PREDICTING ENROLLMENT YIELD AT A FAITH-BASED INSTITUTION: A CORRELATIONAL STUDY

by

Timothy Edward Rees

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

Lifetime earnings of Americans increase when they hold the credential of a bachelor's degree. Understanding what factors likely lead to successful candidacy for said degree has been the subject of study in higher education for more than three quarters of a century. With the advent of affirmative action in the late 1960s, issues of access to higher education were somewhat mitigated and the field began to focus on issues of persistence to graduation. From Tinto's (1975) interactionalist theory of student departure through the present day, a plethora of studies have explored and uncovered many factors that are relevant to persistence. These factors include, but are not limited to: academic preparedness, ethnicity, socio-economic status, and cultural fit. Despite over four decades of study not much progress has been made in improving retention issues. Curiously, many of those same learnings have not been studied concerning enrollment yield to determine if root causes of attrition can be addressed earlier in the process. Additionally, the perspective of a faith-based institution has not been sufficiently addressed in relation to said factors of persistence. The researcher attempted to extract best predictors of enrollment yield by conducting a correlational logistic regression study of several recent cohorts at a faith-based university in south central Virginia.

Keywords: enrollment yield, faith-based institution, student attributes

Dedication

This work is dedicated to the two people most responsible for its completion. First and foremost, God receives the highest honor and praise for giving me the wisdom and strength to complete this project as He is the ultimate source of all true knowledge and wisdom. Reliance on Him for discernment throughout this process was crucial and essential to cut through the various streams of thought that are necessary parts of a process such as this, but in the end, need to be stripped away to reveal the underlying truth of the situation and draw correct conclusions.

Secondly, this page would be remiss without acknowledgement of my loving and caring wife as she has been a constant encourager all along the way. On days when dismay with the pace of progress and the length of the process would overtake all thoughts of completion, she was constant in her admonishment to continue and complete the process. That is her way and a hallmark of her assistance throughout the entire educational journey that has led to completion of this pinnacle achievement. While the work is not hers, it could not have been completed without her constant abiding love and encouragement.

Acknowledgment

Completion of this dissertation would be incomplete without acknowledging the influence of Terry Elam, PhD for his contribution to guiding the selection of the eventual topic of this project. Heavy influence was derived from his dissertation process and eventually led to finding the gap in the literature that is represented in these pages. Additionally, his example as a leader helped fuel the desire to participate in the dissertation process.

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List of Abbreviations

American Association of Collegiate Registrars and Admissions Officers (AACRAO)

American College Test (ACT)

Centers for Disease Control (CDC)

Expected Family Contribution (EFC)

Free Application for Federal Student Aid (FAFSA)

Grit Scale (GRIT-s)

High school grade point average (HS GPA)

Historically Black Colleges and Universities (HBCU)

Institutional Review Board (IRB)

National Center for Education Statistics (NCES)

Predominantly White Institution (PWI)

Root Cause Analysis (RCA)

Scholastic Aptitude Test (SAT)

Socioeconomic Status (SES)

Strategic Enrollment Management (SEM)

United States Census Bureau (USCB)

CHAPTER ONE: INTRODUCTION

Overview

This chapter provides high-level insight regarding the historical, social, and theoretical context of this study. Identification of inferred gap in the literature is revealed along with the research question that is the topic of the dissertation. Additionally, definitions of significance to the study are introduced.

Background

Americans who earn a bachelor's degree have average lifetime incomes almost double those who only hold a high school diploma (Julian, 2012). Therefore, from an economic perspective, it is important that earning a college degree become a priority for learners who intend to enter post-secondary studies. Students are enrolling in college in larger numbers each year (National Center for Education Statistics [NCES], 2015). While this trend is encouraging, almost 30% of those entering for the first time will not retain until their second year (Demski, 2011). Various factors seemingly contribute to this dilemma including ethnicity (Tierney, 1999), academic preparedness (Reid & Moore, 2008), socio-economic status (Cabrera et al., 2006), and cultural fit of the student for the institution (Tinto, 1975, 1987, 1993). The amalgamation of these factors contributes to an overall sense of preparedness which is key to achievement as pointed out by Duniway (2012) when he stated, "From the standpoint of our educational mission, we can only be successful if we have a population of students reasonably well prepared to succeed in the courses and academic programs we offer" (p. 25).

Understanding what factors likely lead to successful candidacy for said degree has been the subject of study in higher education for more than three quarters of a century (Astin & Lee, 1972; Cornell, 1947; Johnston, 1958). However, earlier studies did not account for issues of

access for underrepresented minorities. Additionally, very little recent study has been conducted regarding enrollment yield and what factors best indicate that a student will matriculate. With the advent of affirmative action in the late 1960s, issues of access to higher education were somewhat mitigated and the field began to focus on issues of persistence to graduation. From Tinto's (1975) interactionalist theory of student departure through the present day, a plethora of studies have explored and uncovered many factors that are relevant to persistence. These factors include, but are not limited to: academic preparedness, ethnicity, socio-economic status, resilience or grit, and cultural fit. However, many of those same learnings have not been studied in the context of enrollment yield to determine if root causes of attrition can be addressed earlier in the process.

Over the course of the past three quarters of a century, enrollment in higher education institutions has shifted significantly in both sheer number of students and in focus of research on the surrounding phenomena. Prior to the end of the Second World War, colleges in the United States were populated mostly with only the affluent or the well-connected. Significant changes in society rapidly changed the college landscape as the GI Bill provided funding for the millions returning from the war to pursue higher education as thanks for their service to the country (Kinzie et al., 2004). Additionally, the nation was awakening to a cultural evil that necessitated removal, that of segregation. Slowly building throughout the early part of the twentieth century through the work and acts of men such as Booker T. Washington, W. E. B. DuBois, and Jackie Robinson, the civil rights movement fully blossomed during the 1950s and 1960s with court decisions such as *Brown v. Board of Education, 1954* (Alridge, 2006). Actions of justice minded Americans and court rulings helped open the doors of higher education institutions more widely

then they had ever been extended in the past. With institutions transforming into multi-cultural environments, great growth in enrollment ensued (Kinzie et al., 2004).

However, with the overabundance of applicants and enrollment headcount came a new issue that had not been studied to any great degree in the past. Departure from higher education prior to graduation began to become an issue that was not merely dismissed as being the sole fault of the individual student. Research turned from enrollment yield toward retaining those that did register. Tinto (1975, 1987, 1993) proposed the seminal theory regarding why students depart college. Tinto, one of the most widely cited theorists on this topic, placed focus on cultural integration or fit as a key to which students retain and persist to graduation. Basically, those that adapt to the environment, or assimilate, tend to graduate. Tinto stated that students left school if it was not a good fit for them, however, he was focused more on the institutional perspective of how the student fit into the campus culture and has been criticized for not viewing the issue through the lens of the student (Hurtado & Carter, 1997; Tierney, 1992, 1999).

Since Tinto (1975), there have been numerous studies conducted to ascertain what factors best predict or contribute to retention of students across numerous strata (Cabrera et al., 2006; Duckworth & Seligman, 2005; Harper, 2012; Hurtado & Carter, 1997; Reid & Moore, 2008; Tierney, 1992, 1999). Additionally, D'Lima, Winsler, and Kitsantas (2014) advocated for this type of study when they stated, "It is, therefore, essential for researchers to examine the early motivational profiles of ethnically diverse, first-year college students as such profiles may be related to student performance, retention, and eventual completion of college" (p. 341). Despite the acknowledged need for continued study in this area, other studies regarding enrollment yield have proven inconclusive (Hayes, Price, & York, 2013). In addition, one limited area of study regarding both retention and enrollment yield is the matter of faith (Bowman & Denson, 2014).

While ethnicity and socioeconomic status have been exhaustively studied, matters of faith still seem to conjure up little support for review (Bowman & Small, 2010, 2012; Glanzer, Carpenter, & Lantinga, 2011).

Enrollment in college used to be the domain of the rich and connected. That has shifted over the past half century, but new issues have cropped up regarding completion of studies and earning a degree. Factors that influence students and whether they will complete the degree program they started have been studied extensively over the past forty years. Cultural fitness factors have been identified as a key indicator of whether a student will persist to graduation or stop out. These factors, along with absence of study related to faith-based institutions, have not been brought forward to the study of enrollment yield.

