 year olds enrolled in college, compared to 20% of African Americans, and 16% of Hispanics (Aud, Fox, & Kewal Ramani, 2010). By 2008, 44% of White 18 to 24 year olds enrolled in college, compared with 32% of Blacks, 26% of Hispanics, and 22% of American Indian/Alaska Natives. In 2008, 58% of Asian/Pacific Islanders enrolled in college, the highest college participation rate of any other racial group.
Figure 1.1 College participation rates by race, ages 18 to 24, 1980 to 2008.

The four-year baccalaureate degree attainment remains critical for national economic competitiveness and individual economic well-being given the wage premium for a bachelor’s degree is greater than that for a two-year credential (Shapiro, et.al, 2013). An individual’s level of economic success is strongly related to educational attainment level. Numerous studies have demonstrated the strong relationship between educational attainment and earnings (U.S. Bureau of Labor Statistics, 2010a; Card, 1999; A. Carnevale, Jayasundara, & Hanson, 2012; Day & Newburger, 2002; Hansen, 1970; Kantrowitz, 2007; Muller, 2002; Newburger & Curry, 2000). College degree completion results in a substantial increase in future earning potential. This relationship can be seen early in a working adult’s life (Figure 1.2).

The median annual earnings of full-time, full-wage salary workers between the ages of 25 and 34 is $23,500 if they did not complete high school; $30,000 with a high school diploma; $36,000 with an associate’s degree; $46,000 with a bachelor’s degree; and $55,000 for a master’s degree or higher (Aud et al., 2010). Individuals with a bachelor’s degree earn approximately 28% more than those with an associate’s degree; 53% more than high school graduates; and 96% more than those without a high school diploma.

Over the course of a lifetime, increased educational attainment levels translate into even higher financial gains (Figure 1.3). Assuming full-time, year-round employment over an estimated 40 year work life (from 25 to 64 years of age), individuals without a high school diploma can expect to earn $973,000; high school graduates can expect to earn $1,304,000; those with an associate’s degree can expect to earn $1,727,000; those with a bachelor’s degree can
expect to earn $2,268,000; those with a master’s degree can expect to earn $2,671,000; those with a doctorate degree can expect to earn $3,252,000; and individuals with a professional degree can expect to earn $3,648,000 (Carnevale, Rose, & Cheah, 2011).

![Figure 1.3 Median lifetime earnings by highest educational attainment level, 2009. From Carnevale, Rose, & Cheah (2011). The college payoff: Education, occupations, and lifetime earnings. The Georgetown University Center on Education and the Workforce.](image)

Individuals with an associate’s degree earn nearly one third more than those who just completed high school. The acquisition of additional educational credentials can be attributed to the economic incentive of higher income and better employment prospects during the course of one’s working life. A college degree contributes to lower poverty rates and greater labor force stability. College graduates are less likely to live in poverty and are able to move out of it quicker if they do (Lazear, 2006). In 2007, 16.5% of individuals without a high school diploma were living in poverty compared to only 1.3% of bachelor’s degree recipients, 2.8% of associate degree recipients, and 6.3% of high school graduates (U.S. Bureau of Labor Statistics, 2009).
Unemployment rates decrease as educational levels increase. The unemployment rate for individuals without a high school diploma is 12.4%; 8.3% with a high school diploma; 6.2% with an associate’s degree; 5.4% with a bachelor’s degree; 3.5% with a master’s degree; 2.5% with a doctorate, and only 2.1% with an advanced professional degree (U.S. Bureau of Labor Statistics, 2013). Postsecondary education promotes greater labor market participation and employability, irrespective of race or gender (Checchi, 2006).

According to Carnevale and Fry (2000), in 1959 only 20% of all workers needed at least some college; by 2008 that number increased to 59% and future projections state the share of jobs requiring a postsecondary degree will increase from 59% to 63% over the next decade (Carnevale, et al, 2010). They further stated that not enough Americans are completing college and suggested that by 2018, the United States will need 22 million new college degrees, but will fall short of that number by at least 3 million postsecondary degrees. In addition, the United States will need at least 4.7 million new workers with postsecondary degrees; this shortfall will mean lost economic opportunity for millions of American workers (Carnevale, et al. 2010). As people increase their educational attainment levels, they have access to better employment opportunities and an improved quality of life. In many ways, a college education has become the minimal entry point to the middle class. A college education will increasingly become a basic requirement for economic success as current and future labor market conditions necessitate a greater demand for college education. This is the latest indication of how crucial postsecondary education and training has become to the American economy and the importance of the role of community college in preparing students to continue their education at a 4-year institution towards a bachelor’s degree.
With the greater demand for the baccalaureate degree in the knowledge economy, the transfer function from a community college becomes important. The community college—baccalaureate transfer function is one of the most important issues for state policy makers in higher education (Wellman, 2002). Community colleges play a substantial role in bachelor’s degree attainment and several forces are converging to push more students to community colleges as their initial point of access to postsecondary education, some of those forces include: (1) demographic changes that are increasing the proportion of poor and minority students, according to the U.S. Census Bureau (2012), by the year 2043, people of Hispanic, Asian and African American descent will as a group, form the majority of this nation’s population. By 2060, minorities will account for 56% of the total U.S. population (U.S. Census Bureau, 2012); (2) more stringent admission requirements in many four-year institutions; and (3) rising college tuitions (Mullin, 2012).

There are a significant number of students who transfer each year from a 2-year community college to a 4-year institution. In a study completed by the National Clearinghouse in 2012 (NCH, 2014), for a first-time student cohort in fall 2006, there were a total of 2,792,961 students who began their postsecondary education at U.S. colleges and universities. After enrolling in these institutions, 923,196 or 33.1% of these students enrolled in a different institution at least once during 2006-2011. Of those initially enrolled in a 2-year institution, 267,651 or 29% transferred to a 4-year institution during the five-year period of 2006-2011.

Therefore, it is important to examine at the institutional level, those factors that have a significant effect on transfer student success at the four-year institution, as many community college students want to complete a bachelor’s degree but few go to the 4-year institution to do so. Postsecondary institutional success is benchmarked by the rate of freshman persistence and
graduation within a 6-year timeframe. Very little attention is paid to transfer student persistence or those factors that may have a significant effect on transfer student success. Institutional research and resources tend to focus on the traditional aged freshman student, with little or no institutional effort made to measure or ensure transfer persistence.

Researchers have documented the success and persistence of community college transfers (Townsend, 2008; Koker & Hendel, 2003; Carter, 1992; Frost 1991; Richardson & Doucette, 1980). Carter (1992) examined statewide transfer patterns in Arizona and Michigan and found that the academic performance of community college transfers improved when they moved to a 4-year institution. The Illinois State Board of Higher Education (1992), Washington State Board for Community College Education (1989), Texas College and University System (1988) are among some of the studies, which document community college transfer performances on a statewide level. The Illinois State Board of Higher Education (1992) reviewed historical data on students who received their baccalaureate degrees from an Illinois public university and retrospectively looked at their enrollment, transfer and degree attainment. They found two-thirds of the students who enrolled at a community college for more than half of their total terms earned an associate degree prior to the baccalaureate, 23% of the students completed their baccalaureate degrees in exactly four academic years, another 16% completed their baccalaureate degree in more than four years but less than 4.5 years, and 15% completed their baccalaureate degree in less than 4 years.

The Washington State Board for Community College Education (1989) studied how effectively the state’s community colleges perform the transfer function. This study found among bachelor’s degree recipients at public regional institutions: about 48% had transferred credits from a Washington community college; community college transfers completed their
bachelor’s degree with the same majors, final year grades, and plans for the future as native students; location and cost were the major reasons given for beginning studies at a community college; 70% of the community college transfers said their college encouraged them to transfer and about 27% reported that the 4-year institution did not accept at least one course the students had assumed would transfer. Texas College and University System (1988) conducted a longitudinal study of college transfer using course enrollment data. The study found 19.3% of the original student population had transferred to a Texas public university; transfer rates for individual two-year colleges ranged from 7% to 43%; full-time students transferred at a higher rate than part-time students; part-time transfer rates for individual institutions ranged from 2% to 32%, while full-time rates ranged from 8% to 45%; Texas community college transfers represented 18.1% of the total new student enrollment at Texas public universities and 12.8% of the new student enrollment in Texas community colleges consisted of reverse transfers from Texas universities.

Townsend (2008) examined the transfer process and the adjustment once at the receiving institution, which was generalized for all transfer students from 2-year and 4-year institutions. Townsend (2008) found transfer students are experienced college goers, as they have already been through the college application process at least once, they have been students at another college or university so they know how to be college students. However, at their new institution, they may feel like freshman again because they need to learn how to be students in a new place. They need to learn how the new campus operates bureaucratically, academically, and socially. Their adjustment time is probably shorter than that of first year students, but campus leaders must commit to smoothing their transition and helping them move successfully through the
period of feeling like a freshman again. Koker and Hendel (2003) stated creating a smooth and seamless transition between two and four-year institutions is important.

A study completed by Koker and Hendel (2003) examined the impact of demographic variables, high school and pre-transfer college academic characteristics, and post-transfer college academic characteristics on the variable of bachelor’s degree completion at a large public urban institution. The results revealed that membership in the 4-year college transfer cohort had a more positive impact on graduation than membership in the other two cohorts (which consisted of 2-year college transfer students and students who completed college level courses while in high school), even when entry credits were controlled. Other variables significant in the prediction of graduation status included race, last year/term, first term credits completed, last term GPA, last term credits completed, term count and last college. Transfer cohort (2-year, 4-year or high ability high school students) was a significant predictor of degree efficiency.

Beyond statewide studies, Eaton (1994) completed an examination of intra-institutional factors, which may influence transfer persistence at the 4-year institution, where this study recommended that institutions should examine transfer student success, by tracking them to the point of baccalaureate completion.

Mullin (2012), examined policy on the acceptance of transfer credit hours and degree attainment, he found 82% earned a bachelor’s degree in the period observed when a 4-year receiving institution accepted all of their transfer credits, and 42% earned a degree when the institution accepted only some of their credits.

**Background of the Study**

The American Council on Education (1991) recommended that research responsibilities of 4-year colleges include “setting goals for baccalaureate degree acquisition for transfers, while
state or national transfer goals may be helpful, they do not address the institution’s responsibility”. Frost (1991) noted, the persistence of transfer students receives “little or no attention” in retention studies, despite their significant numbers.

The focus of many state studies has been on transfer academic success (Palmer & Pugh, 1993; Richardson & Doucette, 1980; Washington State Board of Community College Education, 1989). State-wide transfer studies tend to focus on trends for degree attainment (types of associate degrees awarded, institutional practice, an increase or decrease in transfer rates, institutional growth or enrollment trends), but an institutional analysis of transfer data is warranted to determine the institutional criteria for transfer student success. As early as 1965, Knoell and Medsker recommended institutional analysis of transfer data. In 1980, Richardson and Doucette also recommended that institutions conduct follow up studies of transfers annually. In 1991, the American Council on Education called for institutions to set goals for baccalaureate attainment rates for transfers, based on the environment of the institution. Eaton (1994) documented the limited quantitative data and analysis recording transfer activity of community college transfers nationally. She recommended an “Academic Model” or collaborative approach among 2-year and 4-year faculty to encourage transfer. This academic model emphasized changes in academic practices as central to improving transfer; such as collaboration between 2-year and 4-year faculty and building curriculum and developing pedagogy for the sake of institutionalizing changes in academic practices for the good of the transfer student (Eaton, 1991). Johnson and Richardson (1986) linked academic success for transfers to persistence and academic satisfaction. Recent data trends for transfer students come from the National Student Clearinghouse, which tracks data on students at all levels and movement from one institution to
another (Allen, et al, 2008). There need to be more data provided on a national and statewide level that assists with predicting or measuring institutional transfer success.

While mean SAT scores and high school grade point average are typically presented as predictors of academic success for incoming freshman (Willingham, et al., 1990), most institutions have made no effort to predict transfer student success. While an increase in the mean SAT scores is the goal of each year’s freshman recruitment effort, transfers tend to be disregarded in the academic success discussions at most institutions. Measuring or improving transfer students academic success has not been a goal of most institutional research. This is demonstrated at most institutions by the practice of awarding thousands of dollars in institutional merit scholarships to incoming freshman, while relatively few transfer scholarships are awarded by the institution. Recently, outside agencies are seeing the value of transfer students continuing their education after completing a credential at the community college and offers transfer scholarships and support to those transferring to 4-year institutions. One such foundation is the Jack Kent Cooke Foundation (JKFC website, 2014) who awards up to $30,000 a year in undergraduate transfer scholarships. The Jack Kent Cooke Foundation also has the Community College Transfer Initiative (CCTI), which is designed to help high achieving community college transfer students earn a bachelor’s degree at top colleges and universities nationwide. Based on a research report of a study completed on those students who took advantage of this opportunity, 75% completed their degrees within 8.5 years of graduating high school, those figures increase to 80% or 90% at the most elite institutions (Dowd, et al, 2009).

The purpose of this study is to expand upon persistence theories and relevant studies for transfer students by focusing on their persistence and graduation at a 4-year public research university (PRU), by examining factors such as grade point average at both the transfer and
receiving institutions, credit hours transferred, degree completed at the point of entry to the 4-year institution, race, gender, financial factors (expected family contribution – Pell eligibility), number of dependents, working while in college and the students expectations at the new 4-year institution. Finally, in a separate analysis, this study will examine data from the National Student Clearinghouse (NSC) to track the paths of those transfer students who left PRU before graduating to see if they enrolled in another postsecondary institution.

**Research Questions**

Institutional research on transfer student success at the 4-year institution is generally limited. While statewide studies may yield important data for policy makers, the results sometimes vary from state to state. Ehrenberg and Smith (2002) completed a study for the State University of New York system, where they developed and tested a method to determine how well each two-year institution in a state system prepare their students for a successful completion of a 4-year college degree. The Ehrenberg and Smith (2002) study also examined how successful each 4-year institution was graduating students from the 2-year colleges that transfer to it. The purpose of their study was to find a methodology that could be used within any state system of higher education to evaluate the success of 2-year to 4-year transfers. Richardson and Doucette (1980) found similar studies in Arizona for students who completed two years at a community college. A study completed by the Washington State Board for Community College Education (1989) found that transfers who completed the associate’s degree were more likely to complete the bachelor’s degree.

Conversely, researchers who studied community college transfers who transferred without an associate’s degree were found to be less persistent. Pascarella and Terenzini (1991, 2005) reviewed twenty-seven years of transfer research and determined that the baccalaureate
aspirants who enter 2-year colleges tend to have lower levels of education and degree attainment than do comparable individuals who enter 4-year institutions. These assumptions would imply that the attainment of the associate’s degree is a significant predictor of persistence, while simply attending the community college is not. Data on transfer issues should be studied on an institutional level, as the predictability of transfer student success, and the effect of associate degree attainment on persistence and academic success cannot be generalized.

This study will investigate factors that influenced persistence and degree completion of all transfer students from 2-year and 4-year institutions, by addressing the following questions:

1. To what extent do demographic background, pre-transfer characteristics, college experience and environmental factors predict a transfer student’s first year persistence?

2. To what extent do demographic background, pre-transfer characteristics, college experience and environmental factors predict a transfer student’s completion and graduation from the 4-year institution (PRU)?

3. What percentage of transfer students who leave the 4-year institution (PRU) without their 4-year degree enroll at another institution?

**Significance of the Study**

Transfer student success is a significant issue for state policymakers based on the trend data that has been studied throughout the years. There are three levels when measuring the success of transfer students: the individual level, the sending institution and the receiving institution. What has failed to occur is the follow up by individual institutions to examine the success or non-success of transfer students. Institutional studies are important, as they not only will inform changes that has to be made at the receiving institution, but also will inform of
changes that need to be made at the sending institution. The results of this study will add to the literature on institutional data that involves looking at indicators for academic success of transfer students. One of the unique contributions of this study is to understand what happened to unsuccessful transfers who leave the 4-year institution (PRU) without a degree. Other studies have treated this group as dropouts or stop-outs and have not considered whether they transferred again to another institution, which is important to the argument, “they might be successful elsewhere”.

Previous research has focused on the students when they were at the community college and the transfer process as they prepare to enter a 4-year institution. Relatively, few studies have focused on longitudinal studies of transfer students and the factors that predict their success once they transfer to a 4-year institution (Wang, 2009). This study will be a longitudinal study that focuses on tracking during a 6-year period all transfer students who enrolled at a public research university, examining factors that lead to persistence towards a bachelors’ degree or departure from the institution (PRU). Further, the information from this study could be used to address the needs of transfer students and ultimately to facilitate the transfer process at 4-year institutions by examining persistence and success.

Definition of Terms

The following glossary of terms was defined for this study and used throughout. The definitions were included for clarification and proper understanding of meaning by the reader.

*Academic performance* – grade point average obtained

*Academic Success* – good academic standing (obtaining a grade point average of 2.0 or better)
Admissions – the process of selecting which applicants will be offered the opportunity to matriculate at a post-secondary institution.

Admitted – the process where applicants who applied to a post-secondary institution was successfully accepted to matriculate.

Community college transfer student – a student who matriculated at a four-year institution after attending another institution.

Decided/Declared – identify students who enter college with an identified major program of study.

Decision Status – undecided or decided about a major program of study.

Demographics – race/ethnicity, gender, estimated family contribution, etc.

Domestic Transfer – transferred from a United States Institution

Dropout – defined as leaving the institution without a degree and not returning.

Enrolled – the process where an applicant was successfully admitted and enrolled in the post-secondary institution by matriculating and registering for coursework.

Full-time student – an academic load of 12 or more credit hours per fall and spring semester.

Gender – male or female

Grade Point Average (GPA) – the grade point average attained by the student in institutions of higher education. The GPA was based on a 4-point scale, where the grades of A=4.0, B=3.0, C=2.0, D=1.0 and F=0.0.

Major – the student’s educational program of study

Persistence – the progressive college reenrollment either continuous from one term to the next.
Race – African American, Asian/Pacific Islander, Hispanic/Puerto Rican, White, and Other (Native Americans, Native Hawaiian or those who self-identified as other or unknown or more than one race)

Retention rate – percentage of those remaining at the institution after their first year of matriculation (fall to fall).

StudentPersisters – students who earned a bachelors’ degree within 4 years of transfer, or if they persisted at the 4-year institution.

StudentSuccess – successful completion of a bachelor’s degree at the 4-year institution.

Transfer – the movement of students from one postsecondary institution to another for the purpose of attaining a degree.

Transfer student – a student coming from another institution that has successfully completed twenty-four or more credit hours.