Problem Statement

While numerous studies regarding enrollment yield have been conducted in the past, since the mid-1970's the focus in higher education research on this topic has shifted to the issue of persistence after enrollment. From Tinto (1975, 1987, 1993) to Harper and Kuykendall (2012), the research has focused on either how the student should adapt to the institutional culture or how the institution should take into consideration the students' native culture. Cultural fit has been viewed as a one-sided coin, rather than being an issue to address from both student and institution perspectives. Instead of focusing on the common ground between student and institution, the literature leaves a large gap in this regard (Bowman & Denson, 2014). One way to view the common ground between student and institution is through the perspective of faith. When the spiritual culture of the student aligns with that of the institution, there should be more agreement and alignment from a cultural perspective.

The literature has only just begun to address the issue of retention from the perspective of cultural fit in relation to spiritual aspects of community (Bowman & Small, 2012; Kim & Hargrove, 2013). Proactive measures, such as identifying students who are potentially at-risk for departure due to cultural fitness factors during the admission process, do not appear to exist even though researchers say this is important (D'Lima et al., 2014). Naturally, the earliest point in the matriculation process where factors surrounding persistence begin to become known is the admission process. Perhaps the very same factors that are well-known and documented to be related to issues of student departure from college are also factors in not enrolling in the first place. Based on findings about retention, focus should be shifted to cultural fitness factors, such as spiritual fit, in the recruiting and admission process (Morris, Smith, & Cejda, 2003). The problem is predictors of enrollment yield at a faith-based institution, based on student attributes that represent cultural fitness factors, are limited or non-existent (Bowman & Small, 2010, 2012; Bowman & Toms Smedley, 2013; Glanzer et al., 2011).

Purpose Statement

The purpose of this quantitative, correlational study is to evaluate predictors of enrollment yield at a faith-based institution. The criterion variable is enrollment yield which is defined by Antons and Maltz (2006) as the percentage of admitted students who persist from admittance to matriculation at an institution. The predictor variables are student attributes relating to cultural fit, academic preparedness, ethnicity, and socio-economic status. Cultural fit, as defined by Bowman and Denson (2014), includes not only how the student fits into institutional culture from the perspective of social and academic parameters but also on a spiritual plane. The variables chosen to represent cultural fit for this study are religious affiliation and geographic origin. Academic preparedness is viewed as the ability to successfully

complete college level work as described by performance in the classroom and on standardized tests (Gardner, 1983). The variables that are used in this study to represent academic preparedness are the high school grade point average (HS GPA) and the Scholastic Aptitude Test (SAT) score. Ethnicity is federally defined as a person's origin and specifically excludes race as a consideration (Centers for Disease Control and Prevention [CDC], 2015). The variable selected to represent ethnicity for this study is the self-reported ethnic group information taken from the application for admission. Socioeconomic status (SES) is generally defined by measures of aggregate income, education level and occupation of the head of household (White, 1982). The variable selected to represent SES for this study is the expected family contribution (EFC) that is generated from the Free Application for Federal Student Aid (FAFSA). The population to be studied are domestic applicants to the resident campus of a large, faith-based institution in south central Virginia.

Significance of the Study

This study proposes to research enrollment yield at a faith-based institution through the lens of cultural fitness factors. The gap in the literature on this topic is verified by Bowman and Denson (2014), Bowman and Small (2012), and Kim and Hargrove (2013), among others. Enrollment yield was chosen for the study rather than retention rate because only those that enroll can eventually be retained. Additionally, over four decades of study regarding retention have not resulted in measurable improvement (Tinto, 2006). Focus on faith-based institutions is necessary as research remains limited regarding holistic student success at such schools (Derrico, Tharp, & Schreiner, 2015). Therefore, it is postulated that utilizing what is known about these factors from studying retention can be brought forward to the study of enrollment yield and perhaps provide a more intricate lens with which to view admit decisions and a holistic outlook

on enrollment. In other words, understanding the matriculation behavior of applicants who are admitted may result in higher yield rates among groups of students who will tend to persist to graduation. Since understanding and evaluating factors contributing to departure from college will foster improved completion rates (D'Lima et al., 2014), utilizing these same factors to determine enrollment yield may lead to improved ability to select students who will persist to graduation. Results of this study also hold the potential to bring sharper focus to issues that impact the Christian higher education community as advocated by Bowman and Denson (2014).

Overarching significance to humanity can be found in the potential socio-economic impact of improving retention rates for students of color (Julian, 2012). If there are more college graduates, this should deliver improved economic standing for the entire community. Chen and DesJardins (2010) stated, "In the United States it is well established that investment in higher education is beneficial to individuals and society and that it promotes economic development" (p. 179). Additionally, Tinto (2006) noted that those in higher income groups graduate at higher rates, regardless of institution they attend. Tinto (2006) further explained that an important fact regarding socio-economic status is that it yields a strong correlation to graduation. Thus, it stands to reason that improving the income status of students in the present will assist in leveling the playing field in the future which should yield a corresponding rise in graduation rates.

Research Question

RQ1: How accurately can enrollment yield of students at a faith-based institution be predicted from a linear combination of student attributes (High School Grade Point Average, Scholastic Aptitude Test score, Ethnicity, Expected Family Contribution, Geographic origin, and Religious affiliation)?

Definitions

1. *Enrollment yield* – Percentage of admitted students who persist from admittance to matriculation at an institution (Antons & Maltz, 2006).
2. *Ethnicity* - Federally defined as a person's origin and specifically excludes race as a consideration (CDC, 2015).
3. *Expected Family Contribution (EFC)* - Federally defined as a measure of a family's financial strength and ability to pay for college (Federal Student Aid, n.d.).
4. *Geographic origin* – Federally defined as one of four geographic regions: Northeast, Midwest, South, and West (United States Census Bureau, 2015).
5. *High School Grade Point Average (HS GPA)* - Federally defined as representing the average number of grade points earned for each high school course that grants credit toward graduation (NCES, 2011).
6. *Scholastic Aptitude Test (SAT) score* - A globally recognized college admission test that measures knowledge of reading, writing, and mathematics (College Board, 2015).
7. *Cultural fit* - Cultural fit, as defined by Bowman and Denson (2014), includes not only how the student fits into institutional culture from the perspective of social and academic parameters but also on a spiritual plane. The variables chosen to represent cultural fit for this study were religious affiliation and geographic origin.
8. *Socioeconomic Status (SES)* - Generally defined by measures of aggregate income, education level and occupation of the head of household (White, 1982).

CHAPTER TWO: LITERATURE REVIEW

Overview

This chapter provides in-depth insight regarding the historical, social, and theoretical context of this study. A synthesis of the literature is provided along with identification of various gaps. Definitions of significance to the study are discussed in much greater detail than in the previous chapter and information regarding limitations of this study to address certain gaps is revealed. Finally, the case is made for why this study is both timely and important for present day understanding in higher education.

Americans who earn a bachelor's degree have average lifetime incomes almost double those who only hold a high school diploma (Julian, 2012). Additionally, Moore, Bridgeland, and Dilulio (2010) as cited by Dyce, Albold, and Long (2013) stated, "By 2018, it is estimated that 62% of jobs in the U.S. will require a college education, and that over half of those jobs will require a four-year degree" (p. 152). From an economic perspective, it is imperative that learners who intend to enter post-secondary studies earn a college degree.

Barriers to initial entry, especially price sensitivity, seem as high as they have ever been yet students are enrolling in college in larger numbers each year (NCES, 2015). In fact, the rate of growth over the period 2002 to 2012 outpaced the period 1992 to 2002 by almost ten percentage points with much of the growth occurring in full-time enrollments. While this trend is encouraging, almost 30% of those entering for the first time will not retain until their second year (Demski, 2011). Various issues surrounding student's integration to the collegiate culture are theorized as being key to persistence to graduation. Themes seemingly contributing to this dilemma include ethnicity (Harper, 2012; Harper & Kuykendall, 2012; Kim & Hargrove, 2013; Perna, 2000; Tierney, 1999), academic preparedness (Cabrera & La Nasa, 2001; Gardner, 1983;

Reid & Moore, 2008; Scannell, 1960), SES (Cabrera et al., 2006; Chen & DesJardins, 2010; Curs & Singell, 2010; Rubin, 2011), resilience or grit (Duckworth & Quinn, 2009; Duckworth & Seligman, 2005; Rojas, Reser, Usher, & Toland, 2012; Strayhorn, 2013), and cultural fit of the student for the institution (Bowman & Small, 2010; Bowman & Toms Smedley, 2013; Glanzer et al., 2011; Tinto, 1975, 1987, 1993). These factors all contribute toward explaining why students do not retain from one semester to the next.

It is clear, from the evidence that change in our current trajectory needs to occur. Dyce et al. (2013) again cited Moore et al. (2010) as well as the Lumina Foundation (2009) by stating, "If the U.S. maintains its current college graduate production rate, the country will face a shortage of 16 to 23 million college-educated adults in the workforce by 2025" (p. 152). While retention from semester to semester and persistence to graduation lead to the desired result of earning a degree, these factors have been the subject of heavy research and study over the past four decades with little perceived improvement. Additionally, treating the problem from a reactive rather than proactive standpoint may hamper efforts to improve the situation.

Perhaps applying the understanding gained in the study of retention can inform in a more significant way at the beginning of the journey. Bowman and Denson (2014) provided strong evidence for pursuing this course of action when they cited Radford et al. (2010):

> Despite decades of research on factors that predict college student retention and persistence, graduation rates are still fairly modest within the United States. Among students who begin their undergraduate studies at a four-year institution, 64% receive any degree within 6 years (certificate, associate's, or bachelor's), and this figure is only 35% for students who start at two-year public institutions. (p. 123)

Poor retention, while well documented, has not been greatly impacted over the past forty years of study. Despite heavy effort in addressing the issue from the vantage point of those already enrolled in college, perhaps the greatest application of the knowledge gained by the study of retention can occur even earlier in the process.

Root cause analysis should lead researchers to review the enrollment process considering the same factors being studied in retention. Wilson, Dell, and Anderson (1993) defined root cause analysis (RCA) as a problem-solving method used to identify root causes of faults or problems. A root cause is not merely a causal factor as its removal from the problem-fault sequence prevents recurrence of the defect. If decisions about attendance and retention at an institution of higher education were viewed from the perspective of a business process then RCA might not only help identify root causes in departure but be able to help predict those students likely to retain. A frequently used tool in the RCA process is the Ishikawa diagram (better known as either a cause and effect or fishbone diagram). Developed in Japan by Dr. Kaoru Ishikawa, a quality control expert, the basic premise of the template (see Figure 1) is to begin with the problem to be addressed as the focus (or head of the "fish") while the skeleton (or "bones") unveil contributing factors along four planes (typically identified in a business setting as the 4 Ps: Policies, Procedures, People, and Plant) to keep the discussion focused around elements most likely to be acknowledged as the root cause of the issue at hand.

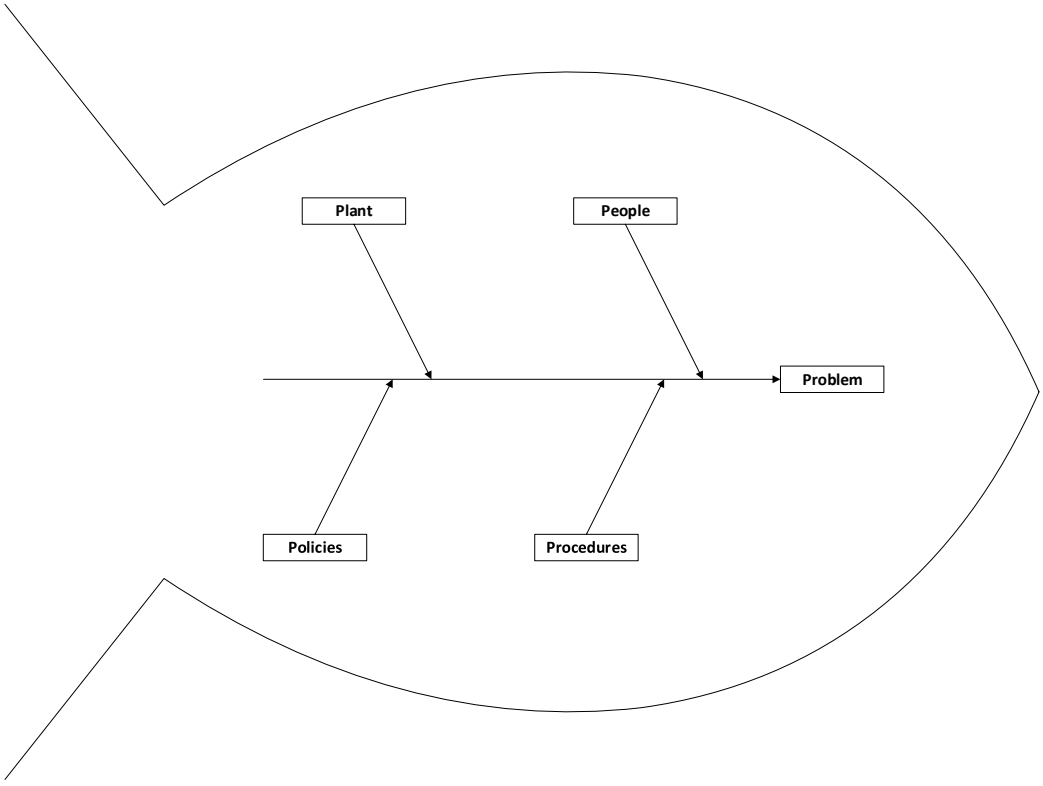

Figure 1. Sample cause and effect diagram.

As each branch of the contributing area is discussed, more detail surrounding the potential for any particular element to increase learning about the underlying cause of the problem is illuminated. This process involves asking "Why?" for each cause that is given so that the additional response invokes the question again until all logical answers are exhausted. Thus, with the root exposed, a solution can be crafted that will address the problem rather than any of the symptoms exposed during this questioning process. By continuing to ask why certain students perform poorly once they attend college, perhaps greater understanding can be gained which will propel the higher education system forward to making more informed and student-centric choices about college admission and thereby help both the student and institution to achieve maximum yield and productivity. While pursuit of post-secondary education is not simply a utilitarian equation, the focus of study must surround the actual completion of a degree program with the hope that improvement in graduation rates will have broad impact on society.

With this focus in mind it is entirely appropriate to study factors that lead to successful retention in higher education as continuation in a program of study is necessary to eventually graduate.

Extensive study has been conducted regarding matters of race and ethnicity (D'Lima et al., 2014; Flores & Park, 2013; Harper, 2012; Harper & Kuykendall, 2012; Hurtado & Carter, 1997; Kim & Hargrove, 2013; Perna, 2000; Posselt, Jaquette, Bielby, & Bastedo, 2012; Tierney, 1999; Tinto, 1987, 1993, 2006), academic preparedness (Baird & Richards, 1968; Cabrera & La Nasa, 2001; Cabrera et al., 2006; Gardner, 1983; Noble & Sawyer, 2002; Price & Kim, 1976; Reid & Moore, 2008; Rothstein, 2004; Scannell, 1960; Weitzman, 1982), resilience or grit (Duckworth & Quinn, 2009; Duckworth & Seligman, 2005; Rojas et al., 2012; Strayhorn, 2013), and SES (Cabrera et al., 2006; Chen & DesJardins, 2010; Curs & Singell, 2010; Rubin, 2011; White, 1982) and the contribution each of these issues makes toward whether a student will retain. Indeed, ongoing efforts regarding study of these matters continues to draw out more nuanced answers pertaining to how each of these contribute to departure from college. However, an understudied portion of the equation continues to exist surrounding cultural fit, specifically regarding issues of faith and study at faith-based institutions.

Previously, Bowman and Small (2012) cited Pascarella and Terenzini (2005) in establishing that comparatively slight research had been done regarding the aspect of cultural fit associated with faith as most study had examined this element as an outcome of college rather than an input to be studied for its weight in assisting students in completing college-level work (p. 492). A similar conclusion regarding the limited existence of study related to enrollment yield at faith-based institutions was noted by Bowman and Small (2010), Bowman and Toms Smedley (2013), as well as Glanzer et al. (2011). Further evidence of limited study of faith-based institutions is provided by Derrico et al. (2015) when they cited Barram et al. (2012),

Boivin et al. (1993), Collins and Paredes-Collins (2014), Ecklund (2013), Schreiner and Kim (2011), and Vander Schee (2008) in stating that "research on the success of students on faith-based campuses remains limited to a small number of studies on such topics as student engagement, learning outcomes, retention, and supportive programming for diverse student groups" (p. 299).

It is apparent that a gap exists in the study of enrollment yield and that this gap is further exacerbated by lack of study at faith-based institutions. It is well documented that faith is an important factor in the lives of adults (Bowman & Small, 2012). Integration of Tinto's theories into the study of faith-based institutions is also shown to be studied very sparsely and warrants further investigation (Morris et al., 2003).

Theoretical Framework

Retention

The study of retention stems from Tinto (1975) and his interactionalist theory of departure. Research today references and continues to build upon this influential work. His theory states that students who adapt to the college environment tend to graduate. His groundbreaking work began a wave of retention efforts aimed at transition to college and surviving the first-year experience (Tinto, 2006). However, Tinto has been criticized for not assigning more responsibility to the institution to be proactive regarding making students feel as if they belong at the college.