Organization of Chapters

This dissertation will be divided into five chapters. Chapter 1 has introduced the transfer student population and their significance in higher education in the United States. Chapter 2 will review the literature on transfer student persistence, along with models related to persistence and provide the theoretical model from which this study was derived. Chapter 3 will outline the methodological approach used to answer the research questions and provide a description of the data analysis. Chapter 4 summarizes findings of the study, while a discussion of the results, implications and conclusions of the study will be in Chapter 5.
Chapter 2
Literature Review

Researchers have attempted to understand how institutions could retain and graduate more students by proposing models to examine different relationships. A large body of research on college student persistence, retention and graduation has emerged and most of the research has been focused around the freshman experience, with little consideration given to transfer students. This chapter will discuss research related to transfer student persistence in the context of the following three strands: (1) individual characteristics; (2) role of the community college or sending institution and (3) role of the 4-year institution or receiving institution. Most of the research draw on the following three models related to student persistence: Tinto, 1975, 1993; Bean and Metzner, 1985; and Wang, 2009. Tinto (1975, 1993) models have been widely used as a conceptual framework for studies by a number of researchers when examining student persistence in postsecondary institutions. Bean and Metzner (1985) is another model used by researchers when studying student attrition, especially those examining nontraditional students. Wang (2009) set up a conceptual model specifically for community college transfer students that predict baccalaureate degree attainment and college persistence of those who transferred to 4-year institutions. Finally, this chapter will conclude with a conceptual model based on the framework of Wang (2009) community college transfer baccalaureate attainment and college persistence model.

Transfer Student Persistence to Graduation

Student persistence is generally regarded as a significant measure of institutional success. It is frequently defined as the attainment of the baccalaureate degree due to concurrent enrollment from one semester to the next. Berger and Malaney (2003) further stated there are three areas of studies that have focused on the successes and failures of community college
transfer students at 4-year colleges. The earliest studies focused on individual characteristics of
transfer students (i.e., Pascerella & Terenzini, 1991, 2005; Astin, 1993; Wang, 2009; Ishtani,
2008). Later studies emphasized the role of the community college in preparing students for
subsequent success at 4-year institutions (i.e., Cohen, 1998; Beach, 2011; Cataldi et. al, 2011).
Most recently, studies have found the experiences in 4-year institutions impact community
college transfer success (i.e., Handel, 2007, 2011; Koker & Hendel, 2003; Marling, 2013;
Shapiro et. al., 2013). Many researchers have studied persistence of students in higher education
over the years. The study of transfer students by researchers suggest there are many factors
involved in transfer and completing a baccalaureate degree. Astin (1993) looked at students’
aspirations and related their aspiration to transfer, academic preparation, commitment to college,
age and other factors to their persistence to transfer and complete a bachelor’s degree at a 4-year
institution. He found that all of these factors are legitimate, but every transfer student has such a
varied experience at the higher education level.

Transfer persistence research tends to study all transfers as one cohort, or all transfers
from community colleges (graduates and non-graduates alike), or broad statewide studies.
Rarely do studies isolate community college graduates as a separate sub-group, although studies
like Palmer and Pugh’s (1993) study of Virginia’s baccalaureate degree recipients, noted that
community college graduates account for a specific percentage (17%) of the state’s bachelor’s
degrees awarded. Frost (1991) noted the persistence of transfer students as receiving little
attention in national student retention discussions. Frost (1991) reported as many as 33% of all
bachelor’s degrees are awarded nationally to students who began their studies at another college.
Johnson (1987) stressed the importance of individual university studies to understand transfer
attrition and recommended the development of strategies to increase transfer persistence and success at the institutional level.

**Strands of Transfer Student Success**

The next section will discuss three strands of student success for transfer students: (1) individual characteristics; (2) role of the community college or sending institution and (3) role of the 4-year institution or receiving institution.

**Individual Characteristics**

Many researchers have studied persistence of students in higher education over the years. The study of transfer students by researchers suggest there are many factors involved in transfer and completing a baccalaureate degree. For example, Pascarella and Terenzini (1991) found commitment a key factor and stated, “Students’ who are committed to graduating from a specific institution are more likely to graduate from that institution.” Astin (1993) looked at students’ aspirations and related their aspiration to transfer, academic preparation, commitment to college, age and other factors to their persistence to transfer and complete a bachelor’s degree at a 4-year institution. The biggest suggestion of these studies is that students who focus on the goal of completing their college education have a better chance of achieving it (Pascarella & Terenzini, 2005; Wang 2009).

Literature on transfer students’ success supports the theory that academic integration and the number of credit hours completed prior to transferring has a positive effect on baccalaureate degree completion (Piland, 1995). For example, Koker and Hendel (2003) found the more hours a transfer student completes prior to transferring, the more likely the student will graduate. According to Alfonso (2006), the majority of transfer students have a clearer understanding of their goals and it has been shown that declaring a major prior to transferring increases the
likelihood that a student will graduate by as much as 25%. The discipline in which a student majors once he or she transfers could determine their chances of attaining a baccalaureate degree, students majoring in the sciences are less likely to succeed (Mullen & Eimers, 1997). According to Ishitani (2008), other studies illustrated the educational success of transfer students by using other metrics, such as retention and graduation rates, but few studies have examined how GPA’s at a 4-year institution are associated with persistence behavior among transfer students in a longitudinal framework.

**Role of the Community College**

“A great challenge and an opportunity are at hand… at the very time that global competitiveness depends on well-educated citizenry, we find ourselves losing ground in relative educational attainment” (American Association of Community Colleges, 2012). Cohen (1998), states the last fifty-years have seen remarkable growth in American higher education and the American Community College played a phenomenal part in this growth. Transfer has been a primary mission of junior colleges since its establishment in 1901; Joliet Junior College in Illinois was the first public junior college to open its doors, this open-access college was an American invention with the simple purpose to prepare high school graduates for delayed entry into a 4-year university (Beach, 2011). William Rainey Harper, president of the University of Chicago and J. Stanley Brown, principal of Joliet High School both contributed to the creation of the junior college (Beach, 2011). The term junior college was used to further prepare students for college by offering a curriculum compatible to the first two undergraduate years of study in a University and its original mission lasted for more than 40 years.

At the end of World War II, a sense of hope pervaded America’s colleges and universities. Enrollment had dropped due to so many college eligible students participating in
military service, and many institutions looked forward to the return of millions of veterans, there was also concern that the nation’s economy would be unable to provide work for the millions of returning soldiers and would send the economy back into a terrible slump. This led to one of the major higher education acts in American history: the GI Bill of 1944, which had a goal of using the nation’s colleges and universities to keep masses of veterans out of a labor market that might not be able to absorb them. The question then became, what institutional forms would be most appropriate for handling the unprecedented number of students seeking higher education? The Truman Commission was established in 1946 and released a landmark report in 1947; the junior college was central to the Commission’s plans for expanding educational opportunity, changing its name from “junior college” to “community college” and recommending that the number of community colleges be expanded (Brint and Karabel, 1989). The greatest impact of the report was legitimizing an enormous increase in the prominence of the community college within the larger system of higher education. This commission broadened the mission to be more comprehensive where they would not only prepare students for entering a 4-year institution, but also prepare students for entry into the workforce.

Today’s community college missions involve offering a varied curriculum, with different blends of vocational, career, adult education, remedial, and liberal arts programs. They also expanded to partner with industry and local and state governments, which have resulted in workforce development programs (Dougherty & Bakia, 2000). This growth forced educators at those institutions to balance the transfer mission to a growing list of other priorities. Although the community college has stabilized in recent years, enrollment is beginning to decline, based on the headcount enrollment at community colleges for fall 2012 and fall 2013 that included
those students taking courses for credit and noncredit. The fall 2012 headcount enrollment for community colleges was 12.8 million students versus 12.4 million students in fall 2013.

Community colleges play a substantial role in bachelor’s degree attainment, as 28% of bachelor’s degree earners started at a community college (Cataldi et al., 2011) and 47% took at least one course or more at a community college (NCES, 2012a). Surveys indicate that at least 50% and perhaps as many as 80% of all incoming (first-time) community college students seek to transfer and earn a bachelor’s degree (Snyder, et al, 2012). The U.S. Department of Education (Snyder et al, 2012) predicts that postsecondary enrollments will grow 13% between now and 2021, despite the fact that the national high school graduation rate is predicted to decline 3% during the same period. Part of the projected growth in the college going population will be made up of Latino students, students ages 25-34 years old, and part-time students (NCES, 2012). These groups are far more likely to attend a community college than a 4-year institution (Hussar & Bailey, 2011). The next section will discuss the role of the 4-year institution in the success of transfer students and transfer students’ value to their institution.

**Role of the 4-year Institution**

The intent and actions of a 4-year institution must be purposeful to foster transfer student success. Research has identified practices that 4-year institutions can employ to encourage post-transfer success (Handel, 2011b; Miller, Erisman, Bermeo, & Taylor-Smith, 2011). Handel (2007) concludes that 4-year institutions must commit to the following: developing a strategic enrollment plan that commits to serve transfer students, develop close relationships with feeder colleges, increase communication between college counselors, developing transparent transfer credit policies, providing scholarships for transfer students, monitoring and assessing the transfer student experience in a way similar to the first-year student experience, requiring transfer
orientation, establishing a transfer center for students, and reserving housing for transfer students are practices 4-year institutions could employ to assist with a successful transfer.

One of many critical factors for a transfer student is the number of credit hours accepted at the receiving institution (Koker & Hendel, 2003). Research has shown that 82% of transfer students earned a bachelor’s degree in the period observed when a 4-year receiving institution accepted all of a community college student credits, and 42% earned that degree when the institution accepted only some of their credits (Mullin, 2012). Another important factor is the development of clear articulation agreements with key 2-year feeder schools and communication of those agreements with prospective transfers via the web and other vehicles before they even apply (Wellman, 2002). It is important that advisors/counselors and faculty for both institutions collaborate regarding these agreements and have meaningful discussions regarding the relationship of their courses (Wellman, 2002).

Community colleges are an important starting point for low-income students of all academic abilities seeking to obtain a bachelor’s degree (Froimson, 2014). Students who start at a community college and show that they are high academic achievers with plans to transfer to a 4-year institution are recognized by various foundations which encourages them to apply to selective and highly selective colleges and universities which are known to graduate greater proportions of their students including low-to-moderate income students. One such foundation is the Jack Kent Cooke Foundation that awards up to $30,000 a year in undergraduate transfer scholarships (JKFC, 2014).

A goal of most 4-year higher education institutions is diversity and transfer students are key to meeting this goal (Handel, 2011a). Based on the representation of community college students among undergraduates in the United States enrolled in college during fall 2012, that
representation included 59% Native Americans, 56% Hispanic and 48% African Americans (American Association of Community Colleges, 2014). Community colleges have traditionally appealed to low income students because of the lower tuition rates, where 58% of community college students are Pell eligible, but approximately 42% of those students do not file a FAFSA (McKinney & Novak, 2013). Because of the overrepresentation of low-income and minority students at 2-year institutions, strong equity implications lie in the outcomes of 2-year to 4-year transfer students (Shaw & London, 2001).

In this context, it is important for 4-year institutions to gain an accurate understanding of the needs of transfer students and those factors that are critical to their academic success. Proper assessment of these needs based on the academic history of those students at their former institution is the beginning that could help the receiving institution focus its programs and services to address their needs when they begin (Marling, 2013). It is important for 4-year colleges with significant transfer enrollment to develop an assessment program that measures student performance and the factors that affect performance once they are enrolled at their institution (Marling, 2013). The ability of the four-year colleges to assess and respond to the needs of these students can help those colleges in their recruiting and retention efforts for this group. Given the mobility of student populations, transfer students are needed in significant numbers to meet overall enrollment goals for many 4-year institutions (Shapiro et al., 2013).

The next section will cover three models related to persistence and student success with the final model by Wang (2009) guiding this study.

**Towards a Model of Transfer Student Success**

Since the early 1970’s researchers, such as Astin, Spady and Tinto have attempted to understand how institutions could retain and graduate more students by proposing models to
examine different relationships. A large body of research on college student persistence, retention and graduation has emerged and most of the research has been focused around the freshman experience, with little consideration given to transfer students. The discussion of these models are organized chronologically, which includes some of the major models of student persistence most widely utilized in persistence research and discusses adaptations, implications or limitations for community college transfer students.

**Tinto’s Integration Model of Student Departure**

Tinto (1975, 1987, and 1993) built on the work of Spady (1970, 1971) and Durkheim’s (1951) Theory of Suicide, and formulated an advance theory of student departure explaining the process that motivates individuals to leave college before graduating. Tinto (1975) theory asserts that student departure from a particular higher education institution or in some cases from higher education completely, is a longitudinal process that results from insufficient integration into the academic and social systems of the college or university.

According to Tinto (1975, 1987, 1993), students enter a college or university with a variety of personal and pre-enrollment characteristics (e.g., individual attributes, precollege experiences, and family background), each of which have direct and indirect effects on goal commitments (i.e. degree completion) and institutional commitment. Once enrolled these commitments are continuously modified and reformulated through a longitudinal series of interactions between the individual and the structures and members of the academic and social systems of the institution. The greater the institution’s ability to integrate the student into the formal and informal academic and social systems of the college or university, the stronger the student’s commitment to graduating and more specifically graduating from that particular institution. Tinto (1975) asserts that it is the interaction between the student’s commitment to the
goal of completing college and his or her commitment to the specific institution that ultimately determines whether or not the student drops out (figure 2.1).

Figure 2.1 Tinto, V. (1975). Tinto’s 1975 conceptual model for college dropout. From Tinto V. (1975), Dropout from higher education: A theoretical synthesis of recent research. Review of Educational Research, 45 (1), 95.

Tinto (1987, 1993) refined his model to include external factors (figure 2.2). In 1987, Tinto added external commitments and intentions to the second set of goals and commitments (Tinto, 1987). In 1993, Tinto added external commitments to the first set of goals and commitments in the model; he also added the overall social system to the external community. Tinto (1987, 1993) proposed that the college integration process had three stages; the first stage was separation from the past community, where students disassociate themselves to a certain extent from communities they belong to in the past, which include family, friends, values and beliefs. This stage could be stressful and success may be influenced by the value that the old community places on college (Tinto, 1987). The second stage was transition into the new community, which begins when the student first enters college and is completed when the student is integrated into the institution. Finally, the third stage was incorporation into the
community, where students adapt to the college’s values and norms. According to Tinto, students go through the three stages throughout their time in college until they ultimately decide whether to persist or withdraw.

Figure 2.2 Tinto’s (1993) longitudinal model of institutional departure. From Tinto, V. (1993), Leaving college: Rethinking the causes and cures of student attrition (2nd ed.), 114.

Tinto’s model of Student Integration has served as a conceptual framework for a great number of college persistence studies in the last three decades. Tinto’s research is valuable in explaining the complexity of the student persistence over time to degree completion. Tinto examined the interaction between the academic experience of students in the classroom and the other attributes of student life that help to determine engagement levels. Tinto’s analysis addresses how policies and practices of a higher education institution influence the process of
student departure. There are many individual characteristics that contribute to departure including intention, commitment, adjustment, difficulty, congruence, obligations, finance, and isolation (Tinto, 1993).

Limitations to Tinto’s model include its relevance to students of all racial and ethnic groups at different types of institutions (Bers & Smith, 1989; Cabrera, et al, 1992; Cabrera & Nora, 1993; Munro, 1981; Nora, 1987; Nora & Rendon, 1990; Pascarella & Chapman, 1983; Pascarella, Duby, & Iverson, 1983; Pascarella, Smart, & Ethington, 1986; Voorhees, 1987), where the experience of students of different backgrounds has been greatly enhanced as an appreciation of how a broader array of forces, cultural, economic, social, and institutional shape student retention (Tinto, 2007). For example, Tinto defined the three stages of the college integration process, particularly where students needed to disassociate from their past communities, but those past communities is essential to their persistence. Braxton (2004) acknowledged that Tinto’s theory has served higher education well; it needs to be updated to reflect current demographical, cultural, and institutional perspectives. One of the key arguments Braxton (2004) discussed, was student departure theory need to be more policy-oriented in order to change current trends.

Social and academic integration may be important factors in predicting persistence, but they do not appear to be equally important for all types of students. Tinto emphasized social integration over academic integration, but many research studies of students at commuter institutions and of older students indicate that social integration is not an important factor in deciding to persist or dropout (Bean & Metzner, 1985; Ethington, 1990; Pascarella, et al., 1983; Pascarella, et al., 1986; Pascarella, 1995; Voorhees, 1987). Pascarella and Chapman (1983) compared student attrition at commuter institutions (2-year and 4-year), and at a residential 4-
year college. Predictive validity was established for all three-institution types, but academic integration had the strongest influence on attrition at commuter schools, whereas social integration had a stronger influence at the residential institution. This is important as community college transfer students are coming from commuter campuses, where most of the 4-year institutions are residential.

Other studies found similar results when focusing specifically on 2-year commuter institutions (Pascerella, et al., 1983; Pascarella, et al., 1986). Academic integration had the greatest influence on persistence. Halpin (1990) examined persistence of first semester freshman at a community college and found that academic integration had a greater influence on persistence than social integration. Several studies focused on community college students found social integration to be less of an influence on persistence than academic integration (Byrd & MacDonald, 2005; Miller, et al, 2005, Moore, 2006).

Another criticism of Tinto’s (1987, 1993) model was the assumption of a 4-year residential college for traditional age college students. Later, Tinto (1993) suggested that the external commitments role would be more prominent when applied to nontraditional students. Tinto’s model also assumed entry and exit from a single higher education institution. Community college and low-income students tend to display various forms of mobility patterns among higher education institutions (Crisp & Nora, 2010; Goldrick-Rab, 2006; Goldrick-Rab & Roska, 2008; Gross & Hossler, 2009, 2010; Karabel & Astin, 1975; Townsend & Denver, 1999) which need to be accounted for in a persistence model of degree completion. In Tinto’s model, a student who transferred to another institution was considered a dropout. Tinto’s model would need to be modified to take into account the mobile, nontraditional community college population.
Webb (1988) used Tinto’s 1975 model as well as the 1993 model to study freshman attrition and persistence at community colleges. Webb’s (1988) study evaluated the applicability of existing retention/attrition models for community college students using data obtained prior to, or at the time of matriculation into three campuses of a major community college system. The model derived could then be used to identify students who are likely to drop out of college during their freshman year; this study did not focus outcomes related to degree attainment or transfer to another institution. Data was obtained from three campuses of the Los Angeles Community College District for students who completed the ASSET placement testing and advising program as freshman. Webb (1988) used a stepwise regression method, as this method is useful for exploratory analysis when a large number of independent variables are thought to be related to a dependent variable. The limitations included the sample number of students did not match what was in the ASSET database, as part-time and students who took the ACT or SAT were not required to complete the placement testing. Webb was not able to measure the degree persistence beyond the freshman year, due to the absence of an indicator on the grade history file to identify students who transfer, graduate, or drop out, also the effect on retention could not be measured based on new fees and policy changes. Webb concluded that Tinto’s model was not adequate to explain patterns in the community college population. Bean and Metzner (1985) explain the limitations with the research conducted by Tinto, as well as many others, on commuter students since a separate analysis for part-time students, and for older students, confounding their results. Out of the 56 attrition studies using commuter populations, only four included a separate analysis for part-time students, and only five for older students (Bean & Metzner, 1985). For example, family responsibilities may play a key role in older part-time students, but may play less of a role for traditional, younger students.
Braxton et al. (1997) completed a comprehensive empirical assessment of Tinto’s model. The results of the study demonstrated that Tinto’s (1975) model was strongest in residential universities as compared to other types of higher education institutions. Braxton et al. (2004) proposed eliminating academic integration from Tinto’s (1975) theory when applying it to residential schools and replacing them with propositions that further address social integration. Braxton, et al. (2004), concluded that the following six factors affects social integration: 1) commitment of the institution to student welfare; 2) institutional integrity; 3) communal potential; 4) proactive social adjustment; 5) psychological engagement; and 6) ability to pay (Braxton et al., 2004). Braxton’s model is different from Tinto’s in the following ways; first Braxton eliminated academic integration (grade performance and intellectual development) from his model for students who attended residential colleges. Next, Braxton proposed that a student’s ability to pay had a direct effect on social integration, where Tinto viewed ability to pay as part of a student’s family background, which has an indirect effect on academic and social integration, and consequently on persistence. Finally, Braxton questioned the validity that one theory could cover different types of institutions and created different models to address different types of institutions (Braxton, 2014). Braxton proposed that students who attend residential colleges and universities are influenced by different factors than those who attend commuter schools. This study highlighted an important principle that Braxton points out; different types of students are affected by different factors when deciding to persist. This principle supports the basis of this study; transfer students’ decision to persist may be different from non-transfer students.
Bean and Metzner Model of Non-Traditional Student Attrition

Bean and Metzner (1985) developed a student attrition model that emphasized academic achievement, socialization, and the interpersonal outcomes of socialization and institutional selection. Bean and Metzner (1985) proposed that student interactions with peers are more important socialization agents than informal contact with faculty. Environmental factors, such as finance, opportunity to transfer, hours of employment, and outside friends have a greater influence on a student’s decision to withdraw, particularly with nontraditional students. Bean and Metzner (1985) defined a nontraditional student as older than 24, or does not live in a campus residence or is a part-time student or some combination of these three factors; is not greatly influenced by the social environment of the institution; and is chiefly concerned with the institution’s academic offerings.

According to Bean and Metzner (1985), older, part-time, commuter college students (nontraditional) do not have the same opportunity to become socially integrated into higher education institutions as traditional, younger, full-time residential students. It is assumed that older students have more family responsibilities, hours of employment, and higher level of absenteeism, which limits their social integration opportunity. Bean and Metzner (1985) sought to develop a conceptual model specifically for nontraditional students, particularly at commuter institutions such as community colleges. Bean and Metzner’s (1985) model recognizes the smaller influence social integration has for nontraditional students. Nontraditional students have less interaction with peers or faculty in the college environment, less interactions through extracurricular activities; they use campus services less, and have a much greater interaction with the external environment (Bean & Metzner, 1985). After reviewing relevant studies available at
that time, Bean and Metzner developed their model of nontraditional student attrition (figure 2.3).

![Diagram of Bean and Metzner's model of nontraditional undergraduate student attrition](image)

Figure 2.3 Bean and Metzner’s model of nontraditional undergraduate student attrition. From Bean and Metzner (1985, 1987). A Conceptual Model of Nontraditional Undergraduate Student Attrition. Review of Higher Education, 55 (4), 491.

Bean and Metzner (1985) proposed that a student’s decision to withdraw from college is based primarily on four sets of variables: (1) academic variables largely based on high school GPA; (2) intent to leave, which is influenced by psychological outcomes and academic variables;
(3) background and defining variables, and (4) environmental variables. Two compensatory effects (indicated by dotted lines) that interact with other variables are included in the model (Bean & Metzner, 1985), but were taken out of the 1987 subsequent revision of the model. Environmental and academic variables interact and result in different outcomes, depending largely on the environmental variable, which is presumed to be more important for nontraditional students. For example, when both environmental and academic variables are favorable, students will persist in college. When both environmental and academic variables are poor, students will most likely dropout. When environmental variables (support) are favorable, and academic support is poor, the student will most likely persist in college as environmental factors compensate for low academic variables. When environmental variables are poor, but academic variables are favorable, students are likely to dropout.

The second compensatory effect is between the variables of academic outcome (GPA), and psychological outcomes. Those psychological outcomes include (1) utility, which measures students perceptions of the usefulness of their college education for employment opportunities and personal development; (2) satisfaction which is an indicator of the degree to which a student enjoys the role of being a student and reports a lack of boredom with college courses; (3) goal commitment refers to the amount of personal importance that a student ascribes to obtaining a college education; and (4) stress which measures the extent to which students believe that they experience from factors that are not related to college attendance as well as from the amount of time and energy required for college study (Bean & Metzner, 1985). Students with high values for both variables will most likely persist; students with low values for both will most likely dropout. Despite a high GPA, a student may decide to dropout if they perceive low levels of utility, satisfaction, or goal commitment or have high levels of stress. A student with low GPA,
but high levels of psychological outcomes may decide to persist because non-academic factors may compensate for the low academic achievement.

Bean and Metzner’s (1985) model was designed specifically for nontraditional students. Similar to traditional attrition and retention models, they try to predict persistence in terms of student and institution fit and integration socially and academically. They propose that persistence is influenced by academic performance, intent, background variables such as age, ethnicity, and gender, and environmental variables not controlled by the institution. Bean and Metzner (1985) found that attrition among nontraditional students is more influenced by the external environment than social interaction variables. In later research, they found that grade point average and institutional commitment had an impact on attrition for nontraditional students. As a result, they emphasize academic integration over social integration, and the model appears to be more suitable for commuter institutions like community colleges.

A drawback to Bean and Metzner’s (1985) Conceptual Model of Nontraditional Student Attrition is the complexity of the model demonstrates the complexity of the various constructs and their interactions and relationships with each other; it also makes it difficult to test. Another limitation of Bean and Metzner’s (1985) model is their incorporation of a narrow definition of persistence and student departure instead of a system departure definition that does not allow for the complex patterns of enrollment of college students, particularly among the patterns displayed by community college transfer students. Bean and Metzner (1985) defined dropout as a student who was enrolled for one semester, then did not enroll in the subsequent semester.

Wang’s Model - Community College Transfers

Wang (2009) developed a model of community college transfers baccalaureate attainment and college persistence. Wang (2009) found many models focused on student persistence in
general for all students; however, he found relatively few studies that focused on community college transfer students and the unique factors that predict their educational outcomes.

Students who are successful in transferring and then negotiating the complex process of transitioning from one educational setting (the community college or another 4-year institution) to another (the four-year institution) are an especially motivated and resilient group (Lee, et al 1993). This conceptual model also includes a set of precollege motivational attributes, namely perceived locus of control, self-concept, and baccalaureate aspiration (Wang, 2009).

In the conceptual framework (figure 2.4) Wang (2009), describes variables based on precollege characteristics, college experiences and environmental factors framing how they all play an important role in the educational outcomes for community college transfer students. Precollege characteristics such as demographic background (gender, race, and SES), and academic resources/preparation as it relates to high school curriculum are taken into consideration in the input model. Another factor Wang (2009) felt was important to examine was the psychological attributes to determine how those variables interact with a transfer students college experience and educational outcome. In this model, college experience emphasizes academic integration variables such as, course taking behavior patterns by semester (including remedial courses in math and reading), enrollment intensity (based on full-time enrollment), and academic performance at the community college based on GPA. It also touches upon involvement at the community college. Wang’s (2009) model also examined environmental factors, such as work hours and having dependents factor into attainment of the baccalaureate degree and college persistence. All of the above dynamics are presumed to influence the educational outcomes, of baccalaureate degree attainment and college persistence among community college transfers (Wang, 2009).
Figure 2.4 A model of community college transfers baccalaureate attainment and college persistence. From Wang (2009), Baccalaureate attainment and college persistence of community college transfer students at four-year institutions. Research Higher Education, 50, 570-588.

The next section will discuss Wang’s (2009) model in more detail outlining the many variables contained in his model and the limitations of his model.

**Precollege Characteristics**

These characteristics include demographic background, academic resources and psychological attributes.

**Demographic Background.** Student demographic background variables in Wang’s (2009) model include gender, race, and socioeconomic status (SES). Most of the models...
discussed in the college persistence literature have explored the contribution of these entry characteristics to the probability of staying in college and, ultimately, attaining a degree (Adelman, 1999; Tinto, 1993). Specific to community college beginners, prior research indicated that gender, SES, and race predict educational attainment (Lee & Frank 1990; Velez & Javalgi, 1987). When discussing first time, full-time students, approximately 56% male and 61% of female who sought a bachelor’s degree at a 4-year institution in fall 2004 completed their degree at that institution within 6 years (NCES, 2012). Students who transferred to 4-year colleges were of higher social class and less likely to be minority. The socioeconomic status (SES) of students transferring closely resembles those students who originally enrolled in 4-year colleges (Lee & Frank, 1990).

When examining race there are many factors that can have a significant impact on persistence and degree completion that is not a direct result of race. Approximately 69% Asian/Pacific Islander, 62% White, 50% Hispanic, 39% Black and 39% American Indian/Alaska Native completed a bachelor’s degree within 6 years who entered a four-year institution in fall 2004 (NCES, 2012). These statistics show that underrepresented minorities are completing bachelor’s degree at a lower rate than Whites and Asian/Pacific Islanders.

Several studies have supported the positive association between Socio-Economic Status (SES) and degree completion (Adelman 1999, 2006; Hussar, et al., 2011; Cabrera, et al., 2005). SES is generally defined by students of parents with low income, low educational attainment or working in low-status jobs (NCES, 2012). Students who generally fall into these categories are at-risk of performing poorly in school, therefore not persisting and completing a bachelor’s degree. When examining family income, comparing students from families in the bottom income quartile, top income students have a higher rate of graduation by 32% (Bowen, et al.,
The differences in outcomes between the students of the most and least educated parents are equally striking, as 33% more students who have a more educated parent graduate from college.

Conversely, many studies have found that differences in socioeconomic status and race can be attributed to a myriad of other factors including high school preparation, external factors (such as work, number of children), enrollment pathways (part-time attendance, delayed entry to college, community college attendance), academic performance in college, increased need for remediation, and financial factors (Sawyer, 2008). For each racial group, some measure of social class, often via socioeconomic status, is significantly related to completion (Lundy-Wagner, 2012). According to NCES (2013), the 6-year graduation rate by race for the 2006 cohort entering both a 4-year and 2-year institution could be found in figure 2.6 below:

![Figure 2.6. 6-year graduation rate by race for the 2006 cohort entering a 4-year and 2-year institution (NCES, 2013). (Please note that data was not provided for the Asian population for the 2-year institution for that time period).]
**Academic Resources.** Academic resources are represented by academic intensity of pre-college curriculum tracks (Wang, 2009). Literature suggests that the academic resources students bring from high school to college have emerged as one of the strongest predictors of baccalaureate attainment (Adelman, 1999). Adelman (1999), further states that academic resources is a composite measure of the academic content and performance the students bring forward from secondary school into higher education, which is measured by the intensity and quality of the secondary school curriculum. Wang’s findings supported previous research that showed academic resources in high school were linked to academic success in college. Velez & Javalgi (1987) speculated an academic track in high school presents a more favorable environment that encourages college success and these findings were supported by Lee and Frank (1990) who showed community college transfer students were more academically oriented in high school and followed a more academic track.

According to Perna (2005), research has consistently shown that academic preparation and achievement are important predictors of a student’s predisposition toward, or interest in college enrollment and actual attendance. Academic preparation is an important factor to consider among students planning to enroll in higher education, the process of preparing students academically for college should begin as early as eighth grade (Perna, 2000). Likewise, because students preparation for and access to college can be impacted by the use of tracking or curriculum grouping, Perna (2000) suggests that the information students receive regarding college from high school counselors will equally prepare students for entry into higher education. Moreover, Perna (2000) found that low income African American and Hispanic students tend to be placed in low curriculum tracks and are less prepared for college because they have not been exposed to high status knowledge required for acceptance into colleges and universities. In view
of this, academic preparation and tracking are significant; the way in which students are academically prepared ultimately affects students’ educational trajectories.

Kuh, et al., (2007) found the rigor of the high school curriculum plays a critical role in the persistence of college students. High school students who completed a rigorous high school curriculum with 4-years of English, math and science had an 87% graduation rate compared to 62% graduation rate for students who did not complete a college preparatory curriculum (Kuh, et al., 2007).

**Psychological Attributes.** There are also internal factors that Wang (2009) allude to that is a common limitation of existing persistence models. Those factors include a student precollege attitudinal and motivational trait, which is considered an important dimension shaping individual behaviors, especially when studying community college transfers. By nature, transfer students have a more complicated path to the bachelor’s degree, encounter more barriers and have to deal with more challenges as they experience additional transitioning in postsecondary education (Wang, 2009). There have been several studies examining the concept of “locus of control”, which attempts to explain a person’s sense of control (internal locus of control) or lack of control (external locus of control) over his or her environment, which is rooted in social learning theory (Lefcourt 1981, 1982, 1983, Rotter 1966, 1975). Locus of control as a psychological construct is often studied in conjunction with academic outcomes (Pascerella & Terenzini, 1991; Perry, 1991). Substantial evidence has highlighted the importance of internal locus of control for the academic development and outcomes of college students (Gifford et al., 2006; Grimes 1997; Martin & Bowman, 1985). Internal locus of control, how community college transfers perceive themselves may play a positive role in determining whether they can successfully navigate the less traditional route of persisting to their degree goals (Wang, 2009).
In the model, self-concept refers to the individual’s thoughts and feelings with reference to self and has a profound impact on student future success (Goleman 1995; McClelland, 1993). Self-concept is important to college students when it comes to explaining educational outcomes (Smart & Pascerella, 1986). Community college transfer students who have positive self-concept are more likely to follow their educational goals than those with similar abilities and backgrounds but with negative self-concept (Wang, 2009). The final motivational attribute included in the model is educational expectation, measured by whether the student expected to earn at least a baccalaureate degree or not upon entering college (Wang, 2009). The amount of effort students put into achieving a bachelor’s degree depends partly on their perceived possibility of obtaining the degree (expectancy) (Wang, 2009).

**College Experiences.** College experiences also affect community college transfer students’ educational outcomes. The variables in this group include student enrollment intensity, remediation received in math and reading, college involvement and academic performance.

*Enrollment Intensity*

Students’ choice of enrollment such as full-time or part-time points to the amount of time students might be able to devote to academic learning, but also may be an indicator of students’ psychological commitment to their educational experience (Wang, 2009). Studies have shown that full-time students are more likely to persist and attain a credential in postsecondary education (Berkner et al. 1996). While part-time attendance expands the educational opportunities of students who either lack the resources or time to attend full-time, it also increases the time required to earn a degree (Horn & Premo 1995).

Researchers, such as Adelman (2006), O’Toole and Wetzel (2007) found how part-time enrollment decreased the likelihood of completing a degree, while increasing the likelihood of
dropping out. Adelman (2006) found that part-time status reduced the probability of degree completion by over 35%. Although, part-time students tend to be less socially and academically integrated, O’Toole and Wetzel (2007) found those part-time students who were more integrated socially into campus life had higher persistence rates.

**Remediation.** Remediation, also referred to as developmental education, is coursework offered at a postsecondary institution that is below college level. Students are typically tested to determine their level of academic proficiency in areas such as reading, math and writing before they could enroll in college level coursework. Using the National Center for Education Statistics NEL: 88/00 data, Bailey, et al., (2005) examined the enrollment patterns and the highest 8-year outcome of minority, low-income and first generation college students. They found that 60% of the NELS: 88 cohort enrolled at community colleges and took remedial courses during their first year, compared to 26% at four-year institutions. Adelman (2004) completed a study examining college transcript data of the high school graduating classes of 1972, 1982 and 1992. He found at the 4-year institutions, there was a considerable decline in the proportion of students enrolling in remedial coursework from the high school graduating classes from 44% to 25%. However, the proportion of community college students taking remedial coursework was at 63%.

**College Involvement.** Research has suggested that student involvement and integration on campus are key to persistence to degree (Astin, 1993; Bean, et al, 1990; Tinto, 1993). Transfer students may demonstrate different patterns of involvement than native students (Wang & Wharton, 2010), and the way transfers are involved might affect their educational experience and success at four-year institutions. According to Wang, et al. (2010), transfer students did not seem to differ much in academic involvement; however, transfers were less involved socially, reported using fewer student support services, and participated less in campus events and student
organizations. Laanan (2007) found through the implementation of the Laanan-Transfer Students’ Questionnaire, the most prevalent social adjustment to a four-year institution was related to organized social involvement activities, including participation in clubs and organization and attendance at events organized by cultural groups. Townsend and Wilson (2006) found that many transfers expressed challenges in making friends in the 4-year institution setting. Lester, et al (2013) found that transfer students were not without social engagement; however, they experienced the social piece outside of the university.

**Academic Performance.** Academic performance during college years has proven to be the single strongest predictor for degree attainment (Pascarella & Terenzini 1991, 2005). According to Adelman (2006), the average GPA and earned credit hours by the end of a students’ second year is higher for students who persisted through graduation. Desjardins et al. (2003), found the higher a student’s GPA in year one, the lower the odds of dropping out and for every full-grade increase in GPA a student’s odds of graduating in a timely fashion more than doubles. Reason (2003); found the first-year college GPA, a measure of initial academic success was found to be a statistically significant predictor of retention, as early academic performance during postsecondary education plays a significant role in explaining final degree completion. Academic performance in this model is represented by student grade point average (GPA) and the first postsecondary institution students attended (Wang 2009).

Wang (2009) found that the community college grade point average is the single best predictor of bachelor’s degree completion. Adelman (2006) found that if a student’s first-year GPA falls into the top two quintiles, the probability of earning a degree increases by nearly 22 percent. Nora et al. (1996) found that student’s GPA at the end of the first year was three times more important for Black and Hispanic students’ persistence than for White students.
Environmental Factors. Environmental factors and external demands may play a role in shaping student persistence and outcomes, working long hours and having dependents might restrain students from achieving their educational goals (Wang, 2009). Previous studies have found that such circumstances as having dependents and employment may redirect students away from full integration to postsecondary education (Nora et al., 1996), in addition to financial support and encouragement and support from significant others.

Work Hours. Research on the impact of employment on college degree completion indicates that the more hours a student works, the more likely they are to shift from full-time to part-time enrollment and the less likely they are to complete a bachelor’s degree (Pascerella & Terenzini, 2005). Perna, et al., (2007) found that working more than 15 hours a week and working off campus decreases the likelihood of completing a degree. Students who work more hours may have issues with course scheduling, choice of courses, the number of courses they take, access to the library and academic performance (Horn & Berktold, 1998). Community college transfer students, who work, differ from their peers on other factors that might account for differences in persistence and completion, such as being a single parent and working full-time (NCES, 2012).

Having Dependent(s). Being a parent requires many added responsibilities, which can deter college completion. Children require care on a financial, physical, and emotional level and having children deterred both men and women from attending college (Teachman & Polonko, 1988). Horn (1998) found that students with children are more likely to dropout than students without children. Adelman (2006) found that the only demographic variables that had a strong negative association with degree completion was becoming a parent by the age of 20.
**Educational Outcomes.** All the dynamics described in Wang’s (2009) model are presumed to influence the likelihood of baccalaureate attainment and college persistence among community college transfers. Many researchers have studied persistence of students in higher education over the years. The study of transfer students by researchers suggest there are many factors involved in transfer and completing a baccalaureate degree. For example, Pascarella and Terenzini (1991) found commitment a key factor and stated, “students who are committed to graduating from a specific institution are more likely to graduate from that institution.” Astin (1993) looked at students’ aspirations and related their aspiration to transfer, academic preparation, commitment to college, age and other factors to their persistence to transfer and complete a bachelor’s degree at a four-year institution. The results of Wang’s (2009) study among community college transfer students found 62.6% attained a bachelor’s degree by the year 2000 and 37.4% did not do so by the end of the same time period. Wang (2009) also found 76.2% persisted in postsecondary education, while 23.8% did not persist. The biggest suggestion of these studies is that students who focus on the goal of completing their college education have a better chance of achieving it.