Numerous lines of research attest to the fact that there are many facets to the issue of retaining students (Cabrera et al., 2006; Duckworth & Seligman, 2005; Harper, 2012; Hurtado & Carter, 1997; Reid & Moore, 2008; Tierney, 1992, 1999). Tinto (2006) accepted that early research was not broad enough and may not have considered factors such as type of institution

attended, gender, ethnicity and various other cultural factors. Tinto (2006) further cited information from the NCES, "Though some institutions have been able to make substantial improvements in the rate at which their students graduate, many have not. Indeed the national rate of student persistence and graduation has shown disappointingly little change over the past decade" (p. 2). This acknowledgement that study of retention has not led to vast improvement makes a strong case for a more strategic approach to the management of the entire enrollment cycle. Additionally, it is necessary to put into practice ideas driven by the research that have the most impact for students regarding their ability to retain.

Strategic Enrollment Management

While enrollment has long been one of the most important elements to any higher education institution, most study on the subject occurred prior to the 1960s. With the advent of theorists such as Tinto and the focus on retention came a need to be proactive on both fronts simultaneously. Maguire (1976) coined the phrase "enrollment management" to define the effort to attract and retain students to a college or university. This concept has become so universal that Duniway (2012) stated, "The work of enrollment management is central to the operation of any college or university" (p. 25). Thus, was launched a new field of study in higher education and many researchers began to publish on the topic. While schools had long been strategic on where they spent recruitment dollars, a growing concern with retention efforts forced open a new front in relation to students and services directed toward them. Initially, efforts were somewhat disjointed rather than integrated. Tinto (2006) stated, "Most retention activities were appended to, rather than integrated within, the mainstream of institutional academic life. Retention activities were then, as they are in some measure today, add-ons to existing university activity" (p. 3). Thankfully this paradigm has shifted over time, especially owing to pioneers in the field

such as Hossler and Bontrager and the efforts of the higher education community through groups such as the American Association of Collegiate Registrar's and Admissions Officers (AACRAO) who has provided professional development opportunities for the past 25 years presented through the Strategic Enrollment Management (SEM) conference and the leadership program recently launched to endorse professionals in this imperative field of study.

The field of SEM is now viewed as a holistic approach that covers the entire process from initial recruitment through alumni relations. SEM draws on three theoretical perspectives: resource dependency theory (Pfeffer & Salanick, 1978), institutional theory (DiMaggio & Powell, 1983), and new managerialism (Deem, 1998; Exworthy & Halford, 1998). Resource dependency theory essentially states that organizations react to environmental changes by shifting toward protection or acquisition of scarce resources. Institutional theory basically states that organizations tend to emulate other organizations they deem to be successful in hopes of achieving similar results within their own organization. The idea of new managerialism is centered on adaptation of for-profit practices within non-profit organizations to assist with making the non-profit entity more nimble and able to maneuver environmental obstacles and issues. The amalgamation of these three theories into the concept of SEM shows how recruitment and retention of students is, in reality, a market-driven solution as acquiring rare resources (students who will retain to graduation) is driven, in part, by emulation of organizations who are successful in retention and graduation efforts (institutional theory) with an eye on what is occurring in the industry as a whole so as not to miss the opportunity to take advantage of some new innovation that may make the organization more successful (new managerialism).

Retention and Enrollment Yield

Meaning of retention. Retention is the continuation of education from one semester to the next and ultimately culminates in the student graduating from the institution. Departure and failure to retain are synonymous terms. Retention and persistence are related terms and often used interchangeably as retention often refers to a student remaining from one semester to the next while persistence envisions multiple terms and encompasses the entirety of the journey to graduation.

Brief history of study on retention. Researchers first began serious study of the issue of retention in the early 1970s. The problem that first drew attention was the fact that students were attending in greater numbers than ever, however, those departing campus was occurring in greater proportion than the upswing in enrollment. Tinto (1975) postulated that students were leaving college due to lack of fit with the college culture. This idea was counter to conventional wisdom which was that students were being lazy or simply lacked the intelligence to complete college level work. As the ideas of Tinto gained traction, additional study led to deeper understanding of the factors involved in departure, namely that students had a variety of reasons why they failed to retain. While ability to continue paying for college and academic preparedness did contribute for some students, additional findings showed that the college campus culture was sometimes off-putting to students. Additional researchers such as Zhao and Kuh (2004), have added to the body of work by suggesting various methods whereby the institution can increase engagement of the student and hopefully improve retention. In other words, colleges needed to do more to be cognizant of the culture the students were comfortable with (Hurtado & Carter, 1997; Tierney, 1992, 1999) and try to accommodate so that learning could continue unabated.

Another area of great interest in the study of enrollment and retention phenomena is

regarding the impact of resilience or grit on the ability of certain students to persist despite other factors that seemingly put them at risk for departure. Resilience or grit, defined as "the passion and perseverance to pursue long-term goals" (Duckworth & Seligman, 2005) focuses on qualitative measures which are much more difficult to quantify. Duckworth originally developed an instrument to measure persistence and this instrument, which has since been revised, has proven to be greatly reliable over the past decade that it has been in existence. Duckworth, Peterson, Matthews, and Kelly (2007), add that "Grit entails working strenuously toward challenges, maintaining effort and interest over years despite failure, adversity, and plateaus in progress. The gritty individual approaches achievement as a marathon; his or her advantage is stamina" (p. 1087-1088). The values necessary to measure persistence derive from a self-assessment instrument such as the Short Grit Scale (GRIT-s) and is typically administered to control for factors, such as age, that might skew the result of the survey (Strayhorn, 2013).

This study cannot properly evaluate the impact of these factors as there are a lack of variables within the data set that can stand as representative of these elements and therefore will not be included in this analysis. Additionally, while age could be a variable to consider for this cohort, since the sample consists only of first-time freshman, much of the group was 18 years of age, therefore this variable is also not accounted for in the study. Nevertheless, these are important areas to address and the researcher encourages other researchers to continue to attempt to connect these issues to the study of enrollment yield as it may produce a heretofore unknown multiplier effect on ability or likelihood to retain.

Meaning of enrollment yield. Each year colleges make admittance decisions on more student files than the number of openings they have in their incoming class because not all admitted students will eventually enroll at their institution. The differential between the number

of admitted students and those who matriculate is known as enrollment yield (Antons & Maltz, 2006). While a well-known term throughout the higher education industry, this rate differs from school to school.

Brief history of study on enrollment yield. Understanding what factors likely lead to successful candidacy for a college degree has been the subject of study in higher education for more than three quarters of a century (Astin & Lee, 1972; Cornell, 1947; Johnston, 1958). There is, unfortunately, a lack of recent research on the subject as so much time and effort is spent in better understanding retention. While the information now available about retention has proved advantageous, a large gap remains in understanding issues of enrollment yield. The private, Christian higher education realm is especially vulnerable on this point as Hayes, et al (2013) pointed out "An on-going challenge facing many college administrators is predicting freshman enrollment from year-to-year. Institutions that are highly dependent on tuition dollars, in particular, are concerned about their ability to accurately predict enrollment in order to facilitate the budgeting process" (p. 61). Hayes et al. went on to cite numerous studies that have been conducted verifying the fact that many institutions are somewhat proficient at estimating their retention rate but caution that "estimating the matriculation rate for accepted applicants often proves more difficult" (p. 61). Perhaps utilizing what is known about retention can become a catalyst for understanding better how an admitted student will yield to an enrolled one thus improving an institutions ability to predict the diverse composition of their incoming class along the lines of ethnic, academic, and socio-economic diversity.

Meaning of enrollment yield at faith-based institutions. While the definition of the term enrollment yield does not change for faith-based institutions, the actual rate experienced is different than for secular schools in that while there are private schools that are also secular all

faith-based schools are private. Private schools face challenges in terms of reliance on tuition revenue that is not always as much of a concern for public institutions (Deegan & Deegan, 2014). Secular, private institutions, such as Harvard, have large endowments which reduce their reliance on net tuition revenue to provide funding for operating expenses (Chabotar, 2010). Endowment, in the faith-based, private college world, is much less a factor and this makes the selection process at faith-based schools more precarious as the school relies heavily on the funding that is derived from the tuition dollars resulting from those that matriculate.