**Limitations to Wang’s Model**

Limitations to Wang’s (2009) model includes examining factors, such as high school curriculum and remediation level coursework at the community college. He also did not factor in the GPA at the four-year institution. Another limitation was the use of the National Education Longitudinal Study (NELS) and Postsecondary Education Transcript Study (PETS) data, being that these studies followed a particular high school cohort making the sample not representative of all community college transfer students. Wang’s (2009) study was based on nationally representative samples; therefore, the design of the survey questions was guided by broad
research and policy interests, rather than specific research questions that would be related to a particular institution. The next section will focus on the conceptual framework guiding this study, using a modified version of Wang’s (2009) model.

**Conceptual Framework of Academic Success of Transfer Students**

The conceptual framework (figure 2.5) guiding this study used a refined version of Wang’s (2009) Model of Community College Transfers Baccalaureate Attainment and College Persistence, with some components of Tinto’s (1993) Longitudinal Model of Institutional Departure and Bean and Metzner (1985) model of Nontraditional Undergraduate Student Attrition.
Figure 2.5 Academic success of transfer students at the four-year institution

The model proposed for this study examined the characteristics and background information as they relate to persistence to graduation or student departure before graduating, which is similar to Wang (2009), Tinto (1993) and Bean and Metzner (1985) models. All three models used the same or similar demographic background variables. Wang’s (2009) model was based on precollege characteristics and examined variables based on their high school background and psychological attributes, however he did examine the GPA at the community college as a factor for success. Tinto’s (1993) model examined pre-college and educational achievements, such as high school GPA and examined the transition and incorporation of high school graduates into a college community. Bean and Metzner (1985) examined the high school GPA as an academic outcome that would determine a student’s intent to leave.

Other characteristics examined in this model included the first semester GPA, perceived academic and social integration, financial aid information (expected family contribution – EFC for those who applied for financial aid) and enrollment intensity. Both Tinto (1993) and Bean and Metzner (1985) models examined academic major as an intention of students, but did not examine GPA once a student entered college. Wang’s (2009) model examined enrollment intensity, math and reading remediation and college involvement at the community college level. All three models included finances in their model, such as the Socioeconomic Status (SES) of the student. In addition, this model will examine the following variables taken from the new transfer student survey: (1) self-concept as it refers to comparing themselves to their peers in the areas of academic ability, drive to achieve, leadership ability and social self-confidence; (2) expected college involvement, such as expectations to be involved during their enrollment at the 4-year institution (PRU); (3) educational aspirations, which was their intention to graduate with a
bachelor’s degree or higher; and finally (4) examining how environmental factors such as working and having dependents play a role in their persistence and graduation. The New Transfer Student Survey is administered prior to the start of their first semester at the 4-year institution or PRU.

Finally, this model examined all the variables shown in figure 2.5 to determine their influence on the outcomes of persistence to graduation or student departure within a four-year timeframe and went further to examine the National Student Clearinghouse database for students who departed before graduation to evaluate enrollment at another institution. Wang’s (2009) model examined outcomes related to baccalaureate degree attainment and college persistence, while Tinto (1993) and Bean and Metzner (1985) models examined dropout or student departure as an outcome. The refined model for this study will examine transfer students who persist and satisfy the requirements for a bachelor’s degree at the four-year institution or PRU within a 6-year period.

**Summary**

The review of literature presented an overview of theoretical models of student attrition and persistence. There was also discussion on how variables in some of the models could be adapted when examining transfer students. Wang (2009) developed a conceptual framework on college persistence and educational outcomes of community college transfer students, which concluded, bachelor degree attainment among community college transfer students is an under-researched area of study. The community college graduate in particular, when studied as a unique cohort, has displayed significant patterns of persistence and success. Most researchers have concluded that prior degree attainment before transfer tends to ensure both persistence and academic success.
Chapter 3: Research Methodology

The purpose of this study was to expand upon persistence theories and relevant studies focusing on transfer students that investigated factors that influenced persistence and degree completion. First, pre-transfer characteristics were examined, such as demographic background, academic performance at the former institution and psychological attributes (self-concept) taken from the New Transfer Student Survey completed by new transfer students at the 4-year institution or PRU. Next, the college experience at the PRU was examined looking at academic performance, expected family contribution based on PELL eligibility, expected college involvement and enrollment intensity (full-time or part-time). The final characteristics examined were environmental factors that included expectations to work while in school and having dependents or children.

When examining the variables, the outcome variable was the student’s cumulative persistence and degree attainment through spring 2014, and this study considered the transfer student cohort that began in fall 2008. This study considered students as persisters if they earned a bachelors’ degree within 6-years of transfer, or if they persisted at the 4-year institution or PRU. In this study, I employed a dichotomous multivariate logistic regression analysis examining the relationship of factors to transfer student success at the public research university (PRU). Since the outcome of interest was dichotomous (success/non-success), I used logistic regression. This chapter presents the methodological approaches employed in conducting this study. First, a description of the institution (PRU) was presented, followed by a discussion of the data, population, measurement of variables and the statistical analysis.
Setting of the Study

The institution used for this study was a public research university (PRU), which holds the classification of a comprehensive doctoral/research university by the Carnegie Classification of Institutions of Higher Education (2013). Its’ accreditation is from the Middle States Commission on Higher Education and the institution is a member of the Association of American Universities (AAU). During the 2014-2015 academic year, the institution served approximately 29,000 students – 19,000 undergraduates and 10,000 graduate and professional (PRU website, 2015).

Sample and Institutional Data

For purpose of this study, all transfer students who were admitted and enrolled into the PRU for the fall semester 2008 were examined. The PRU considers a student a transfer student if they have completed at least twelve hours of college level work at another institution after receiving a high school diploma. In addition to the transcript from the previous college, students also have to submit a high school transcript and SAT/ACT scores. Students admitted to the PRU with fewer than 24 credit hours are considered freshmen and are required to take the same general education course requirements as native freshmen. If the student had 24 or more credit hours completed at the time of application, the basis for admissions consideration is the previous college academic record. For purposes of this study, only the population with 24 or more credit hours was examined, there was no involvement of interviewing subjects and their personal ID number was de-identified. For this PRU, transfer students were required to exhibit minimally acceptable performance at their previous institution earning a cumulative grade point average of 2.5 on a 4.0 scale. (See Table 3.1 for the demographic information of the sample).
Table 3.1 Summary data for demographic characteristics of the transfer students in the population.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>796</td>
<td>54.7</td>
</tr>
<tr>
<td>Female</td>
<td>660</td>
<td>45.3</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>144</td>
<td>9.9</td>
</tr>
<tr>
<td>Hispanic</td>
<td>69</td>
<td>4.7</td>
</tr>
<tr>
<td>White</td>
<td>910</td>
<td>62.5</td>
</tr>
<tr>
<td>Asian</td>
<td>117</td>
<td>8.1</td>
</tr>
<tr>
<td>Other</td>
<td>216</td>
<td>14.8</td>
</tr>
<tr>
<td><em>Other</em> – American Indian or Alaskan Native and Unknown</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In this study, I utilized three sources of student-level data. The first source utilized the data warehouse system housed at PRU to examine data to determine if a student’s demographic background (gender and race), entering academic history, such as transfer grade point average (GPA), transfer credit hours and having a degree or not prior to transfer has any relationship on their 4-year institution persistence through year one and completion of a baccalaureate degree. Knowing the effects on transfer students of their entering academic history at the community college on baccalaureate attainment will help inform policy regarding admission standards and support services needed to increase persistence to graduation from the institution.

The second source of data came from the New Transfer Student Survey. This survey was administered to all incoming transfer students at PRU during their first semester of enrollment at
the four-year institution, this particular study focused on the survey that was administered fall 2008. The survey was not mandatory and was completed online by students on a voluntary basis. The survey asks about information related to their background (gender, race), their expectations of the 4-year institution or PRU, aspirations regarding degree (bachelor’s or beyond), enrollment capacity (full-time or part-time), participation at the new institution and a self-concept evaluation comparing certain attributes of themselves as it relates to their peers at PRU.

The third source of data came from the National Student Clearinghouse (NSC). The data from this source tracked the paths of those transfer students who left the institution before graduating to see if they enrolled at another institution. The National Student Clearinghouse founded in 1993, helps educational institutions have access to a nationwide coverage of postsecondary enrollment and degree records to study postsecondary enrollment and success (NSC website, 2014). According to Handel (2013), the National Student Clearinghouse provides one of the most complete national snapshots of the transfer process and signal that a large portion of students completing certificates and degrees at U.S. postsecondary institutions do so at institutions different from the one in which they originally enrolled. The National Student Clearinghouse services 227 million students, supports more than 3,600 colleges and universities that enroll 98 percent of all students in public and private institutions in the U.S., performs more than 700 million electronic student record verifications, confirms 3.5 million degrees, and verifies enrollment for 1.5 million students (NSC website, 2014).

The data examined for this study was collected as part of a normal institutional data collection. The following criteria was used in selecting students for the cohort:
1) Newly admitted and enrolled transfer students with twenty-four or more credit hours for the fall semester of 2008.

2) Enrolled in at least one credit hour in the fall semester of 2008.

Only transfer students who were admitted and enrolled were selected. Confidentiality was maintained by assigning a masked identification number. Meaningful results were obtained without intruding on the students’ privacy.

Confidentiality: Protecting the Participants

Confidentiality was a primary concern; this research was conducted so the names of the participants were unknown. PRU Office of Institutional Analysis supplied the data. A unique identification number was substituted for the student’s identification number by institutional analysis. This provided security for the institution and the students. The data was used for research purposes only and no attempt was made by the researcher to contact any student who was part of the dataset. This study complied with the 1974 Family and Educational Rights and Privacy Act (FERPA) (U.S. Dept. of Education, 2014) in that no information about any subject was used outside of this study or institution. The study has Institutional Review Board (IRB) approval from PRU for secondary data analysis and all student identifiers were stripped from the data prior to analysis.

Dependent Variables

There were two dichotomous dependent variables measured in this study – attainment of a bachelor’s degree by spring of 2014 and persistence/retention from fall 2008 to fall 2009. The first dependent variable examined each student’s attainment of a bachelor’s degree (a dummy variable that equals 1 if the student attained a bachelor’s degree and 0 otherwise). The second dependent variable examined was persistence, considered to be the progressive college
reenrollment either continuous from one term to the next or temporarily interrupted and then resumes (Pascerella & Terenzini 1991). Persistence will be measured as a dummy variable that equals to 1 if the student enrollment did not experience any breaks in their first year of attendance, and 0 otherwise. In addition, this study tracked students who left the 4-year institution without a degree utilizing the National Student Clearinghouse data to explore if they enrolled in another institution, which was defined as 1 = “left the institution and enrolled at another institution” and 0 = “otherwise”.

The dependent and independent variables included in the regression models of this study are detailed below in Table 3.2 followed by a detailed description of the factors.

Table 3.2
Variable Names and Descriptions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Reference Category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree Attainment</td>
<td>Attained a bachelor’s degree at the 4-year institution.</td>
<td>Dichotomous</td>
</tr>
<tr>
<td></td>
<td>Dummy variable coded 1 = attained bachelor’s degree and 0 = otherwise.</td>
<td></td>
</tr>
<tr>
<td>Persistence/Retention</td>
<td>Student’s college enrollment at the 4-year institution did not experience any break during their first year of attendance.</td>
<td>Dichotomous</td>
</tr>
<tr>
<td></td>
<td>Dummy variable coded 1 = retained and 0 = otherwise.</td>
<td></td>
</tr>
<tr>
<td>Transfer Enrollment Status</td>
<td>Indicates whether student enrolled at another institution after leaving 4-year institution with no degree.</td>
<td>Dichotomous</td>
</tr>
<tr>
<td></td>
<td>Dummy variable coded 1 = left institution and enrolled at another institution during 2008-2012 and 0 = otherwise.</td>
<td></td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demographic Background</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Indicates the students’ gender.</td>
<td>Categorical</td>
</tr>
<tr>
<td>Race</td>
<td>Indicates the race of students.</td>
<td>Categorical</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
<td>Type</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Expected Family Contribution (EFC)</td>
<td>Indicates the Expected Family Contribution during their first year at the 4-year institution.</td>
<td>Categorical</td>
</tr>
<tr>
<td></td>
<td>Determining PELL eligibility.</td>
<td></td>
</tr>
<tr>
<td><strong>Academic Performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer GPA</td>
<td>Indicates undergraduate transfer GPA for all courses students taken at the origin institution they are transferring from.</td>
<td>Continuous</td>
</tr>
<tr>
<td>Transfer credit hours</td>
<td>Indicates the number of transfer credit hours accepted at the 4-year institution.</td>
<td>Continuous</td>
</tr>
<tr>
<td>Prior degree</td>
<td>Indicates student earned a degree prior to entering the 4-year institution.</td>
<td>Categorical</td>
</tr>
<tr>
<td><strong>Psychological Attributes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-concept</td>
<td>This variable indexes if the new transfer student has a positive self-concept compared to their peers, based on the new transfer student survey taken at the 4-year institution.</td>
<td>Continuous</td>
</tr>
<tr>
<td></td>
<td>Item based on a 5-point Likert scale (1=highest 20%, 2=above average, 3=average, 4=below average, 5=lowest 20%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For the following list of attributes, please Rate yourself as compared to your peers:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Academic ability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Drive to achieve</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Leadership ability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Social self-confidence</td>
<td></td>
</tr>
<tr>
<td>Baccalaureate expectation</td>
<td>Indicates the highest level of education that respondents expected to complete.</td>
<td>Categorical</td>
</tr>
<tr>
<td><strong>College Experience - 4-year Institution (PRU)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Semester GPA</td>
<td>Indicates students Grade Point Average after the fall 2008 semester at the 4-year institution or PRU.</td>
<td>Continuous</td>
</tr>
<tr>
<td>Expected College Involvement</td>
<td>This variable examines the overall level of involvement respondents expect to experience at the 4-year institution or PRU.</td>
<td>Continuous</td>
</tr>
</tbody>
</table>
Enrollment Intensity  
Pattern of enrollment intensity for first semester at 4-year institution or PRU (full-time or part-time).

**Environmental Factors**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work hours</td>
<td>Indicates the average hours the respondents expected to work per week during fall 2008.</td>
<td>Continuous</td>
</tr>
<tr>
<td>Dependent(s)</td>
<td>Indicates whether the respondent had children who were dependents during 2008-2009.</td>
<td>Categorical</td>
</tr>
</tbody>
</table>

**Independent Variables**

Consistent with previous research, 15 variables capturing various background and demographic characteristics was included in the regression model. The specific demographic and background characteristics included in the regression model for this study were:

**Gender**

The enrollment, persistence, and graduation rates of female students have outpaced males for decades (Lopez, 2014). In this study, male students were compared to female students via a dichotomous variable. These variables were coded with the following dummy codes: 1 for females and 0 for males.

**Race**

Minority students do not persist or attain degrees at the rates of White students, and the inequalities are not fully captured by differences in socioeconomic status or academic preparation (Lundy-Wagner, 2012 and Cabrera et al, 2005). In this study, race was captured in four groups: Black/African American, Hispanic, Asian and Other comprised of American Indian, Alaska Native and those who self-identified as “other” or “unknown” or more than one race. A dummy code for race was used for the following groups: Black, Hispanic, Asian, Other (American Indian, Alaskan Native, and Unknown) and White served as the referent group.
Expected Family Contribution (EFC)

For those who applied for financial aid this study looked at the expected family contribution (EFC), as research suggests finances play an important role in the persistence of nontraditional students, including community college students. This variable was included to capture the financial need demonstrated by students in this study. Unmet need was calculated as the student budget minus EFC (expected family contribution) minus all grant aid, and this represents the dollar amount students must borrow or otherwise obtain to cover their college costs. The Federal Pell Grants usually are awarded only to undergraduate students who display exceptional financial need and have not earned a bachelor's, graduate, or professional degree (U.S. Dept of Education, 2018). EFC was included in this study as a categorical variable. The EFC examined those students who were Pell recipients versus those who were not Pell recipients. These variables were coded with the following dummy codes: 1= Pell recipient and 0 = not a Pell recipient.

The next set of variables was intended to capture past academic performances and they include:

Transfer GPA

Transfer GPA is regularly included as an explanatory variable in persistence studies, as transfer students with good grades have been shown to impact persistence in a positive way (Pennington, 2006, Grossett, 1994 and Thomas, 1988). This study examined the persistence and graduation of students who enrolled at the 4-year institution or PRU with varying incoming transfer GPA’s.
Credit Hours Transferred

The number of credit hours students transfer from their previous institution assists with how quickly they will persist and complete their education at the 4-year institution (Koker and Hendel, 2003). This study examined the persistence and graduation of new transfer students who enrolled at the 4-year institution or PRU with varying incoming transfer credit hours.

Degree Earned at Transfer Institution

Students transferring to a four-year institution with a degree are expected to persist and attain a Bachelors’ degree at a higher rate compared to those students without a degree (Best, 1993). This study distinguished between students who earned a degree and those who did not when transferring to a 4-year institution. Measured by a dummy variable, coded 1 = having a degree and 0 = not having a degree.

The next set of variables was intended to capture psychological attributes related to the new transfer students based on the new transfer student survey, they include:

Self-concept

Refers to the individual’s thoughts and feelings with reference to self (Rosenberg, 1986) in explaining educational outcomes (Smart & Pascarella, 1986). These indexes are derived variables, based on a comparison of themselves to their peers. This survey question used a Likert scale (ranging from highest 20% to lowest 20%) examining the following attributes taken from the new transfer student survey:

“For the following list of attributes, please rate yourself as compared to your peers.” The four attributes comprising the self-concept index are:

(1) Academic ability

(2) Drive to achieve
(3) Leadership ability

(4) Social self-confidence

Logistic regression was run and analyzed on the above concept, which found that none of the concepts above held any significance when it came to persistence of degree attainment; therefore, further analysis was not completed or used for the study.

Educational Aspirations

Researchers of college persistence have long noted that the incoming aspirations/expectations of college students’ impacts student outcomes like persistence and graduation (Pascerella & Terenzini, 1991). This study distinguished between students who aspired to a bachelor’s degree. Measured by a dummy variable, coded 1 = respondents expected to earn at least a bachelor’s degree or higher and 0 = otherwise. The respondents answered the following question on the new transfer student survey, “What is the highest academic degree you intend to obtain at PRU?”

The next set of variables was intended to capture academic performance at the 4-year institution and they include:

First-Semester GPA

First-semster grade point average is generally included as an explanatory variable in persistence studies. In How College Affects Students, Pascarella and Terenzini (2005) state, “the research is unwavering in finding that first semester grade performance at the transfer institution, even when controlling other factors, is a statistically significant and positive predictor of persistence and graduation.” According to Jaschik (2016), first-semster grade point average may be a better way to predict whether students will graduate than an ACT score, according to a new study by researchers at the University of Illinois at Urbana-Champaign. The study examined more than 1,900 freshmen over a multiyear period, focusing on students from low-
income families, poorly financed high schools and historically underrepresented groups. Among these students, the GPAs of those who went on the graduate were virtually identical to those who dropped out. However, first-semester grades were an effective way to predict graduation. In this study, first-semester GPA was included as a continuous variable.

**Expected College Involvement:**

College involvement is important when looking at persistence and graduation. College involvement in this study was examined on a 4-point Likert scale based on respondent’s answer to the following question on the new transfer student survey:

“During your enrollment at PRU, how likely is it that you will….”

1. Be elected to a student office?
2. Socialize with someone of another racial or ethnic group?
3. Participate in volunteer or community work?
4. Participate in extra-curricular activities other than intercollegiate athletics?
5. Be satisfied with college?

Logistic regression was run and analyzed on the above concept, which found that none of the concepts above held any significance when it came to persistence of degree attainment; therefore, further analysis was not completed or used for the study.

**Enrollment Intensity**

Attending less than full-time lengthens time to degree and has been linked to lower persistence rates (Berkner, et al, 1996). Captured in this study’s institutional data is the variable of full-time or part-time attendance for their first semester of study at the 4-year institution (fall 2008). In this study, students who attended full-time for each semester were compared with
those who did not, for example – attended part-time or a mix of part-time and full-time when enrolled. Measured by a dummy variable, coded 1 = respondents are enrolled full-time for their first semester at the 4-year institution and 0 = otherwise.

The next set of variables was intended to capture environmental factors based on life circumstances and they include:

**Expected Work Hours**

Many students work while enrolled in college, and the effects that working while enrolled could be complex. Working while enrolled could have a positive effect on students, as it helps them afford college and employers and co-workers may provide support and encouragement, especially if students could obtain a job on campus (Pascerella & Terenzini, 2005 and Perna, et al, 2007). On the negative side, the time and effort students spend working takes away from the time they have to dedicate to college and may slow progress (Horn & Berktold, 1998). Respondents answered the following question on the new student transfer survey, which was based on a 6-point Likert scale, “During your first semester at PRU, how many hours per week do you intend to spend working for pay?” This study compared the students who expected to work against those who did not expect to work.

**Having Dependent(s)**

Having dependents other than a spouse (i.e. children) is another characteristic that may have an impact on college persistence. Research suggests that the costs (time, money, effort) associated with caring for a child present challenges to persistence; however, having dependents may also provide the focus and motivation for students to finish (Teachman & Polonko, 1988). In this study, respondents who had dependents was compared with those who did not have
Dependent variables. Measured by a dummy variable, coded 1 = respondents had dependents other than spouse and 0 = otherwise.

Table 3.3 List of independent variables

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographic background</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>Dummy variable (coded 1 = females and 0 = males)</td>
</tr>
<tr>
<td>Black</td>
<td>Dummy variable (coded 1 = Black and 0 = not Black)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>Dummy variable (coded 1 = Hispanic and 0 = not Hispanic)</td>
</tr>
<tr>
<td>Asian</td>
<td>Dummy variable (coded 1 = Asian and 0 = not Asian)</td>
</tr>
<tr>
<td>Other*</td>
<td>Dummy variable (coded 1 = Other and 0 = not Other)</td>
</tr>
<tr>
<td>EFC</td>
<td>Dummy variable coded based on expected family contribution 1= Pell recipient (EFC is at or below $5,081) and 0 = not a Pell recipient (EFC is over $5,081)</td>
</tr>
<tr>
<td><strong>Pre-transfer characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Transfer GPA</td>
<td>Undergraduate GPA for all courses student took in the previous institutions</td>
</tr>
<tr>
<td>Credit hours transferred</td>
<td>Cumulative number of undergraduate credit hours transferred from previous institutions</td>
</tr>
<tr>
<td>Self-concept</td>
<td>Summated scale measuring self-concept (ranging from 1 to 5)</td>
</tr>
<tr>
<td>Educational aspirations</td>
<td>Dummy variable (coded 1 = bachelor's or higher and 0 = otherwise)</td>
</tr>
<tr>
<td><strong>College experience</strong></td>
<td></td>
</tr>
<tr>
<td>First term GPA</td>
<td>Undergraduate GPA after first term at 4-year institution</td>
</tr>
<tr>
<td>Expected college involvement</td>
<td>Dummy variable (coded 1 if respondents expected to participate in any of the following activities and 0 if respondents participated in none: be elected to a student office, socialize with someone of another racial/ethnic group, participate in volunteer or community work, participate in extra-curricular activities other than intercollegiate athletics and being satisfied with college)</td>
</tr>
<tr>
<td>Full-time enrollment</td>
<td>Dummy variable (coded 1 if enrolled full-time at the four-year institution and 0 otherwise)</td>
</tr>
<tr>
<td><strong>Environmental Factors</strong></td>
<td></td>
</tr>
<tr>
<td>Expected to work</td>
<td>Average hours expected to work per week</td>
</tr>
<tr>
<td>Dependents</td>
<td>Dummy variable (coded 1 if respondent had a dependent other than their spouse and 0 otherwise)</td>
</tr>
</tbody>
</table>
because the data of this study contained only 6 American Indian students, the researcher combined American Indians and unknown race to form an “other” race category

**Statistical and Analytical Methods**

This study analyzed institutional data using the data warehouse at PRU. The data was collected and analyzed using the statistical software package SPSS. The SPSS statistical software package is one of the most popular statistical packages, which can perform highly complex data manipulation and analysis. It has a very flexible data handling capability and can read data in almost any format. This study measured transfer student persistence and examined those variables, which might predict transfer student success.

I utilized descriptive analyses, including frequencies, percentages, and cross-tabulations to describe sample demographics and experiences to highlight differences among transfer students’ degree attainment and persistence/retention. I utilized two separate logistic regression models to examine the effects of the set of independent variables on the probability of attaining a bachelor’s degree by the end of the spring 2014 semester and the probability of enrolling in college in a progressive manner (persistence). I utilized these two regression models to predict membership in each of the two outcomes that I examined: (1) earned a bachelor’s degree versus did not earn a bachelor’s degree and (2) persisted in postsecondary education at the 4-year institution or PRU versus did not persist. The strengths of using this particular method is that “it’s one of the best statistical methods to use when you are trying to examine the accuracy of dichotomous dependent variables from one or more independent variables” (Glass and Hopkins, 1996).

The linear regression model of ordinary least squares (OLS) was reviewed, but will not work with a study that has a dichotomous dependent variable. In addition, the ordinary least
squares will minimize the sum of the squared deviations between the observed and predicted values of the dependent variable—no longer gives efficient estimates (Pampel, 2000). The logistic regression model is a better approach for dichotomous dependent variables. Logistic regression is flexible in accepting variables with various units of analysis (Hanuschek & Jackson, 1977), a yes/no outcome variable is adaptable to independent variables being categorical or continuous (Cabrera 1994). Many studies (Cabrera, 1994, Wang, 2009 and 2012, Koker & Hendel, 2003, Desjardins, Kim and Rzonca, 2003) utilized logistic regression analysis to investigate the individual factors that affect college persistence. College outcomes such as persistence and graduation are the product of many factors in which both student and institutional characteristics interact (Pascerella & Terenzini, 1991), and those outcomes are naturally divided into two groups, such as attends or not, persists or not, attains a degree or not.

Logistic regression is one of only a few statistical techniques that can be used to study dichotomous nature of these types of outcomes measures (Cabrera, 1994). One example of a study completed in 1989 by F.K. Stage where logistic regression was used when he validated Tinto’s model of college persistence by analyzing the effects on the dichotomous criterion, persistence (Stage, 1989). Logistic regression is a good technique of analyzing information to be used in policy questions with dichotomous outcomes with an emphasis on practical applications (Cabrera, 1994). Koker and Hendel (2003) completed a study involving logistic regression analysis and a multiple logistic regression model. In this study (Koker and Hendel, 2003) logistic regression was used to analyze graduation status as the dependent variable and the independent variables of gender, ethnicity, birth date, entry credits total, GPA total, first term GPA, etc. and transfer cohort, which revealed ten significant predictors of graduation status. The multiple logistic regression model used in this study was estimating the coefficients for variables
in the equation and prediction of persistence and graduation status, using gender, race, transfer credits total, transfer GPA, enrollment status, GPA at PRU and work hours. A small separate study will review the status of those who leave before graduating.

Among the logistic regression results, the following was presented: the standard errors of the estimates (SEs), the odds ratio, and the p values. As the independent variables with a p-value less than 0.05 was reported as statistically significant and the relationship between those variables and the dependent variables of interest (degree attainment and persistence), was discussed in terms of odds ratios and percentages. Standardized coefficients in logistic regression may present problems that stems partly from ambiguity in the meaning of standard scores or standard units for dummy variables (Pampel, 2000).

A typical and common way of interpreting the logistic regression coefficients is to transform the logit into an odds ratio which is the change in odds of the outcome occurring given a unit of change in the independent variable, holding other variables constant (Wang 2009). Another way to express the meaning of logistic regression coefficients is discrete changes in probability (delta p), which measures the change in the probability of the outcome of interest occurring, controlling for other variables in the model (Peng et al. 2002). This study used odds ratios as the primary parameter estimates; this study also reported p-values for significant predictors. The logit model represents a conceptualization of the research problem as predicting the odds that y=1 (Menard, 1995).

The independent variables utilized in the regression analyses in this study were categorical and continuous. Specifically, a one-unit change in a continuous independent variable may not be of interest; instead, the researcher must decide how many units change is substantively meaningful depending on the continuous independent variable (Hosmer &
Lemeshow, 2000). For example, whereas the change in the odds of success associated with the number of transfer credits the 4-year institution accepts may be uninteresting, the estimated odds ratio associated with each additional 15 transfer credit hours accepted by the 4-year institution may be interesting as a meaningful change in the independent variable.

For each continuous independent variable, previous research and the range of responses in the dataset will aid in the determination of what constitutes a substantively meaningful change in units of the independent variable. For transfer GPA, measured on a scale from 0 – 4.00, each additional .50-point increase of transfer GPA’s was considered. For transfer credit hours, each 12 credit hours accepted was considered. For work commitment, each additional 10 hours of work per week was considered. Measured on a 0 – 4.00 scale, each additional .50 point increase of first-semester GPA was considered.

When using the logistic regression model, the most popular set of tests that is used is the “goodness-of-fit tests,” as these set of tests could explain the variation in the independent variable (Sykes, 1992). One of the tests called the Hosmer-Lemeshow Goodness-of-Fit test could be used to assess whether the logistic regression model fit the data well (Wang, 2009). There’s also the Pearson’s chi-squared goodness of fit test that is based upon the chi-square distribution of data and others depending on the models and variables you are testing. Underlying assumptions of logistic regression may lead to “biased coefficients, inefficient estimates, or invalid statistical inferences” (Menard, 1995). Menard (1995) stated a number of diagnostics tests were performed on each model to test the assumptions; those included tests of nonlinearities in the independent variables, tests for multicollinearity and tests for outliers. This study used the Hosmer-Lemeshow Goodness-of-Fit test.
The limitations of this method and the data may be the omission of some variables that affect the dependent variable, which may cause “omitted variable bias”. Other limitations could be missing data on the data being collected, and the problem of multicollinearity (Sykes, 1992). Multicollinearity could reduce the degree of confidence that one could place in coefficient estimates, which could occur if two of the independent variables are closely correlated, creating a situation in which their effects are difficult to separate.

**Summary**

This quantitative study used logistical regression analysis examining transfer students attending PRU beginning in the fall of 2008 to determine their success based on degree attainment and persistence. This study examined those students who left the institution (PRU) without a degree to see if they enrolled at another institution through data obtained from the National Student Clearinghouse. Survey information was examined, which was administered to new transfer students on a voluntary basis as they began their first semester at PRU. The variables included were drawn from researchers of college student persistence, such as Tinto, Bean & Metzner, Wang and others. The areas examined included: background demographics, financial aid information in regards to expected family contribution (EFC), transfer GPA, credit hours, educational aspirations, environmental factors such as expectations to work and having dependents or children, and expected college involvement measures. This study will help fill the void in literature based on studying the success of transfer students at the PRU.
Chapter 4: Results

This chapter presents the findings of this study for the factors associated with persistence through the first year and 6-year graduation rate of transfer students entering PRU in fall 2008. The first section discussed descriptive statistics related to the success of transfer students. Section II discussed the items used in the study taken from the new transfer student survey as it related to degree aspirations, self-concept and expected involvement at the four year institution. Section III examines the summary of data related to the independent variables used in the study, which were, gender, race, income based on estimated family contribution (EFC) – Pell eligibility, cumulative transfer GPA, cumulative transfer credit hours, first-term GPA, enrollment intensity (full-time or part-time), expectations of work and having any dependents or children. Section IV discusses the two logistic regression models used (persistence and graduation). Section V discusses persistence through the first year measured against independent variables that emerged as significant predictors, which included income based on EFC, cumulative transfer GPA, first term GPA and enrollment intensity. Section VI considers degree attainment within a 6-year period measured against independent variables that emerged as significant predictors, which included income based on the EFC, cumulative transfer credit hours, first term GPA at the PRU, and expected work hours. Section VII discusses transfer students who left the PRU without a degree, while the final section summarized the findings. The results were organized by the research questions that guided this study:

1. To what extent do demographic background, pre-transfer characteristics, college experience and environmental factors predict a transfer student’s first year persistence?
2. To what extent do demographic background, pre-transfer characteristics, college experience and environmental factors predict a transfer student’s completion and graduation from the 4-year institution or PRU?

3. What percentage of transfer students who leave the 4-year institution or PRU without their 4-year degree enroll at another institution?

**Descriptive Statistics**

Descriptive statistics for the outcome variables are provided in Table 4.1. Among transfer students who entered and attended PRU in the fall 2008, 68.8% graduated within a six-year period and 31.2% left the institution and did not graduate within the same time-period. The biggest percentage of students who graduated (68.8%) within a 6-year period had the following profile: gender - male, race - white, cumulative transfer GPA - 3.0 and above, cumulative transfer hours were 60 or more, first term GPA at the 4-year institution was 3.0 and above, they were enrolled in their first semester as full-time students and had a higher income level (did not receive a Pell grant). The biggest percentage of students who did not graduate (31.2%) had the following profile: gender - male, race - white, cumulative transfer GPA between 2.0 - 2.99, cumulative transfer hours was 30-59 credit hours, first term GPA was between a 2.0-2.99, they were enrolled in their first semester as full-time students and had a lower income level (received a Pell grant). In addition, during the same time period fall 2008 through spring 2014, 79.9% (1164) persisted at the PRU after their first year, while 20.1% (292) did not persist. The biggest percentage of students who persisted from first to second year had the following profile: gender - male, race - white, cumulative transfer GPA was 3.0 and above, cumulative transfer hours were 60 or more, first term GPA was 3.0 and above, they were enrolled in their first semester as full-time students and had a higher income level (did not receive a Pell grant). The biggest
percentage of students who did not persist had the following profile: gender - male, race - white, cumulative transfer GPA 2.0 -2.99, cumulative transfer hours was 30-59 credit hours, first term GPA was between a 2.0-2.99, they were enrolled in their first semester as full-time students and were from a lower income level (received a Pell grant). The biggest loss of transfer students occurred after their first year, the profile of that student population showed that 80% (234 out of 292) were below the minimum 2.0 GPA to graduate and 70% (204 out of 292) transferred to a two year institution.

**Table 4.1** Descriptive statistics for the dependent variables

<table>
<thead>
<tr>
<th>Dichotomous dependent variables</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baccalaureate attainment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attained a bachelor’s degree</td>
<td>1001</td>
<td>68.8</td>
</tr>
<tr>
<td>Did not attain a bachelor’s degree</td>
<td>455</td>
<td>31.2</td>
</tr>
<tr>
<td><strong>Persistence/Retention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persisted to term 3</td>
<td>1164</td>
<td>79.9</td>
</tr>
<tr>
<td>Did not persist to term 3</td>
<td>292</td>
<td>20.1</td>
</tr>
</tbody>
</table>

Among transfer students who entered the PRU in fall 2008 and graduated within the 6-year time frame, a larger percentage graduated between years 2 and 4, with year 3 containing the highest percentage of graduating transfer students at 37.9% (see Figure 4.1).
More details related to the independent variables that influence student persistence and degree attainment will be discussed in the persistence and attaining a bachelor’s degree sections. The next section will discuss the new transfer student survey.

New Transfer Student Survey

Prior to the start of a transfer student’s first semester in the PRU, newly accepted transfer students for the fall semester were asked to complete an online “New Transfer Student Survey” (see Appendix A). The response rate of those enrolled transfer students who completed the survey was 87.4% (1273/1456); the data for non-respondents was replaced with 999 and excluded. The survey provides information on the students enrollment at their previous institution(s) and their activities while attending those institutions. Students were asked about their reasons for choosing to attend the PRU and activities they intend to participate in while enrolled at the PRU. The survey included questions about degree aspirations, past and future academic endeavors, financial standing and future goals. The new transfer student survey allowed this study to capture psychological attributes related to self-concept, expected college
involvement at the PRU, and educational aspirations. Table 4.2a and 4.2b provides the responses of new transfer students to the survey questions used in this study. Although it was not a focus of this study, new freshman students at the PRU rated higher in every category with the exception of social self-confidence in comparison to new transfer students.

**Table 4.2 a – Survey Responses – Self-Concept (N=1273)**

<table>
<thead>
<tr>
<th>Survey Question #21</th>
<th>Highest 20%</th>
<th>Above Average</th>
<th>Average</th>
<th>Below Average</th>
<th>Lowest 20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the following list of attributes, please rate yourself as compared to your peers:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic ability</td>
<td>23.4% (299)</td>
<td>46.8% (596)</td>
<td>29.2% (370)</td>
<td>.5% (7)</td>
<td>.1% (1)</td>
</tr>
<tr>
<td>Drive to achieve</td>
<td>38.9% (495)</td>
<td>41.5% (529)</td>
<td>18.6% (236)</td>
<td>.9% (12)</td>
<td>.1% (1)</td>
</tr>
<tr>
<td>Leadership ability</td>
<td>26.4% (337)</td>
<td>38.6% (493)</td>
<td>30.3% (383)</td>
<td>4.3% (54)</td>
<td>.4% (6)</td>
</tr>
<tr>
<td>Social self-confidence</td>
<td>23.8% (303)</td>
<td>37.2% (474)</td>
<td>32.8% (417)</td>
<td>5.1% (65)</td>
<td>1.1% (14)</td>
</tr>
</tbody>
</table>

**Table 4.2 b – Survey Responses College Involvement (N=1273)**

<table>
<thead>
<tr>
<th>Survey Question #18</th>
<th>Not at all likely</th>
<th>Somewhat Likely</th>
<th>Quite Likely</th>
<th>Very Likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>During your enrollment, how likely is it that you will:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Be elected to student office</td>
<td>71.4% (909)</td>
<td>22.9% (292)</td>
<td>3.5% (45)</td>
<td>2.2% (27)</td>
</tr>
<tr>
<td>Socialize with someone of another ethnic/racial group?</td>
<td>1.4% (18)</td>
<td>11.3% (144)</td>
<td>31% (394)</td>
<td>56.3% (717)</td>
</tr>
<tr>
<td>Participate in volunteer or community work?</td>
<td>13.1% (167)</td>
<td>40.3% (513)</td>
<td>29.1% (371)</td>
<td>17.5% (222)</td>
</tr>
<tr>
<td>Participate in extracurricular activities other than intercollegiate athletics?</td>
<td>12% (153)</td>
<td>35.8% (455)</td>
<td>29.3% (373)</td>
<td>22.9% (292)</td>
</tr>
</tbody>
</table>
The majority of new transfer students rated themselves above average or higher in regards to academic ability (895/1273), drive to achieve (1024/1273), leadership ability (830/1273) and social self-confidence (777/1273). They are confident and feel they can compete with their peers, and did not lack confidence in those areas. Based on the survey responses of questions related to college involvement (Table 2b), the majority of new transfer students were quite likely or very likely to be satisfied with college (941/1273), socialize with someone of another racial or ethnic group (1111/1273), and participate in extracurricular activities other than intercollegiate athletics (665/1273). Unfortunately, the transfer student survey items did not have a significant effect on predicting persistence or graduation at PRU.