Lack of study and focus on enrollment yield at faith-based institutions. Limited study had been conducted regarding retention or enrollment yield while accounting for matters of faith (Bowman & Denson, 2014). While faith-based institutions existed when enrollment yield was a topic of research interest in the mid-twentieth century, they were rarely studied. Since college bound young adults were a more monolithic group at that point in time there was less reason to conduct significant study on niche institutions such as faith-based schools. Much has changed during the intervening years. There were far less faith-based schools during the 1950s than there are today. Additionally, one of the factors related to retention is that of cultural fit, of which spiritual or faith-based concerns are of significance. Important factors such as ethnicity and socioeconomic status have been exhaustively studied, however, matters of faith still seem to conjure up little support for review (Bowman & Small, 2010, 2012; Glanzer et al., 2011). As stated by Tierney (1992, 1999) and others, cultural fitness factors have been identified as a key indicator of whether a student will persist to graduation or not. The literature has only just begun to address the issue of retention from the perspective of cultural fit in relation to spiritual aspects of community (Bowman & Small, 2012; Kim & Hargrove, 2013). Proactive measures, such as identifying students who are potentially at-risk for departure due to cultural fitness factors during

the admission process, do not appear to exist even though researchers say this is important (D'Lima et al., 2014). Neither the known cultural factors in retention nor study of faith-based institutions have been reviewed in the context of enrollment yield.

Related Literature

Background

Race and ethnicity. Since colonial times in America, school systems were segregated along racial lines. Prior to the United States Civil War, even in the northern states, unequal treatment was experienced by students of color. Nineteen years prior to the passage of the Fourteenth Amendment, the Massachusetts state courts ensconced the practice of separate but equal schools as a justified approach to public education in *Roberts v. Boston* (1849). In this case, the father of Sarah Roberts sought her attend a white school near their home instead of her racially assigned school which was far from her home and in poor condition. Though the plaintiff's attorney made many of the same arguments that would win the day a century or so later, the court determined that race was an allowable rationale for separating facilities, if the facilities for both races were equally able to dispense education.

To be certain, education between the northern and southern states was different in that the South did not allow for formal schooling of non-whites, the northern schools still did not allow for mixing of races within the public schools and the facilities and funding were not always equal even when separate. More than 30 years after the end of the Civil War, a case was brought to the United States Supreme Court that challenged the idea of separate but equal services for different races. However, this unfair system was preserved by the court in the ruling in *Plessy v. Ferguson* (1896). The court upheld the state law, which codified the separate but equal doctrine as federal practice since it left the states great latitude to determine what public accommodations

were reasonable regarding maintaining public order. In fact, Justice Brown, writing for the majority stated that the legislature "is at liberty to act with reference to the established usages, customs, and traditions of the people" in determining which actions help promote order and peace within their own communities (Alexander & Alexander, 2012, p. 1004). Even though this court case was specifically about amenities and accommodations aboard passenger trains in Louisiana, the implications for public schools was also clear in that local tradition could be used as a lens with which to view the policy of maintaining separate schools for different races of people.

The introduction of historically Black colleges and universities (HBCU) in the 1800s can be viewed as part of a system built on the idea of separate but equal facilities. Since this practice did not change until the latter half of the 20th century, an argument can be made for disparity in preparedness based on the Jim Crow era mentality of treating people differently because of their ethnicity. With issues of access so newly conquered it may be expected that concerns regarding retention might dominate the higher education landscape for quite some time and that is what we see today even though the issue has been studied extensively for the past four decades.

Over a half-century after *Plessy v. Ferguson* (1896), this standard still existed in much of the country but predominantly in the south. In 1954, the Supreme Court decided to take up five separate challenges and combine them into one ruling that would change the course of education in this country forever. In *Brown v. Board of Education* (1954), the Warren court "repudiated the separate but equal doctrine, stipulating that racially segregated public schools were 'inherently unequal'" (McCarthy, Cambron-McCabe, & Eckes, 2014, p. 131). Alexander and Alexander (2012) explained "Warren did not dwell on other judicial precedents because the precise issue before the Court had not been presented before. The validity of separate-but-equal

since Roberts had been assumed but had never been argued and validly established" (p. 1007). Considering the herculean task of combining school district facilities that had previously been separate, the court stayed any action for one year to allow briefs to be filed regarding ways to accomplish the intended result. In 1955, the court handed down its decree that "conversion from dual to unitary districts must occur 'with all deliberate speed'" (McCarthy et al., 2014, p. 131).

The immediate aftermath of the ruling was quite tumultuous as many states in the south moved either very slowly towards compliance or directly violated the order. In one famous instance, President Eisenhower had to call out federal troops to escort black students into the high school in Little Rock, Arkansas after the state had sent the National Guard to block their entrance. Many devices and schemes were used to avoid compliance and several additional court cases were necessary to decide issues brought to light by the litigation.

One example of the lengths some communities were willing to go to keep the races separate is Prince Edward County, Virginia. One sometimes forgotten fact about *Brown v. Board of Education* (1954) is that it was actually five separate cases that were combined for the sake of the court making one ruling binding to all. One of the five original cases brought forth was due to the conditions in the school district of Prince Edward County, Virginia (*Davis v. Prince Edward County, Virginia*). Robert Russa Moton High School was the designated institution for students of color and in 1951 students decided to strike to bring attention to the conditions of their school compared to the nearby white school, Farmville High School. This became the basis for the suit that was combined with the additional cases to form *Brown v. Board*.

Across the South, an effort to resist the court order began whereby states would cut off funding to any school that attempted to integrate. The courts (both state and federal) were forced

to weigh in to strike down the laws and restore a path to achieving actual integration of the schools. In Prince Edward County, where the fight had begun almost a decade earlier, the county determined to close the entire public-school system rather than integrate. At the same time, prominent members of the community opened Prince Edward Academy, today known as Fuqua School, a private academy which served only the affluent white student population of the county. All other students were forced to move or temporarily live in other districts in order to attend public school or they simply did without further education. To counteract this and other anti-segregation policies, the Civil Rights Act of 1964 along with the Elementary and Secondary Education Act of 1965, cut off funding to schools that could be demonstrated to be actively resisting integration (Virginia Historical Society, n.d.). While this action began to turn the tide, progress remained slow and finally, in 1969, the Supreme Court ruled that all school districts must immediately comply and become unitary.

The Fourteenth Amendment to the United States Constitution, designed to provide equal protection under the law, naturally leads to race being one of several classes where discrimination can become an issue. Even after the end of the civil war, discrimination based on race was a common and accepted practice throughout the United States. Fortunately, the overarching issue of equality eventually won the day so that racially discriminatory practices are viewed in a more proper light. Today discrimination exists in the form of preferences, which can be used to advantage one group over another, however the court takes a very narrow view of this approach and the entity engaging in the practice must show a compelling reason for doing so (McCarthy et al., 2014, p. 130). This practice is necessary not only to protect racial classifications but also affinity groups such as religious organizations who sometimes practice discrimination not allowed to other groups because of strongly held religious beliefs.

Cultural fit. Out of the rapid growth in enrollment during the 1960s and the corresponding decline in completion rates, grew study surrounding this phenomenon. One of the central theorists of the early 1970s, Tinto, helped shape discussion regarding what was occurring when he described the contributing factors of departure from institutions. A major discovery of his work was that students that did not integrate into the environment of the institution were more likely to not be retained at that particular college or university. This lack of cultural fit was initially seen as a lack of preparation on the part of the student rather than a failure by the institution to adapt to populations of much more diverse students. This is evidenced by Hossler, Bontrager, and Associates (2015) who stated, "Student departure from the starting institution was a failure of the student to form meaningful interactions or to engage with the culture of that institution" (p. 255). However, over the proceeding decades, more research led to the understanding that each learner is an individual with not only different skills and abilities, but also diverse views, attitudes, and even cultures that inform their educational pathway.

Race and ethnicity as a cultural factor. As established in previous discussion regarding *Plessy v. Ferguson* and other landmark court cases, segregation within the American education system was a long-standing pillar. Only more recent efforts, such as the GI Bill and decisions such as *Brown v. Board*, have opened the doors of institutions of higher education to embrace a broader spectrum of students. However, while students thirst for knowledge may be the same across ethnically diverse groups, it is undeniable that the cultural reference points for students from these varied backgrounds is not similar and must be accounted for so that each student will reach their full potential.