Summary of Data

The sample includes 1,456 transfer students, approximately 45% were female and 55% were male; 63% were White, 15% were Other (American Indian/Alaskan Native/Unknown), 10% were Black/African American, 8% were Asian American and 5% were Hispanic. The frequencies of the independent variables of transfer students are presented in Table 4.3 as: pre-transfer, which include demographic and background information; college experience at the PRU, which include first term GPA, estimated family contribution (EFC) as it relates to eligibility of the Pell grant, expected college involvement and enrollment; environmental factors, such as average hours expected to work and having dependents.

New transfer students who entered PRU in fall 2008 had an average cumulative GPA of 3.0 and transferred an average of 62 credit hours. Approximately 25% of transfer students had completed an Associate’s degree before they transferred. The average first term GPA was 2.72,
the average expected family contribution for those students who applied for financial aid was $10,275, and 76% of the transfer students were full-time (enrolled in 12 or more credit hours). The difference in persistence and graduation of transfer students who came from a 4-year institution versus a 2-year institution was higher for those who transferred from a 4-year institution. The persistence rate of transfer students coming from a 4-year institution was 83% and 78% for those who came from a 2-year institution. The graduation rate of transfer students coming from a 4-year institution was 71% and 67% coming from a 2-year institution. There was no significant statistical difference in community college transfers from students who transferred from 4-year institutions.

Examining the expectations of work question on the new transfer student survey (87.4% response rate), it is important to note the actual hours worked was not examined; the question asked the students did they expect to work their first term of enrollment at the PRU. Survey results indicated 16.8% of the transfer population did not expect to work at all during their first term, while 83.2% expected to work an average of 11-20 hours per week during their first term. When comparing the transfer population to freshman, 41.9% of freshman did not expect to work at all during their first term, while 58.1% expected to work an average of 11-20 hours per week. The number of transfer students who had children or other dependents was 1.6%.
Table 4.3 Summary of data

<table>
<thead>
<tr>
<th>Sample Characteristics</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1456</td>
<td>100</td>
</tr>
</tbody>
</table>

**Pre-Transfer**

Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>660</td>
<td>45.3</td>
</tr>
<tr>
<td>Male</td>
<td>796</td>
<td>54.7</td>
</tr>
</tbody>
</table>

Race

<table>
<thead>
<tr>
<th>Race</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black/African American</td>
<td>144</td>
<td>9.9</td>
</tr>
<tr>
<td>Hispanic/Puerto Rican</td>
<td>69</td>
<td>4.7</td>
</tr>
<tr>
<td>Asian</td>
<td>117</td>
<td>8.0</td>
</tr>
<tr>
<td>White</td>
<td>910</td>
<td>62.5</td>
</tr>
<tr>
<td>Other*</td>
<td>216</td>
<td>14.8</td>
</tr>
</tbody>
</table>

Academic Performance

<table>
<thead>
<tr>
<th>Academic Performance</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Transfer GPA</td>
<td>3.02</td>
<td></td>
</tr>
<tr>
<td>Average Credit Hours Transferred</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>Prior Degree Earned</td>
<td>369</td>
<td>25.3</td>
</tr>
</tbody>
</table>

Psychological Attributes

<table>
<thead>
<tr>
<th>Psychological Attributes</th>
<th>N</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Self-Concept</td>
<td>1259</td>
<td>86.5</td>
</tr>
<tr>
<td>Educational Aspirations (bachelor’s or higher)</td>
<td>1261</td>
<td>86.6</td>
</tr>
</tbody>
</table>

**College Experience – 4-year institution (PRU)**

<table>
<thead>
<tr>
<th>College Experience – 4-year institution (PRU)</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average First Semester GPA</td>
<td>2.72</td>
<td></td>
</tr>
<tr>
<td>Average EFC**</td>
<td>$10,275</td>
<td></td>
</tr>
<tr>
<td>Expected College Involvement</td>
<td>1272</td>
<td>87.4</td>
</tr>
<tr>
<td>Full-time Enrollment</td>
<td>1102</td>
<td>75.7</td>
</tr>
<tr>
<td>Part-time Enrollment</td>
<td>354</td>
<td>24.3</td>
</tr>
</tbody>
</table>

Environmental Factors

<table>
<thead>
<tr>
<th>Environmental Factors</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Hours Expected to Work per week 11-20 hrs.</td>
<td>24</td>
<td>1.6</td>
</tr>
</tbody>
</table>

* = “Other” consists of American Indian or Alaska Native and Unknown
** - those students who applied for financial aid

Logistic Regression Analysis

Using a set of theoretically grounded predictor variables, I estimated two logistic regression models to predict student success in each of the two dichotomous outcomes: (1) Persisted through the first-year (fall 2008 to fall 2009) at the PRU versus did not persist and (2) Earned a bachelor’s degree versus did not earn a bachelor’s degree within a 6-year timeframe
(fall 2008 to spring 2014) at the PRU. The results of the logistic regression analysis for persistence and graduation are presented in tables 4.5 and 4.6. The values displayed in the tables include the unstandardized regression coefficients (B), the standard errors of the estimates (SE), the odds ratios and the p-values. In the analysis, estimates for independent variables with an associated p-value less than 0.05 were reported as statistically significant and the relationships between those variables and the dependent variable of interest, persistence through the first-year and bachelor’s degree attainment within a 6-year period are discussed in terms of odds ratios and percentages.

First, I tested whether the model fits the data by utilizing the Hosmer-Lemeshow Goodness-of-Fit test. I present the Hosmer-Lemeshow test (table 4.4) for each regression model; both gave a result of an alpha greater than 0.05, suggesting that the model was a good fit. When examining the dependent variables of persistence and graduation with the independent variables it tells us that the predictions of first to second year persistence and graduation made by the model fits the data of the observed transfer student population.

**Table 4.4 Hosmer-Lemeshow Tests (Persistence and Graduation)**

<table>
<thead>
<tr>
<th>Persistence</th>
<th>Chi-Square</th>
<th>df</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attaining a bachelor’s degree</td>
<td>6.914</td>
<td>8</td>
<td>.546</td>
</tr>
</tbody>
</table>

The next section discusses the first logistic regression model for persistence.
Persistence

In the first logistic regression model, I entered a set of independent variables to predict the likelihood of transfer students persisting through their first year at the PRU. The sample used in the logistic regression analysis for persistence included all transfer students. Approximately 79.9% of the original sample (n=1164) were retained through their first year of entering the PRU (fall 2008 to fall 2009). The parameter estimates for the persistence model are reported in Table 4.5.

Four factors emerged as significant predictors for continuous enrollment at the PRU among transfer students, which were: estimated family contribution based on students who were eligible for the Pell grant, cumulative transfer GPA, first term GPA at the 4-year institution, and enrollment intensity (full-time vs. part-time). In analyzing the survey questions and controlling for other predictors in the model, self-concept and expectations of involvement at the PRU did not have a significant effect on the persistence of transfer students from the first to second year.

Next, I estimated students who were not eligible for the Pell grant and had a higher income were more likely to persist through their first year at the PRU than students who were eligible for the Pell grant and had a lower income. The odds of transfer students persisting through their first year is greater by a factor of 48% for students who had a higher income. A total of 1,269 students or 87% completed an application to receive financial aid. From the 1,269 students, 49% were eligible to receive the Pell grant, while 51% were not qualified to receive the Pell grant. The average Pell award for transfer students was approximately $3,800 and for freshman was $4,988. Those students who were not eligible for the Pell grant had a higher first to second year retention rate at 82% versus those students who were eligible for the Pell grant whose first to second year retention rate was 78%, which is a 4% difference.
Examining the effect of the cumulative transfer GPA, I estimated that students who earned a higher cumulative transfer GPA upon entry to the PRU were more likely to persist through their first year. For a 1-point increase in their cumulative transfer GPA their odds increased by 29% over those whose transfer GPA was lower. Students who transferred with a higher cumulative GPA were retained at a higher rate of 69% as compared to 31% for those students whose cumulative transfer GPA was lower. In comparing gender, males made up the majority of the population that was admitted and enrolled to the PRU with a cumulative transfer GPA below a 2.5. Comparing race, African American and Hispanic students were admitted and enrolled at the PRU with a cumulative transfer GPA below 2.5 on average. This placed those populations at a disadvantage from the beginning of their enrollment at the PRU.

Examining the effect of first-term GPA at the PRU for transfer students, I estimated that students who earned a higher first-term GPA were more likely to persist through their first year. The odds of being continuously enrolled at the PRU increases by 29% for a one-point increase in their first semester GPA. Seventy-six percent of new transfer students had a first term GPA above 2.5; 6% had a first term GPA between 2.0-2.5; 18% had a first term GPA below 2.0. Students whose first term GPA was a 2.5 or greater persisted at a higher rate (71%) than those students whose first term GPA was less than 2.5 (9%). Of the sample population, 20% left the PRU, 11.8% had a first term GPA above 2.0, while 8.2% had a first term GPA below 2.0.

When examining the effect of enrollment intensity at PRU, data was analyzed related to those students who registered full-time (12 or more credit hours) versus part-time (less than 12 credit hours) during their first term. Those registered as part-time students with less than 12 credit hours for their first term persisted at a higher rate than those registered as full-time students with 12 or more credit hours for their first term. The odds of being continuously
enrolled at the PRU for transfer students who were enrolled full-time was lower by a factor of 40%, as that for those transfer students who were registered part-time, which demonstrates a negative relationship to persistence through the first year for full-time students. During the fall 2008 semester, there were 1,102 (76%) full-time transfer students and 354 (24%) part-time transfer students enrolled at the PRU. Of the 1,102 full-time transfers, 79.9% were retained through their first year, while 20.1% of them left the PRU. Of the 354 part-time students, 80.8% were retained through their first year, while 19.2% left after their first year. There were more full-time transfer students who left the 4-year institution than part-time students. A larger percentage of part-time students at PRU received more Pell grant money during their first year, there was a bigger percentage of White, and Asian students who studied part-time, those populations had higher retention rates as compared to other races.

In terms of the specific effects of other individual predictors analyzed for transfer student persistence through the first year at the PRU where the p-value was greater than .05, which was not considered statistically significant was gender, race, prior degree, cumulative transfer credit hours, baccalaureate aspirations, work hours, having dependents and all survey items related to self-concept and expected college involvement.

**Table 4.5** Logistic regression parameter estimates: Persistence (N = 1456)

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>b</th>
<th>S.E.</th>
<th>Odds ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>-.040</td>
<td>.142</td>
<td>.960</td>
<td>.776</td>
</tr>
<tr>
<td>Black/African Amer.</td>
<td>-.083</td>
<td>.223</td>
<td>.921</td>
<td>.711</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-.107</td>
<td>.316</td>
<td>.898</td>
<td>.734</td>
</tr>
<tr>
<td>Asian</td>
<td>.551</td>
<td>.311</td>
<td>1.736</td>
<td>.076</td>
</tr>
<tr>
<td>Other$^1$</td>
<td>.045</td>
<td>.209</td>
<td>1.046</td>
<td>.828</td>
</tr>
<tr>
<td>EFC – PELL Recipients</td>
<td>-.305</td>
<td>.148</td>
<td>.737</td>
<td>.039*</td>
</tr>
<tr>
<td><strong>Pre-transfer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer GPA</td>
<td>.254</td>
<td>.123</td>
<td>1.289</td>
<td>.039*</td>
</tr>
</tbody>
</table>
Transfer credit hours  
Prior degree  

<table>
<thead>
<tr>
<th>College Experience (4-year institution - PRU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Term Factors</td>
</tr>
</tbody>
</table>
| Baccalaureate expectation  
First term GPA  
Full-time enrollment  |

<table>
<thead>
<tr>
<th>Survey Items</th>
</tr>
</thead>
</table>
| Self-concept  
Expected college involvement  |

Environmental Factors  
Expected work hours  
Dependents  

| Note. 1The category in Race titled “Other” consists of American Indian or Alaska Native and Unknown.  
*P < 0.05; ** P < 0.01; *** P < 0.001 |

Next, is a description of the results for the attainment of a bachelor’s degree regression model.  

Attaining a Bachelor’s Degree  

For the second logistic regression model, I entered the same set of independent variables  
to predict the likelihood of attaining a bachelor’s degree among transfer students at the PRU.  
Graduation rates were calculated for a 6-year period beginning with fall 2008 semester and  
ending at the conclusion of spring 2014. The focus was to determine which independent  
variables influenced the likelihood of graduation and to provide insight into the student  
characteristics that may contribute to success factors of transfer students at the PRU. The degree  
attainment status for each case was coded “attained bachelor’s degree” or “otherwise.”  
Otherwise indicated, at the time the sample was taken, the student left the PRU before  
graduating. These codes were designed by PRU and provided in the student record data.  
The PRU sample used in the logistic regression analysis for graduation included those  
students who graduated within a 6-year period, which was 1,001 or 68.8% of the original sample.
of 1,456. The parameter estimates for the baccalaureate attainment model are presented in Table 4.6. Five factors emerged as significant predictors for transfer students likelihood of attaining a bachelor’s degree at the PRU, which were: estimated family contribution (EFC) based on students who were eligible for the Pell grant, cumulative transfer GPA, cumulative transfer credit hours, first term GPA at PRU, and expected work hours (not working at all vs. working). In analyzing the survey questions and controlling for other predictors in the model, self-concept and expectations of involvement at the PRU did not have a significant effect on attaining a bachelor’s degree for transfer students.

I estimated students at the PRU who were not eligible for the Pell grant and had a higher income based on the expected family contribution (EFC) were more likely to graduate than students with a lower income based on the EFC. The odds of transfer students graduating from PRU was greater by a factor of 28% for students who were not Pell eligible. The percentage of transfer students not eligible for Pell graduated at a higher rate of 72% compared to transfer students who were eligible for the Pell grant who graduated at a rate of 65%. There were a total of 1,269 students who applied for financial aid, where a total of 871 (68.6%) transfer students graduated within a 6-year period and 398 (31.4%) transfer students did not graduate within a 6-year period. Transfer students with higher incomes were more likely to graduate than lower income students. The average Pell award for transfer students was approximately $3,800 and for freshman was $4,988.

Students who transferred to the PRU with a higher cumulative GPA from their previous institution had a better chance to earn a bachelor’s degree; a one-point increase in GPA is associated with an increase in the odds of earning the baccalaureate by a factor of 2.197. Those transfer students who came into the PRU with a 2.5 or better GPA graduated at a higher rate,
which was 61.4%, compared to 6% for those transfer students who came into PRU with a GPA below 2.5 and did not graduate. There was also 7.3% of students who graduated within a 6-year period from PRU whose cumulative transfer GPA was below 2.5. Finally, 25.3% of transfer students had a cumulative transfer GPA of 2.5 or better who did not graduate within a 6-year period.

Students who entered the PRU with more cumulative transfer credits graduated at a higher rate, than those with less credit hours. Those students who entered the PRU with 60 or more credit hours had a graduation rate of 73.5%, as opposed to students who transferred in with less than 60 credit hours whose graduation rate was 64.1%. The odds of graduating increases by 8% for every 10 credit hours that is accepted by the PRU.

The odds of graduation for transfer students who had a first term GPA of at least 2.5 at the PRU was higher than for students who had a first term GPA less than 2.5. Students with a first term GPA of 2.5 or better graduated at a 78.3% rate compared to 59.3% for those students whose first term GPA was below 2.5.

Approximately 213 students (16.8%) reported they did not expect to work at all during their first semester at the PRU, while 1,058 (83.2%) expected to work at least one or more hours per week. The odds of attaining a bachelor’s degree was higher by 37% for those students who had no expectations of working. The more students expected to work, the lower the odds of them earning a degree. Students who had no expectations to work had a higher rate of completing their degree at 77% versus those students with expectations to work whose degree completion rate was 68%.

In terms of the specific effects of other individual predictors analyzed for transfer student baccalaureate attainment at the PRU where the p-value was greater than .05, which didn’t show
as statistically significant was gender, race, prior degree, enrollment intensity, baccalaureate aspirations, enrollment intensity, having dependents and survey items related to self-concept and expected college involvement.

The final analysis related to this study was examining those transfer students who left the PRU without a bachelor’s degree.

**Table 4.6 Logistic regression parameter estimates: Baccalaureate attainment (N = 1456)**

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>b</th>
<th>S.E.</th>
<th>Odds ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Transfer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>.126</td>
<td>.123</td>
<td>1.134</td>
<td>.306</td>
</tr>
<tr>
<td>Black</td>
<td>-.365</td>
<td>.140</td>
<td>.694</td>
<td>.055</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-.366</td>
<td>.270</td>
<td>.694</td>
<td>.176</td>
</tr>
<tr>
<td>Asian</td>
<td>.380</td>
<td>.248</td>
<td>1.462</td>
<td>.125</td>
</tr>
<tr>
<td>Other</td>
<td>.114</td>
<td>.183</td>
<td>1.121</td>
<td>.534</td>
</tr>
<tr>
<td>EFC – Federal Pell Recipients</td>
<td>-.333</td>
<td>.122</td>
<td>.717</td>
<td>.006**</td>
</tr>
<tr>
<td>Transfer GPA</td>
<td>.787</td>
<td>.119</td>
<td>2.197</td>
<td>.000***</td>
</tr>
<tr>
<td>Transfer credit hours</td>
<td>.008</td>
<td>.002</td>
<td>1.008</td>
<td>.001**</td>
</tr>
<tr>
<td>Prior degree</td>
<td>-.116</td>
<td>.162</td>
<td>.890</td>
<td>.472</td>
</tr>
<tr>
<td>Self-concept</td>
<td>.066</td>
<td>.101</td>
<td>1.068</td>
<td>.513</td>
</tr>
<tr>
<td>Baccalaureate expectation</td>
<td>.044</td>
<td>.079</td>
<td>1.045</td>
<td>.577</td>
</tr>
<tr>
<td><strong>College Experience – 4-year institution (PRU)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First term GPA</td>
<td>1.154</td>
<td>.088</td>
<td>3.172</td>
<td>.000***</td>
</tr>
<tr>
<td>Expected college involvement</td>
<td>.089</td>
<td>.094</td>
<td>1.013</td>
<td>.350</td>
</tr>
<tr>
<td>Full-time enrollment</td>
<td>.175</td>
<td>.156</td>
<td>1.191</td>
<td>.261</td>
</tr>
<tr>
<td><strong>Environmental Factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expected work hours</td>
<td>-.456</td>
<td>.195</td>
<td>.634</td>
<td>.019*</td>
</tr>
<tr>
<td>Dependents</td>
<td>.283</td>
<td>.660</td>
<td>1.327</td>
<td>.668</td>
</tr>
</tbody>
</table>

*Note. †The category in Race titled “Other” consists of American Indian or Alaska Native and Unknown.*

*P < 0.05; **P < 0.01; ***P < 0.001
Transfer Students Leaving the 4-year Institution

This study examined all transfer students who enrolled at PRU with 24 or more credit hours from their previous institution(s) and earned a cumulative grade point average of at least 2.5 or better on a 4.0 scale. There were some exceptions based on extenuating circumstances where students were admitted with a cumulative transfer GPA below 2.5, approximately 6% of the total population.

The final analysis relates to those transfer students who enrolled at the PRU in fall 2008, but left without a degree and enrolled at another institution or did not enroll. The method used to answer the final question related to those students leaving PRU without a degree was Descriptive Analysis (Table 4.7). Based on the analysis, 455 transfer students entered the PRU in fall 2008 and did not graduate or attain a bachelor’s degree within a 6-year period. Out of the 455 transfer students, 363 students or 80% attended another institution once they left PRU. Many of the students (156 or 34%) who left PRU transferred to a 2-year public institution. 109 students or 24% left PRU and went to a 4-year public institution and 98 students or 22% left the PRU and went to a 4-year private institution. There were 92 students or 20% that left PRU that could not be tracked in the National Student Clearinghouse data, so it was assumed that they did not attend another institution during the time-period being studied. Those 455 transfer students consisted of gender - male students, race was African American and Hispanic, a large percentage of those students first term GPA was 2.3 or below and they were registered full-time.
Table 4.7  Descriptive statistics for transfer students the PRU

<table>
<thead>
<tr>
<th>Status</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>455</td>
<td>100%</td>
</tr>
<tr>
<td>Left and went to 2-year public institution</td>
<td>156</td>
<td>34%</td>
</tr>
<tr>
<td>Left and went to 4-year public institution</td>
<td>109</td>
<td>24%</td>
</tr>
<tr>
<td>Left and went to 4-year private institution</td>
<td>98</td>
<td>22%</td>
</tr>
<tr>
<td>Did not attend any institution</td>
<td>92</td>
<td>20%</td>
</tr>
</tbody>
</table>

Summary

The findings from this study reinforce the notion that the educational outcomes of transfer students to a 4-year institution can be explained, to some extent, by the combined influence of various pre-transfer demographic characteristics, academic characteristics, as well as the student expected experience at PRU. The statistical method of Logistic Regression was used in estimating the parameters of the independent variables as they relate to the dependent variables in this study. There were six student characteristics included in the regression model as categorical variables: gender, race, prior degree, baccalaureate expectation, enrollment intensity and dependents. Additionally, there were seven student characteristics included in the regression model as continuous variables: expected family income, transfer GPA, transfer credit hours, self-concept, first semester GPA, expected college involvement and average hours expected to work. Variables that were considered significant were analyzed.

The examination consisted of utilizing descriptive statistics for outcome variables (persistence and degree attainment), where frequencies were calculated based on the data showing the percentages and total number of students who persisted through their first year and
students who attained their baccalaureate degree within a 6-year period and those that did not. Using a set of theoretically grounded predictor variables, I estimated two logistic regression models to predict membership in each of the two dichotomous outcomes: (1) persisted through the first-year (fall 2008 to fall 2009) at PRU versus did not persist. (2) Earned a bachelor’s degree at PRU versus did not earn a bachelor’s degree within a 6-year timeframe.

When examining persistence (enrolled through term 3) in this study, four independent variables emerged as significant predictors for continuous enrollment at the PRU among transfer students, which were: estimated family contribution (EFC) – Pell grant eligibility, cumulative transfer GPA, first term GPA at the PRU and enrollment intensity (full-time or part-time). In analyzing the survey questions and controlling for other predictors in the model, self-concept and expectations of involvement at PRU did not have a significant effect on the persistence of transfer students from the first to second year.

Graduation rates were calculated for a 6-year period beginning with fall 2008 semester and ending at the conclusion of spring 2014. The probability of earning a bachelor’s degree among transfer students to PRU is a function of correlating demographic, pre-transfer attributes, and expected college experiences. Five independent variables emerged as statistically significant predictors for transfer students’ likelihood of attaining a bachelor’s degree at PRU, which were estimated family contribution (EFC) – Pell grant eligibility, cumulative transfer GPA, cumulative transfer credit hours, first term GPA at PRU, and expected work hours (working vs. not working). In analyzing the survey questions and controlling for other predictors in the model, self-concept and expectations of involvement at PRU did not have a significant effect on the attainment of a bachelor’s degree for transfer students who enrolled in fall 2008.
Descriptive analysis was completed for the final analysis related to those transfer students who enrolled at PRU in fall 2008, but left without a degree and either enrolled at another institution or did not enroll at another institution. Out of the total 1,456 transfer students who entered PRU in fall 2008, 455 left PRU before graduating with a bachelor’s degree within a 6-year period. Three hundred sixty-three students, who left PRU, ended up attending another institution, broken down by 2-year public, 4-year public or 4-year private. The majority of students transferred to a 2-year public institution from the PRU. There were 92 students who were not accounted for in the clearinghouse data, assuming they did not attend another institution during the time-period of this study once they left PRU.

The fifth and final chapter will include a fuller discussion of these results, suggestions for future research, and a conclusion of the study.
Chapter 5: Discussion, Implications and Conclusion

The findings from this study reinforce the notion that the educational outcomes of transfer students at a 4-year institution can be explained, to some extent, by the combined influence of various personal, sociological, and psychological factors, as well as the student expected experience at the 4-year institution. The goal of this study was to examine at the institutional level, those factors that have a significant effect on transfer student success at PRU. First, this final chapter will focus on persistence through the first year measured against specific variables and the related outcomes; graduation within a 6-year period measured against specific variables and the related outcomes; and a summary analysis of transfer students who left PRU without a degree. The final sections will outline policy implications, recommendations for future research on transfer student persistence and graduation, limitations of the study and conclusion.

This study expanded upon research related to persistence theories and relevant studies for transfer students by focusing on their persistence and graduation at PRU. Factors such as transfer credit hours, cumulative transfer GPA, first-term GPA at PRU, enrollment intensity (full-time or part-time), race, gender, expected family contribution related to Pell grant eligibility, and having dependents. Expectations of working while in college, self-concept and expected college involvement were analyzed using survey data as they related to transfer student success. In addition to those factors related to transfer student success as they persisted to graduation, this study included a brief analysis of those students who left PRU before graduating.

The significance of this study was to examine factors related to transfer student success or non-success at the institutional level. Institutional level studies are important, as they not only will inform changes that need to be made at the receiving institution, but will also inform changes that need to be made at the sending institution. As Wang (2009) pointed out there are
relatively few studies that have focused on longitudinal studies of transfer students and the factors that predict their success once they transfer to the 4-year institution. In comparing my findings to other studies, eligibility for Pell as it relates to income and cumulative transfer GPA were in line with previous research that concluded those factors were positively related to persistence and graduation of transfer students. There were two factors in the study where the findings were different from previous research. The first factor was first term GPA at PRU, there are many studies related to first term GPA and positive outcomes when it comes to the success of first-time freshman in college, but there is very little research when it comes to examining the first semester GPA of transfer students related to success at the 4-year institution. Based on Ishitani (2008), although academic achievement (e.g., GPA), and retention and graduation rates have been popular outcomes to assess differences in transfer students’ success at a senior institution, few studies have examined how GPA’s at a senior institution are associated with persistence behavior among transfer students. Even fewer studies have addressed the relationship between academic performance and persistence for transfer students in the longitudinal framework. The second factor related to persistence of transfer students, are students who were enrolled part-time and had a higher persistence rate than students enrolled full-time. This finding at PRU may be due to the small sample size of examining one transfer student cohort and the institution having a larger population of part-time White and Asian students who had a higher persistence rates than any other races. O’Toole (2007) found, it is not part-time enrollment per se that is correlated with attrition; rather it is underlying differences in observable factors between the full-time and part-time students that lead to the correlation with attrition. The next section will discuss the results of the first to second year persistence of transfer students.
Persistence of Transfer Students

Persistence was reviewed in terms of first to second year enrollment at the PRU, where descriptive statistics and logistic regression analysis were used to show the outcomes. Among the transfer students who entered in fall 2008, 79.9% persisted at PRU after their first year, while 20.1% did not persist. Of the variables included in this study, the following emerged as statistically significant predictors for transfer students likelihood of persisting from first to second year at PRU, those variables included: EFC - eligibility for the Pell grant to determine income, cumulative transfer GPA, first-term GPA at PRU, and enrollment intensity (full-time or part-time).

Financial aid is an important element for students and their success in higher education. According to the College Board report, The Financial Aid Challenge, “In 2007-08, 58% of Pell eligible students who attended community college either full-time or part-time applied for federal financial aid, compared with 77% Pell-eligible students at 4-year public institutions.” (College Board, 2011). Student income level was measured through the expected family contribution based on the student’s eligibility for the Pell grant. The results of the study indicated those students who were eligible for the Pell grant (low income) had a lower first to second year persistence rate than those students who were not eligible for the Pell grant (higher income) at PRU. A major reason for low-income students not persisting may be due to the cost of attending college increasing each year. According to Oliverez and Tierney (2008), in the last 10 years, tuition and fees have increased an average of 5.6% per year at private institutions and 7.1% per year at public institutions, in addition low-income families must contribute a significantly larger portion of their income. It’s very important that colleges play a pivotal role in assisting this population with the financial resources to persist and graduate.
Student academic performance represented by cumulative transfer GPA is positively associated with the probability of continuous enrollment at PRU. A plausible explanation is that students who enter PRU with a higher cumulative grade point average from their previous institution are more likely to perform better academically and have a positive integration into the learning environment at PRU. Cumulative transfer GPA is regularly included as an explanatory variable in persistence studies, good grades have been shown to impact persistence in a positive way (Pennington, 2006, Grossett, 1994 and Thomas, 1988). The findings in this study are consistent with research related to transfer GPA and student persistence, as transfer students at the PRU who enrolled with a higher cumulative transfer GPA (69%) persisted from first to second year at a higher rate than those who transferred with a lower cumulative transfer GPA (31%). In addition, those students who transferred from a 2-year institution had higher cumulative transfer GPA’s than those who transferred from a 4-year institution, where 56% from a 2-year institution transferred with a 3.0 or better compared to 45% from a 4-year institution.

Many studies examined the positive relationship of the first-term GPA for first-time freshman entering college. Reason (2003), found the first-year college GPA for entering freshman was a measure of initial academic success and was found to be a statistically significant predictor of early academic performance and retention. This was not the case for new transfer students, according to Ishitani (2008), as studies tend to illustrate their educational success by using other metrics, such as retention and graduation rates, none examined how first-term GPA’s at a four-year institution were associated with persistence behavior among transfer students in a longitudinal framework. The findings in this study showed those transfer students whose first term GPA was a 2.5 or higher persisted at a higher rate than those whose first term GPA was below 2.5 at PRU. This is important, as four-year institutions could target those
students after their first-term and provide support services to assist with their academic integration with the goal of retaining them through graduation. Although, no studies have examined the first term GPA of transfer students and its relation to persistence this study did find it was significant at the PRU.

For students who enrolled part-time at a college or university their likelihood of completing a degree was very low and their likelihood of dropping out of college was high (Adelman, 2006). Although, most research on part-time students tend to say they are less likely to be socially and academically integrated, O’Toole and Wetzel (2007) found those part-time students who were more integrated socially into campus life had higher persistence rates. The results of this study showed the opposite of the majority of research related to enrollment intensity, this study showed part-time students had a slightly higher persistence rate from first to second year than students enrolled full-time at PRU. This difference in outcome for this study may be related to a larger percentage of part-time students at PRU received more Pell grant money during their first year than full-time students and there was a bigger percentage of White and Asian students who studied part-time, this population had higher retention rates compared to other races. Tinto’s (1987, 1993) Student Integration Model has proven to be the most helpful in understanding persistence related to part-time nontraditional students. The next section will discuss the results for the attainment of a bachelor’s degree for transfer students.

**Attaining a Bachelor’s Degree**

The probability of earning a bachelor’s degree among transfer students to a 4-year institution is a function of demographic, pre-transfer attributes, and expected college involvement and experience. Among the transfer students who entered PRU in fall 2008, 68.8% graduated within a 6-year period, while 31.2% did not graduate within the same time-period and
left PRU. Of the variables included in this study, the following emerged as statistically significant predictors for transfer student’s likelihood of graduating from PRU, those variables included: EFC – eligibility for the Pell grant based on income level, cumulative transfer GPA, cumulative transfer credit hours, first-term GPA at the 4-year institution, and expectations of working while enrolled.

The positive effect of financial assistance on graduation among transfer students is not surprising, since a large number of previous studies have confirmed the positive impact of receiving financial aid, specifically grants and scholarships on persistence and graduation among the general student population (Pascarella & Terenzini 1991, 2005). Within this study, those students at PRU with a higher income or higher expected family contribution graduated at a higher rate than those with a lower income or lower expected family contribution. Therefore, those Pell eligible students graduated at a lower rate than those students who were not eligible for Pell. The results support studies that place low-income students at a disadvantage to those higher income students when it comes to persistence to graduation (Titus, 2006). Thayer (2000) described the obstacles for low income students included the lack of financial resources; lack of knowledge of the campus environment, its academic expectations, and bureaucratic operations; lack of adequate academic preparation; and lack of family support. Tinto (1993) felt that strategies to support the low-income student population requires a multi-faceted approach, focus should be on both the social and academic adjustment issues that will support a positive social community. Incorporation of support programs that build a sense of community, such as learning communities and summer bridge programs for transfer students would assist with getting them acclimated to campus.
Wang (2009) found that the community college grade point average is the single best predictor of bachelor’s degree completion. The transfer GPA turned out to be a strong and significant predictor, which is not surprising given the ample amount of previous empirical evidence suggesting the positive effect of grades in predicting baccalaureate attainment (Pascarella & Terenzini 1991, 2005). The findings in this study showed that transfer students who enrolled at PRU with a higher cumulative GPA graduated at a higher rate than those who transferred with a lower cumulative transfer GPA. Transfer GPA was found to be the most prevalent factor for transfer students when it came to success and adjustment at the new institution (Luo et al. 2007, Mullen and Eimers, 2001 and Pennington, 2006).

Another critical factor for transfer students is the number of cumulative credit hours accepted at the receiving institution (Koker & Hendel, 2003). Doyle (2006) provides an example of the impact that the policies of 4-year colleges can have on community college transfers. He found that 82% earned a bachelor’s degree in the period observed when a 4-year receiving institution accepted all of a community college student’s credits, and 42% earned that degree when the institution accepted only some of their credits (Mullin, 2012). Mullin (2012) tried to replicate Doyle’s research and found a slightly different analysis did show a comparatively higher completion rate when some credits were accepted (47.8%) and a comparatively lower 6-year completion rate when all credits were accepted (60.7%). The average number of credit hours students had accepted at PRU was 62, where 14.2% had between 24-29 credit hours accepted, 33.5% had between 30-59 credit hours accepted, 37.9% had between 60-89 credit hours accepted and 14.4% had 90 or more credit hours accepted. The findings in this study showed that a larger percentage of students graduated within a six-year period who entered the PRU with 60 or more credit hours, than those students who entered with less than 60 credit
hours. Literature on transfer students’ success supports the theory that academic integration and the number of credit hours completed prior to transferring has a positive effect on baccalaureate degree completion (Piland, 1995).

The first-year average GPA has been examined extensively for freshman as a predictor for success, Adelman (2006) found the average GPA and earned credit hours by the end of a students’ second year is higher for students who persisted through graduation. Desjardins et al. (2003), found the higher a student’s GPA in year one, the lower the odds of dropping out and for every full-grade increase in GPA, a student’s odds of graduating in a timely fashion more than doubles. Reason (2003); found the first-year college GPA a measure of initial academic success found to be a statistically significant predictor of retention and graduation. As mentioned previously, Ishitani (2008) stated, other studies illustrated the educational success of transfer students by using other metrics, such as retention and graduation rates, but none have examined how GPA’s at a four-year institution are associated with persistence and graduation behavior among transfer students in a longitudinal framework. The findings in this study showed those whose first-term GPA was at least a 2.5 or higher at PRU were likely to graduate at a higher rate than those whose first-term GPA was below 2.5. Although, the research does not show this as a guiding factor for transfer students as they do for freshman, this particular study shows the higher the first term GPA the more likely they will graduate.

Research on the impact of employment on college degree completion indicates the more hours a student works, the more likely they are to shift from full-time to part-time enrollment and the less likely they are going to complete a bachelor’s degree (Pascerella & Terenzini, 2005). Perna, et al., (2007) found that working more than 15 hours a week and working off campus decreases the likelihood of completing a degree. This study differed from the research on this
factor, as it examined transfer students expectations of working, not their actual work hours while enrolled. Based on their expectations of working, more than 83% of the incoming transfer students expected to work at least 1 or more hours per week while enrolled at PRU, while 17% had no expectations of working while enrolled. The findings in this study showed that those students who had expectations of working while attending school had a lower rate of attaining a bachelor’s degree compared to those students who had no expectation to work while enrolled at PRU.

Other factors that were not statistically significant in this study, but deserve a brief introduction based on research findings include factors related to gender, aspirations of earning a degree and college involvement. Although lacking empirically based explanations for this particular pattern revealed by the study, abundant prior literature has demonstrated the influence of demographic characteristics such as gender on the successful completion of higher education degrees (i.e., Adelman 1999; Roksa 2006). Female transfer students are more likely to graduate than male students, although the particular transfer students in this cohort at PRU, gender was not a significant indicator based on the majority of transfer students entering PRU tended to be males. The PRU examined in this study had a higher percentage of males (55%) enrolled than females (45%), which may have been a factor of why gender was not statistically significant.

Transfer students with aspirations of earning a bachelor’s degree have a better chance of earning that degree, than transfer students with no aspirations of earning a degree. This effect is perhaps best understood in the light of expectancy-value theory. This theory holds that individuals are goal-oriented and the value that an individual places on a given task and his or her perceived probability of success determine the amount of effort that the person will exert in attempting to complete the task successfully (Wigfield 1994). The results from this study did not
have degree aspirations as statistically significant, but other studies reiterate the importance of
goals and expectations. Those students who expected to earn a bachelor’s degree may be more
motivated and put forth more effort to make progress toward attainment of their ultimate
educational aspiration, a bachelor’s degree or higher.