Since emulation of prevalent cultural norms is the expectation within communities, it is very alarming that both Latino and African-American communities boast bachelor's degree

attainment rates far behind those of their Caucasian counterparts. Citing statistics from the NCES and the Census Bureau regarding degree completion, Rios-Ellis et al. (2015) showed that nationwide the White population holds a bachelor's degree at an 18.3% rate, the Black population holds the same credential at just a 12% mark, and the Latino population at only a 9% rate. Zhan and Sherraden (2007) cited an article on the College Board website, entitled: *Education pays: The benefits of higher education for individuals and society* (2007) in stating, "This disparity in college completion among those from different racial/ethnic backgrounds has important individual consequences (e.g., economic success, health) and societal consequences (e.g., racial inequality, skills of the workforce)" (p. 2168). Rios-Ellis et al. (2015) went on to explain that while Latino communities face many of the same problems in attaining college that other groups do, such as lack of academic preparedness and financial resources, Latino students face a steeper disparity than do their counterparts but also may possess greater untapped resilience due to their strong community and cultural values.

An additional unintentional barrier to entry for non-white ethnicities may be found in completion rates of would be educators. Berry and Candis (2013) cited the NCES in providing attainment figures regarding those who graduate with a bachelor's degree in education which shows the overwhelming number of degrees for future teachers are obtained by white females with white males second and all ethnic groups regardless of gender falling far behind. It is noteworthy that with such wide disparity between white and non-white education degree completion, it may be the case that cultural awareness among the clear majority of teachers is lacking which may lead to further achievement issues for students of color.

Faith as a cultural factor. There exists a long history of faith-based education in America. In fact, the Puritans established what has become the oldest college in North America

less than a decade after founding their colony at Plymouth. Harvard was an important milestone in the progression of their society as the Pilgrims felt strongly about higher education and its ability to assist in building a strong culture. This foresight proved to be beneficial as "during its early decades New England had one of the highest per capita concentrations of university-educated men anywhere in the world" (Marsden, 1994, p. 33).

Protestant belief regarding the priesthood of the believer required an educated laity and this belief was in sharp contrast to Catholicism which used higher education solely for the benefit of the church and training of professional theologians. This sharp contrast is also what caused reformers to put the Bible into print, for the benefit of the masses rather than keeping God's word under lock and key only to be read by the church educated priesthood. Therefore, the Catholic Church created seminaries, whereas the leaders of the reformation saw service to Christ as the ultimate end and so thought education in the arts was just as useful a pursuit as studying theology so long as the ultimate end was to glorify Christ (Marsden, 1994).

To maintain the singularity of focus deemed necessary to keep the student trained on the end goal of glorifying God through his pursuits, many theological subjects including the biblical language of Hebrew which is pertinent to the understanding of the scriptures were incorporated into the curriculum regardless of chosen vocation. It is of great importance to note that while Harvard, and the other colleges formed later, were rooted and grounded in biblical concepts and church doctrine they were also wholly secular as well. Both church and state worked in tandem to further the work carried on at its institutions of higher learning (Marsden, 1994). A student who did not hold to the tenants of the religious majority of the time would not be welcome and thus would not fit culturally during that time. This is instructive as a potentially key indicator of

why there may be a difference between enrollment yields at a secular university of today as opposed to one with a faith-based focus.

However, today, faith plays a part in being more inclusive of groups that may not meet standards of orthodoxy. For instance, focus on recruiting students of Hispanic descent is undertaken by some faith-based institutions as an effort to meet what they view as their mission to evangelize the world with their belief system (Supiano, 2010). However, Franklin (2013) contradicted Supiano by stating:

> At all levels of study, religious affiliation appears to decrease student diversity, holding other factors constant. Although it might be tempting to view this result through a lens of discrimination (and this may well be part of the explanation), it is likely the case that religious schools draw from narrower demographics that may tend to consist of one race or ethnicity more than the others. This would result in lower overall student diversity. (p. 50)

Supiano still contended that the Hispanic community may be amenable to overtures from faith-based institutions who identify their interest as being an element of a relational experience. As stated by Supiano (2010), "What the growing Hispanic Protestant population is looking for, Mr. Espinosa says, is a college 'who really cares about us, beyond enrollment and affirmative-action laws'" (p. 17). There is room for both Supiano and Franklin to be correct in their separate assertions as it may be the case that the segment of faith-based institutions seeking out a more diverse population is small in comparison to the overall group and thus not be affecting the general data Franklin (2013) cited. From a secular perspective, the outcome Franklin cited is to be expected but from a lens of faith, it is a sad commentary on the faith-based institutions and their evangelical purpose to see so few non-whites attending these colleges and universities.

Additional evidence that the fusion of faith and education may be helpful to students is from the perspective of student engagement. This concept of the student being engaged with the learning material has long proven to be an element of likelihood to persist (Astin, 1993, 1999; Hu & Kuh, 2003; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; National Survey of Student Engagement, 2004, 2005; Pace, 1979; Pascarella, 1985; Pascarella & Terenzini, 1991, 2005 as cited by Hu and Wolniak (2013) who stated that "what matters most in student learning and personal development is what the students do in college" (p. 211). It is apparent that elements of the drive necessary to engage in religious activity is similar to the initiative imperative to become successful in academic pursuits.

Even mainly secular institutions are beginning to acknowledge the role that faith may play in the success of students on campus. For example, Stanford University is in a state of constant revision to procedures regarding cultural religious practices as the administration acknowledges the need to accommodate various religious practices, both traditional (Christian, Jewish, Muslim, etc.) and non-traditional (Church of Human Life Science, Pantheism, Rastafarian, etc.) while also immunizing the remainder of the campus community from any sense of need to conform to any religious practice whatsoever (Karlin-Neumann & Sanders, 2013). By providing space that conforms to certain religious practices while not forcing any individual student to participate in any particular religious exercise, Stanford feels that they are remaining true to the original charter as a public, non-religious affiliated university while still meeting the needs of the current, broadly diverse, student body.

Socioeconomic status. Contrary to popular thought, public education has not always been fully funded by the government. In fact, in the United States, the earliest endeavors at fully free public education did not occur until the 1800s and began in New England where public

schools had been chartered for the better part of two centuries. While the new model of taxation bringing in the needed revenue to operate and fund the schools met with great early adaptation in the North, many schools in the South remained either private or heavily subsidized by tuition or rate bills where students paid a percentage of the overall cost to attend (Stoddard, 2009).

As already well established, lower levels of educational attainment lead to lower rates of lifetime earnings (Chen & DesJardins, 2010; Julian, 2012) which results in a veritable class system whereby those in lower strata cannot climb beyond a certain point and enrich their families. This cycle feeds upon itself and cannot usually be broken without intervention. Thus was the case for students who did manage to complete secondary education in the century between the middle of the nineteenth century and the middle of the twentieth. Poorer students who could not afford to continue beyond public compulsory attendance, even if academically gifted, could not continue to college since grants and scholarships did not exist as abundantly as they do today (Fuller, 2014). Even in society today, the amount of assistance available to the truly needy is, far too often, outpaced by the rising cost of post-secondary education (Davidson, 2015).

Additionally, the cycle of multi-generational poverty or lack of economic independence is exacerbated by low college degree completion rates. Zhan and Sherraden (2007) cited Kane (1994), Orr (2003), and Yeung and Conley (2008) as sources of recent study that point to a lack of assets as being a prime factor in the gap between black and white students' achievement in relation to college degree attainment. This issue is cyclical as the students that do not persist to graduation become more economically disadvantaged as compared to their peers who do complete and are thus less likely to be able to accumulate capital that can be used to purchase assets and create wealth for the family unit. This, in turn, provides less opportunity for their

eventual offspring and continues the likelihood that the family will continue to suffer economically and remain disadvantaged.

Academic preparedness. It is no stretch of the imagination to state that academic pursuits require preparation. To be successful at any endeavor, one must be proficient at that activity. Hossler et al. (2015) cited ACT (2005), An (2012), Hughes et al. (2005), Joensen and Nielsen (2009), Klopfenstein and Thomas (2009), and Long, Conger, and Iatarola (2011) in stating "Higher academic preparation and greater academic achievement are associated with positive college choice outcomes" (p. 53). Ability alone, however, is not sufficient to garner accolades in a particular arena, opportunity to practice and hone skills must also be present. Hossler et al. (2015) further cited Carnevale and Rose (2003), Harper and Griffin (2011), and Perna (2004) as follows:

> School context also shapes college choice. High school academic quality and affluence, such as teacher qualification, student average academic achievement, student average family income, the availability of advanced courses, college counseling, access to technology, and expenditures per student, are closely related to college choice outcomes. (p. 54)

Academic preparedness is, therefore, essential to becoming successful in embarking on the college-bound path.