College involvement has a significant positive involvement on transfer students’
baccalaureate attainment at the 4-year institution. This result lends additional support to the
findings from previous research conducted on other student populations and adds to the
empirical evidence demonstrating that college involvement exerts significant and positive
influence on academic success (Pascarella & Terenzini 2005). Whether community college
transfer students are involved or not might be a marker of the degree of commitment they exhibit
to their overall educational experience and the amount of the effort they put in to enhance the
outcome of this experience. The next section will discuss the results for transfer students who
left PRU before receiving a bachelor’s degree.

Transfer Students Leaving the 4-year Institution

One of the most interesting findings of this investigation is that 80% of leavers attended
another institution. Yorke (1999) used the term non-completer to describe students who
disappeared from the student record system before successfully completing a program of study.
Those transfer students who enrolled at PRU and left the institution without a degree consisted of
455 students or 31% of the incoming transfer student cohort. Of those students who left PRU,
80% of those students attended another institution. The term used for students moving between
institutions is known as swirl, which was coined by Alfredo de los Santos and Irene Wright in
1990, along with the term "double-dipping" (concurrent enrollment at two institutions), to
characterize the back-and-forth, multi-institutional attendance pattern common among students
attending community college (Borden, 2004). The swirl reflects the movement of many students between institutions, Townsend (1999) discussed the term reverse transfer, where students are leaving the 4-year institution and enroll in a 2-year community college. As Hills (1965) found, community college transfer students often suffer “transfer shock” at senior institutions and they often drop out. Based on Johnson and Muse (2012), swirl and double dipping are important factors in student departure, as often these students are underprepared for college level work, first-generation college students or students who have obligations of work and family in addition to school.

The majority of students who left PRU went to a 2-year institution. The other 20% who left PRU could not be tracked, assuming they did not enroll in another institution during the time-period of this study. The next section will discuss policy implications for transfer students.

**Policy and Practice Implications of the Study**

Based on the findings from this study, there are implications for changes to policy and practice at 2-year and 4-year institutions. Demographic and academic background information should be examined more closely for transfer students. Policies and practices should be grounded in data and research. Using data to better understand the characteristics of the transfer student as well as their enrollment patterns and academic outcomes are important to improve transfer student success. Marling (2013) referenced that understanding the portrait of the transfer student is an essential component to connect students and their families to institutional services, communicate effectively with partner institutions, and engage constituents at the local, regional and national levels. The literature speaks to some of these data including Mourad and Hong (2011) who noted the most significant factors that influenced transfer students’ attainment of the
bachelor’s degree included the number of semesters enrolled, cumulative credits earned and
GPA at the community college, ethnicity, and academic preparedness.

Policy and practices related to financial literacy is important, as many low-income
students have very little knowledge of how they will pay for college, therefore may assume they
cannot afford to go. Literature shows that many community college students do not apply for
financial aid at all. According to the College Board report, *The Financial Aid Challenge*, in
2007-08, 58% of Pell-eligible students who attended community colleges either full time or part
time applied for federal financial aid, compared with 77% of Pell-eligible students at 4-year
public institutions (College Board, 2011). Since students from community colleges are
considered the future students who will transfer to 4-year institutions, it’s important to take note
and educate them before and after they arrive on campus. Some of the innovative policies and
practices that were suggested from a qualitative study completed by the College Board (2011)
included:

(1) Package transfers who are under the age of 24 as a dependent, where more favorable
aid awards are available, such as funding transfer student scholarships; which are rare
at many 4-year institutions, but administrators are seeing the value of these funds to
help draw students to their campus.

(2) Make work-study work for transfer students, as it would allow students to take a job
on campus, which would also tie them to campus activities.

(3) Help students understand their financial aid future. This is the point where financial
aid literacy is an important factor (21).

Higher education institutions should conduct more research on their policies and
practices related to pre and post academic outcomes. This is important to ensure admitted and
enrolled students have the academic capability to succeed. Examples include, examining data related to the prior institution cumulative GPA, credit hours accepted and first and second semester grade point average at the 4-year institution. The establishment of a transfer student center at the 4-year institution would be critical in assisting with the transition to the new institution to connect students to the appropriate support services and programs. Institutions must also make sure they have academic support programs in place for transfer students to take advantage of, such as tutoring, mentoring, academic advising and workshops (career services, study skills, time management, etc.).

Finally, collaboration is a significant component to support the development of relationships, which then lead to fruitful partnerships all in the vein of ensuring transfer student success. Research from Zamani (2001) and Rhine et al. (2000) reported that joint meetings by community college and 4-year institution stakeholders is an important factor as it relates to transfer rates as well as success in bachelor’s degree completion. Admission offices at 4-year institutions are crucial for this collaborative effort, if they don’t partner with institutions, the issue of fit for transfer students could be a concern. Handel (2007) concludes that 4-year institutions must commit to the following:

- Develop a strategic enrollment plan that commits to serve transfer students by establishing transfer targets, making sure the transfer guidelines are clear for students to understand and admitting community college transfers before admitting transfers from a 4-year institution.
- Develop close relationships with feeder colleges by setting up regular meetings with faculty and counselors.
- Increase communication between college counselors by inviting them to campus to
receive information and to take a tour of the campus to ensure they could relay better information to students,

- Monitor and assess the transfer student experience in a way similar to the first-year student experience,
- Require transfer orientation, establish a transfer center for students, and
- Reserve housing for transfer students.

The next section will discuss recommendations for future research for transfer students.

**Recommendations for Future Research**

Based on the findings of this study, it is important to continue to examine the transfer student population as they enroll in 4-year institutions, as this student population will continue to increase and impact the 4-year institution in a positive manner. The following future research should occur for transfer students: (1) Quantitative assessment of transfer student academic integration, (2) Qualitative assessment of their prior experience at their former institution, along with their current experience at the 4-year institution, (3) Admission policies and practices; (4) Building support in terms of programming, policies and practices at 4-year institutions.

Quantitative assessment of transfer student performance is key to their success as it relates to persistence and graduation. Examination of data such as transfer GPA, transfer credit hours and GPA at the 4-year institution are key factors that determine their success. Academic performance during college years has proven to be the single strongest predictor for degree attainment (Pascarella & Terenzini 1991, 2005). According to Adelman (2006), the average GPA and earned credit hours by the end of a students’ second year is higher for students who persisted through graduation. It is important for 4-year colleges with significant transfer enrollment to develop an assessment program that measures student performance and the factors
that affect performance once they are enrolled at their institution (Marling, 2013). There is a great deal of literature on transfer students’ success that supports the theory that academic integration and the number of credit hours completed prior to transferring has a positive effect on baccalaureate degree completion (Piland, 1995). Koker and Hendel (2003) also found the more hours a transfer student completes prior to transferring, the more likely the student will graduate. As noted in this study when examining persistence and graduation, the cumulative transfer GPA and first term GPA at the 4-year institution was critical to their success of persisting through graduation. Reason (2003) found the first-year college GPA, a measure of initial academic success to be a statistically significant predictor of retention, as early academic performance during postsecondary education plays a significant role in explaining final degree completion. Academic performance in this model is represented by student grade point average (GPA) and the first postsecondary institutions students attended (Wang 2009).

In addition, qualitative data should be collected and analyzed related to transfer student expectations as they enter the 4-year institution. PRU utilized a new transfer student survey to understand the students’ involvement at their prior institution and expectations of PRU, but there was no follow up survey at PRU once they were enrolled during the semester or anytime thereafter. There should also be a survey given to those transfer students who left PRU without a degree, inquiring why they left and their plans once they leave. As Marling (2013), stated proper qualitative assessment of transfer student needs should be based on their prior history at their former institution, their expectations at their new institutions and what actually occurred during their first and second semester. Examining these factors could help the receiving institution, such as PRU focus its programs and services to address transfer student needs.
Examining and enhancing policies and practices related to transfer student admission. The implication for admission policies would include collecting and examining data related to the cumulative grade point average threshold for admittance to the 4-year institution and transfer student success. For example, a 4-year institution could set the minimum cumulative transfer GPA at 2.5 based on the data examined. Admission offices at 4-year institutions should collaborate with their major feeder institutions to discuss articulation agreements. Wellman (2002) stated the development of clear articulation agreements with key 2-year feeder schools and communication of those agreements with prospective transfers via the web and other vehicles before they even apply are very important. He also stated the importance of advisors/counselors and faculty from both institutions collaborate regarding these agreements and have meaningful discussions regarding the relationship of their courses (Wellman, 2002).

Finally, the 4-year institutions must provide support programs and services that will assist transfer students as they transition and progress through the 4-year institution. Some of those services and programs should include mentoring (peer and faculty), tutorial services and intrusive advising as a few examples of important services for transfer students. Handel (2007) recommended that 4-year institutions commit to develop transparent transfer credit policies, provide scholarships for transfer students, monitor and assess the transfer student experience - similar to the first-year student experience, require transfer orientation, establish mentor programs, tutorial services, advising, establish a transfer center for students, and reserve housing for transfer students. The next section will discuss limitations of the study.

**Limitations of the Study**

This study was conducted at a single institution (PRU), which limits the generalizability of the findings to other groups of transfer students or to other institutions. On the other hand,
having this study examine a single institution (PRU) eliminates variables based on group or institutional differences. Another limitation was the last institution attended by the transfer student before transferring to PRU was used; no examination was done to see if the students attended other institutions. In examining PRU, its’ profile of students differ from other institutions, as the institution tends to admit and enroll more males than females, which may be based on the heavy stem-based majors that is offered. Another difference is PRU may have a higher percentage of international students. These factors make a difference when comparing like institutions.

In using the new transfer student survey, like any research based on a sample, it is subject to sampling errors due to non-response. In examining the National Student Clearinghouse, the information gathered was based on students who left PRU before completing a degree and transferring to another institution. The analysis of why they left was not completed, therefore we cannot assume those who left could not handle the work or disliked PRU. Finally, this study utilized data for the entering transfer cohort of PRU in the fall 2008, which does not account for recent trends and patterns surrounding the data in this study. The next section presents the conclusion of the study.

Conclusion

The purpose of this study was to evaluate transfer student success by examining their persistence from first to second year and the attainment of their degree at PRU. It is very important to understand transfer student persistence, graduation and overall experience given the significant number of students who enter 2-year institutions with the intention of transferring to a 4-year institution. As society is changing, a growing number of underrepresented minority and older adults are entering higher education through the community college. Four-year institutions
have to be prepared for that demand and student influx. This change may allow community colleges to expand in number and size, where the possibility of more students transferring to 4-year colleges is without question. Transfer students are important to the mission of 4-year institutions, as they are critical in head count and those institutions making their funding numbers. Transfers also help 4-year institutions with diversifying their student population. As this study analyzed the background related to demographics and behaviors of transfer students, it shed light on what should be done at the 4-year institution to better serve this population. Those efforts include improved student services related to academics and overall experience, examination and enhancement of existing policies and procedures at the institution that would increase overall persistence and graduation. Further, the information from this study could be used to address the needs of transfer students and ultimately to facilitate the admissions and transfer process at 4-year institutions. The findings of this study should be of interest to policymakers at the local, state and national levels and should set the standards for persistence and graduation of transfer students at the 4-year institution. Lastly, this study made a unique contribution to the literature by examining what happened to those transfer students who left PRU without a degree.
Appendix A

New Transfer Student Survey (PRU, 2008)

New Transfer Survey

Public Research University
Institutional Research Program

Please complete the information below and click the "next" button to begin the questionnaire.

Please enter your 8-digit PRU person number: 

If you do not know your person number, please enter the following information:

- Full Name:
- Birth Date (MM/DD/YYYY):

Academic Information

For questions 1 through 6, please refer to the institution from which you are transferring. If you have attended more than one institution prior to enrolling at PRU, please refer to the one you attended for the longest period of time.

1. While at this institution: (Select all that apply)
   - None
   - Associate
   - Bachelor

   What degree were you working toward? 
   - 
   - 
   - 

   What degree did you earn? 
   - 
   - 
   - 

2. Please choose the situation that best characterizes your living situation during your last term at this institution: (Select one)
   - On campus (college residence hall or apartment)
   - Off campus with parents or other relatives
   - Off campus, not with parents or other relatives

3. How would you characterize your enrollment during a typical term at this institution? (Select one)
   - Full-time
   - Part-time

4. During a typical term at this institution, in how many courses were you usually enrolled?
   - 1
   - 2-3
   - 4-5
   - More than 5

110
5. While enrolled at this previous institution, about how many hours did you spend during a typical 7-day week doing the following? (Select one for each item.)

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<th>Activity</th>
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<th>1-5</th>
<th>6-10</th>
<th>11-20</th>
<th>21-30</th>
<th>More than 30</th>
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<tbody>
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<td>Preparing for class (studying, doing homework, reading texts on my own)</td>
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<td>Studying or doing homework with other students</td>
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<td>Attending class (include on-line instruction)</td>
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<td>Talking face-to-face with instructors outside of class</td>
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<tr>
<td>Communicating with instructors outside of class using email and/or other methods during breaks</td>
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<tr>
<td>Working for pay on campus</td>
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<tr>
<td>Working for pay off campus</td>
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<tr>
<td>Participating in extracurricular activities or student organizations</td>
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<tr>
<td>Socializing</td>
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<tr>
<td>Engaging in physical fitness/exercise</td>
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</tbody>
</table>

6. For the items below, please indicate how frequently you experienced or engaged in each one during your enrollment at your previous institution. (Select one for each item.)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequently</th>
<th>Occasionally</th>
<th>Not at all</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wasted time in class</td>
<td></td>
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<tr>
<td>Tolerated another student</td>
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<tr>
<td>Socialized with someone from another racial/ethnic group</td>
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<tr>
<td>Wasted time in a faculty member's home</td>
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<tr>
<td>Felt overwhelmed by all that I had to do</td>
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<tr>
<td>Felt depressed</td>
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<tr>
<td>Discussed politics</td>
<td></td>
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<tr>
<td>Came late to class</td>
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<tr>
<td>Performed community service or volunteered</td>
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<tr>
<td>Discussed religion/spirituality</td>
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<tr>
<td>Provided care for dependents (spouse, children, others) living with me</td>
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<tr>
<td>Skipped class</td>
<td></td>
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<tr>
<td>Communicated via text messaging</td>
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<tr>
<td>Communicated via e-mail</td>
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<tr>
<td>Communicated via instant messaging (IM)</td>
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<tr>
<td>Voted in student elections</td>
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<tr>
<td>Socialized with someone from another country</td>
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</tbody>
</table>
7. At this point in your postsecondary education, how much loan debt (for which you are personally responsible) have you accumulated as a result of attending college?
   □ None
   □ Less than $3,000
   □ $3,000-5,999
   □ $6,000-9,999
   □ $10,000-14,999
   □ $15,000 or more

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8. Please indicate, according to the ruler above, your progress toward your bachelor’s degree: (Enter a number from 0-10.)

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9. In preparing to transfer to PRU, did you use PRU’s transfer course articulation web site, www.taurus.buffalo.edu, to find course equivalencies for PRU?
   □ Yes
   □ No

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Your Enrollment at PRU

10. Was PRU your: (Select one.)
   □ First or only choice?
   □ Second choice?
   □ Third choice?
   □ Less than third choice?

---

11. What was your primary reason for choosing to attend PRU? (Select one.)
   □ Wanted to enter PRU as a freshman but did not due to financial, academic, or family reasons
   □ Availability of majors/academic opportunities.
   □ Social, cultural, athletic, or other campus community opportunities.
   □ Cost of attendance, financial aid, or other financial concerns.
   □ Preparation for postgraduate work or graduate/professional education.
   □ Location/distance from home.
   □ Know others (family members or friends) who currently attend PRU or attended in the past.
   □ PRU’s quality and/or reputation.
   □ PRU’s size.
   □ Other reason.

   Please specify other reason:

---
12. What is the highest academic degree you intend to obtain:

<table>
<thead>
<tr>
<th></th>
<th>Bachelor's Degree</th>
<th>Master's Degree</th>
<th>Doctoral/Professional degree</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>At PRU?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>At any institution?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
</tr>
</tbody>
</table>

13. Please choose the situation that best characterizes your intended living situation when you begin at PRU: (Select one.)

- On campus (college residence hall or apartment)
- Off campus with parents or other relatives
- Off campus, not with parents or other relatives

14. How long will it take you to get to campus from your intended residence?

- Less than 15 minutes
- 15-30 minutes
- 31 minutes or an hour
- More than 1 hour
- Don't know

15. Are you concerned about your ability to fund the remainder of your college education? (Select one.)

- No, I am confident that I will have sufficient funds.
- A little, but I probably will have enough funds.
- Yes, I am not sure I will have enough funds to complete college.

16. During your first semester at PRU, how many hours per week do you intend to spend working for pay? (Select one for each item)

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</thead>
<tbody>
<tr>
<td>On campus?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Off campus?</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</tbody>
</table>

17. To which of the following expenses will you significantly contribute during your first semester? (Select all that apply.)

- My own living expenses (e.g., room, board)
- Tuition, fees, books.
- Living expenses for dependents living with me
- Spending money (e.g., entertainment, etc.)
- Transportation (e.g., car, gas, etc.)

18. During your enrollment at PRU, how likely is it that you will: (Select one for each item)

<table>
<thead>
<tr>
<th>Change major/field?</th>
<th>Not at all Likely</th>
<th>Somewhat Likely</th>
<th>Quite Likely</th>
<th>Very Likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participate in intercollegiate athletics?</td>
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<tr>
<td>Make at least a &quot;C&quot; average?</td>
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<tr>
<td>Be elected to an honor society?</td>
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<tr>
<td>Communicate regularly with professors?</td>
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<tr>
<td>Participate in a study abroad program?</td>
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<tr>
<td>Graduate with honors?</td>
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<tr>
<td>Participate in student protests or demonstrations?</td>
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<tr>
<td>Be elected to a student office?</td>
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<tr>
<td>Socialize with someone at an extracurricular group?</td>
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<tr>
<td>Participate in volunteer or community work?</td>
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<tr>
<td>Seek career counseling?</td>
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<tr>
<td>Participate in extracurricular activities other than intercollegiate athletics?</td>
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<tr>
<td>Socialize with someone from another country?</td>
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<tr>
<td>Be satisfied with college?</td>
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</tbody>
</table>
20. What was your total household income last year? Please provide your best estimate based on all sources of income before taxes. If you live with parents, guardians, step-parents, spouse, etc., please include their income in your total.
   - Less than $25,000
   - $25,000-49,999
   - $50,000-74,999
   - $75,000-99,999
   - $100,000-149,999
   - $150,000 or more

21. For the following list of attributes, please rate yourself as compared to your peers. (Select one for each item.)
   - Academic Ability
   - Computer Skills
   - Creativity
   - Drive to Achieve
   - Leadership Ability
   - Mathematical Ability
   - Persistence
   - Public Speaking Ability
   - Reading Ability
   - Social Self-Confidence
   - Study Skills
   - Time Management
   - Writing Ability

22. How important is each of the following to your future goals? (Select one for each item.)
   - Obtaining recognition for contributions to my special field
   - Influencing the political structure
   - Influencing social values
   - Raising a family
   - Having administrative responsibility for the work of others
   - Being very well off financially
   - Helping others who are in difficulty
   - Becoming successful in a business of my own
   - Developing a meaningful philosophy of life
   - Performing community service
   - Keeping up to date with political affairs
   - Becoming a community leader
   - Improving my understanding of other countries and cultures
   - Learning to communicate effectively in a second language
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