Frempong, Ma, and Mensah (2012) cited Coleman (1966) as well as Haveman and Wolfe (1995) in establishing that familial background is pivotal to educational outcomes and that the impact begins long before the transition to post-secondary institutions. Additionally, Rubin (2011) cited Baum and Ma (2007) regarding the lack of progress afforded to lower socio-economic students who rely on the federal Pell grant program in enrolling in post-secondary

education. Even when factoring for academic ability, those in the poorest quartiles matriculate at far lower rates than do their academic peers in other quartiles. This evidence reveals that either federal assistance rates may be too low or college costs may be rising too quickly and thus leaving many students in the unenviable position of having the academic qualifications but not the monetary power to attend post-secondary institutions.

One logical conclusion regarding the link between lower socio-economic status and academic preparedness is that along with the lack of funds comes inability to afford tutoring, private school tuition, and multiple entrance testing fees. This lack of opportunity helps solidify the cycle of poverty and may be a contributing factor to lower enrollment yield in the high ability, low income group.

Issues of Enrollment and Retention

Historical overview. Over the course of the past three quarters of a century, enrollment in higher education institutions has shifted significantly in both sheer number of students and in focus of research on the surrounding phenomena. Prior to the end of the Second World War, colleges in the United States were populated mostly with only the affluent or the well-connected. Socioeconomic status and academic preparedness played a substantial role in selecting candidates to be admitted during the enrollment process. Other factors, though present in small amounts, were not considered to be a major issue (Kinzie et al., 2004).

Toward the end of World War II, Congress established the Servicemen's Readjustment Act of 1944, better known as the GI Bill of Rights, in order to assist service members with their readjustment to civilian life. Among the many benefits provided by the legislation was the ability for the returning service member to attend college and receive funds toward tuition costs. This provision faced stiff challenges in Congress since, prior to this time, attending college had

been almost exclusively reserved for the elite in society. As a result of its passage, the number of veterans attending college sky rocketed, making up almost 50% of all college admissions in 1947 (U.S. Department of Veterans Affairs, n.d.). Significant changes in society rapidly changed the college landscape as the GI Bill provided funding for the millions returning from the war to pursue higher education as thanks for their service to the country (Kinzie et al., 2004).

Additionally, the nation was awakening to a cultural evil that necessitated removal, that of segregation. Slowly building throughout the early part of the twentieth century through the work and acts of men such as Booker T. Washington, W. E. B. DuBois, and Jackie Robinson, the civil rights movement fully blossomed during the 1950s and 1960s with court decisions such as *Brown v. Board of Education (1954)* (Alridge, 2006). The civil rights struggle that continued after this decision ushered in programs such as affirmative action that aimed to speed up the process of granting access to all (Alridge, 2006).

Just as it had almost a century before, the federal government played an instrumental role in moving forward dialogue relating to race. One such pronouncement was the integration of combat units shortly before and during the Korean conflict (Feng, n.d.). This was the first time that large numbers of integrated units were utilized.

Actions of justice minded Americans and court rulings helped open the doors of higher education institutions more widely then they had ever been extended in the past. With institutions transforming into multi-cultural environments, great growth in enrollment ensued (Kinzie et al., 2004). However, with the overabundance of applicants and enrollment headcount came a new issue that had not been studied to any great degree in the past. Departure from higher education prior to graduation began to become a problem. Research turned from enrollment yield toward retaining those that did enroll.

Retention theory. Tinto (1975, 1987, 1993) proposed the seminal theory regarding why students depart college. One of the most widely cited theorists on this topic, he placed focus on cultural integration or fit as a key to which students retain and persist to graduation. Basically, those that adapt to the environment, or assimilate, tend to graduate. Tinto stated that students left school if it was not a good fit for them, however, he was focused more on the institutional perspective of how the student fit into the campus culture and has been criticized for not viewing the issue through the lens of the diverse students who were now streaming on to college campuses in record numbers (Harper & Kuykendall, 2012; Hurtado & Carter, 1997; Tierney, 1992, 1999).

Tierney (1992) felt Tinto's theory was insufficient to explain departure for communities of color and that engagement with these students was necessary, rather than expecting them to adapt to norms that were potentially foreign to them. Additional researchers have added to Tinto's work by focusing on how the institution can assist students in the process of assimilating (or ensuring cultural fit) to campus life. In fact, they feel strongly that the college has an obligation to be proactive in this regard – almost to the point of changing the university culture to blend better with that of the student.

Since Tinto (1975), there have been numerous studies conducted to ascertain what factors best predict or contribute to retention of students across numerous strata (Cabrera et al., 2006; Harper, 2012; Hurtado & Carter, 1997; Reid & Moore, 2008; Tierney, 1992, 1999). From Tinto's (1975) interactionalist theory of student departure through the present day, a plethora of studies have explored and uncovered many factors that are relevant to persistence. These factors include, but are not limited to: academic preparedness, ethnicity, SES, and cultural fit. Academic preparedness is a criterion set by each institution but generally includes high school

completion and coursework, scores from standardized testing, reference letters from academic professionals and a personal statement or essay (Hossler et al., 2015, p. 151). Ethnicity is federally defined as a person's origin and specifically excludes race as a consideration (CDC, 2015). Socioeconomic status is most easily defined as the income of the family unit, but this single factor weighs tremendously in the calculus regarding whether a prospective college student is successful in completing studies and graduating (Hossler et al., 2015, p. 53). Cultural fit, as defined by Bowman and Denson (2014), includes not only how the student fits into institutional culture from the perspective of social and academic parameters but also on a spiritual plane.

Enrollment yield. Limited recent research exists regarding enrollment yield. Though much has been learned about the impact various factors have on retention, many of those same learnings have not been studied in the context of enrollment yield to determine if root causes of attrition can be addressed earlier in the process. D'Lima et al. (2014) advocated for this type of study when they stated, "It is, therefore, essential for researchers to examine the early motivational profiles of ethnically diverse, first-year college students as such profiles may be related to student performance, retention, and eventual completion of college" (p. 341). Despite the acknowledged need for continued study in this area, other studies regarding enrollment yield have proven inconclusive (Hayes et al., 2013).

In addition, one limited area of study in relation to retention has been regarding matters of faith (Bowman & Denson, 2014). While ethnicity and socioeconomic status have been exhaustively studied, matters of faith still seem to conjure up little support for review (Bowman & Small, 2010, 2012; Glanzer et al., 2011). As stated by Tierney (1992, 1999) and others, cultural fitness factors have been identified as a key indicator of whether a student will persist to

graduation, however, the literature has only just begun to address the issue of retention from the perspective of cultural fit in relation to spiritual aspects of community (Bowman & Small, 2012; Kim & Hargrove, 2013). Proactive measures, such as identifying students who are potentially at-risk for departure due to cultural fitness factors during the admission process, do not appear to exist even though researchers say this is important (D'Lima et al., 2014). Neither the known cultural factors in retention nor study of faith-based institutions have been reviewed in the context of enrollment yield.

Present era. Enrollment in college used to be the domain of the rich and connected. That has shifted over the past half century, but new issues have cropped up regarding completion of studies and earning a degree. Factors that influence students and whether they will complete the degree program they started have been studied extensively over the past forty years. How well a student acclimates to the college environment often determines whether they will persist or not. Many of the factors related to persistence are cultural in nature and help determine how well the institution fits the student. It is alarming that the identified combinations of these factors, along with study related to faith-based institutions, have not been brought forward to the study of enrollment yield.

While numerous studies regarding enrollment yield have been conducted in the past, since the mid-1970s the focus in higher education research on this topic has shifted to the issue of persistence after enrollment. From Tinto (1975, 1987, 1993) to Harper and Kuykendall (2012), the research has focused on either how the student should adapt to the institutional culture or how the institution should take into consideration the students' native culture. Cultural fit has been viewed as a one-sided coin, rather than being an issue to address from both student and institution perspectives. Instead of focusing on the common ground between student and

institution, the literature leaves a large gap in this regard (Bowman & Denson, 2014). One way to view the shared ground between student and institution is through the perspective of faith. When the spiritual culture of the student aligns with that of the institution, there may be more agreement and alignment from a cultural perspective.

The literature has only just begun to address the issue of retention from the perspective of cultural fit in relation to spiritual aspects of community (Bowman & Small, 2012; Kim & Hargrove, 2013). Proactive measures, such as identifying students who are potentially at-risk for departure due to cultural fitness factors during the admission process, do not appear to exist even though researchers say this is important (D'Lima et al., 2014). Naturally, the earliest point in the matriculation process where factors surrounding persistence begin to become known is the admission process. Perhaps the very same factors that are well-known and documented to be related to issues of student departure from college are also factors in not enrolling in the first place. Tinto (2006) stated:

> The fact is that despite our many years of work on this issue, there is still much we do not know and have yet to explore. More importantly, there is much that we have not yet done to translate our research and theory into effective practice. (p. 2)

Based on findings about retention, focus should be shifted to cultural fitness factors, such as spiritual fit, in the recruiting and admission process (Morris et al., 2003). Predictors of enrollment yield at a faith-based institution, based on student attributes that represent cultural fitness factors, are limited or non-existent. The gap in the literature on this topic is verified by Bowman and Denson (2014), Bowman and Small (2012), and Kim and Hargrove (2013).

In addition to furthering research in the field of higher education, overarching significance to humanity can be found in the thought that if there are more college graduates, this

should deliver improved economic standing for the community as a whole. Chen and DesJardins (2010) stated, "In the United States it is well established that investment in higher education is beneficial to individuals and society and that it promotes economic development" (p. 179). Additionally, Tinto (2006) noted that those in higher income groups graduate at higher rates, regardless of institution they attend. Tinto (2006) further explained that an important fact regarding SES is that it yields a strong correlation to graduation. Thus, it stands to reason that improving the income status of students in the present will assist in leveling the playing field in the future which should yield a corresponding rise in graduation rates. This improvement in graduation will yield economic benefits for both the graduates and their families as well as the community at large.

To be certain, continued improvement is needed in the secondary arena as well as it has been shown that high school students who meet minimum qualifications for college tend to graduate regardless of factors such as socio-economic status (Cabrera & La Nasa, 2001, p. 121). Cabrera and La Nasa (2001) also stated that lower SES does appear to impact application to college but those who complete the application process enroll at similar rates to those from higher socioeconomic backgrounds (p. 121). As established previously, college graduates tend to earn more over their lifetime than do high school graduates.

Summary

The reasons for departure from college have been well documented and thoroughly researched over the past four decades. Yet, as evidenced by numerous reports (e.g., U.S. News and World Reports, ACT, etc.) there has been no substantial improvement in overall average retention rates. Perhaps some of the reason that forty years of study has not resulted in significant change in the plight of student departure from education institutions is that the lessons

learned from the mountains of research on the subject have not been carried far enough forward in the process, back to the point of admittance to the university.

While further research needs to be conducted in niche areas to further explore the phenomena discovered by the myriad research projects on the topic, specifically as it relates to matters of race and ethnicity, resilience or grit, academic preparedness, and socioeconomic status, there remain significant gaps in at least two areas. One such gap is in studying faith-based institutions to derive what differences, if any, may be encountered by students at these institutions (Bowman & Denson, 2014; Bowman & Small, 2012; Kim & Hargrove, 2013). Secondly, while much important work has been done to uncover components that lead to departure very little has been done to study how those same factors impact enrollment yield (Morris et al., 2003). Naturally, the earliest point in the matriculation process where factors surrounding persistence begin to become known is the admission process. The very same factors that are well-known and documented to be related to issues of student departure from college may also be factors in not enrolling in the first place. Predictors of enrollment yield at a faith-based institution, based on student attributes that represent cultural fitness factors, are limited or non-existent.

CHAPTER THREE: METHODS

Overview

This chapter provides details regarding the demographic statistics of the data studied for this research. Additional descriptions of certain data elements not selected for study are included along with rationale for exclusion. Further understanding of the research steps used, the population and sample size selected for study, as well as the suitability of employing logistic regression analysis is also provided.

Design

A correlational design was used in this study using archival data for the incoming fall class for the school years 2013 through 2017. Gall, Gall, and Borg (2007) stated that correlation study is very valuable in education and affords the researcher the opportunity to evaluate relationships among many variables simultaneously (p. 336). Additionally, Gall, Gall, and Borg (2010) instructed, "If the comparison groups differ on the independent variable…the purpose of the study will be to predict how they differ on variables that will occur at a later point in time" (p. 243). Logistic regression and correlation have been used to study relationships across numerous studies of enrollment such as: probabilities of applicants being offered admission at elite universities (Espenshade & Chung, 2005); behavior differences among ethnic groups regarding enrollment (Perna, 2000); and shift in demographics regarding enrollment (Guramatunhu-Mudiwa, 2015). Additionally, Hayes et al. (2013) cited the dichotomous nature of studying enrollment yield as being the basis of past studies on the topic.

The purpose of this quantitative, correlational study was to evaluate predictors of enrollment yield at a faith-based institution. The criterion variable was enrollment yield which is defined by Antons and Maltz (2006) as the percentage of admitted students who persist from

admittance to matriculation at an institution. Since not all admitted students actually enroll at the institution, it is important to ascertain which students are likely to enroll for the semester designated as failure to meet enrollment targets can have a deleterious effect on net tuition revenue and funding for programs, faculty, and facilities. Enrolling involves the action of funding payments for tuition and other fees assessed by the university. In the setting for this study, entering said payment plan is called financial check-in and is considered to be the completion of the enrollment process as this measure yields an almost one-to-one relation to the actual number of students who matriculate to the university. The reliability of this figure has been demonstrated in the universities internal reporting for over a decade and is the quantity used by enrollment management personnel to report out on achievement toward enrollment goals. One way to view enrollment yield would be to divide the number of students who enroll by those that were admitted. For example, 100 students were admitted and if 50 enrolled, the resulting enrollment yield would be 50%.

The predictor variables were student attributes relating to cultural fit, academic preparedness, ethnicity, and SES. Cultural fit, as defined by Bowman and Denson (2014), includes not only how the student fits into institutional culture from the perspective of social and academic parameters but also on a spiritual plane. The variables chosen to represent cultural fit for this study are religious affiliation and geographic origin.

The complete list of choices to represent self-identified religious affiliation are: African Methodist Episcopal, Anglican, Assembly of God, Baptist: Other, Baptist: Southern Baptist, Bible, Brethren, Buddhist, Catholic, Christian Missionary Alliance, Christian Science, Church of Christ, Church of God, Eastern Christian Orthodox, Episcopal, Evangelical, Evangelical Free, Free-Will Baptist, Hindu, Independent, Independent Baptist, Interdenominational/Bible, Jewish,

Latter-Day Saints, Lutheran, Lutheran (Missouri Synod), Mennonite, Methodist, Mormon, Muslim, Nazarene, Non-denominational, None, No Religious Preference, Other, Pentecostal/Charismatic, Presbyterian, Protestant, Quaker/Society of Friends, Reformed, Roman Catholic, Seventh-Day Adventist, United Church of Christ, Unreported, and Wesleyan.

Geographic origin is defined by the United States Census Bureau (USCB, 2015) as one of four geographic regions: Northeast, Midwest, South, and West. This element is derived from the home state indicated on the application for admission and then categorized based on the regions designated by the USCB. States in the Northeast region include: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. States in the Midwest region include: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. States in the South region include: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. States in the West region include: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Academic preparedness is viewed as the ability to successfully complete college level work as described by performance in the classroom and on standardized tests (Gardner, 1983). The variables that were used in this study to represent academic preparedness are the HS GPA and the SAT score. The ACT is an accepted test score at the university, however, far fewer students complete that particular instrument and so the SAT was chosen as a more universal measure among the population.

Ethnicity is federally defined as a person's origin and specifically excludes race as a consideration (CDC, 2015). The variable selected to represent ethnicity for this study was the self-reported ethnic group information taken from the application for admission. The spectrum of responses for this variable are: Hispanic or Latino, Not Hispanic or Latino, and Unknown/No answer.

Socioeconomic status (SES) is generally defined by measures of aggregate income, education level and occupation of the head of household (White, 1982). The variable selected to represent SES for this study was the expected family contribution (EFC) that is generated from the Free Application for Federal Student Aid (FAFSA). This variable was selected for its close proximity to studies linking education level with aggregate income (Julian, 2012).

The population studied were domestic applicants to the resident campus of a large, faith-based institution in south central Virginia. Students from across several fall academic terms (2013 through 2017) were utilized to add depth to the study. Due to the dichotomous nature of the criterion variables and the predictive nature of the study, this design was a good fit for this type of proposal.

Research Question

RQ1: How accurately can enrollment yield of students at a faith-based institution be predicted from a linear combination of student attributes (High School Grade Point Average, Scholastic Aptitude Test score, Ethnicity, Expected Family Contribution, Geographic origin, and Religious affiliation)?

Hypothesis

$H_0$1: There is no predictive relationship between the criterion variable (enrollment yield) and the predictor variables (High School Grade Point Average (HS GPA), Scholastic Aptitude

Test (SAT) score, Ethnicity, Expected Family Contribution (EFC), Geographic origin, and Religious affiliation).

Participants and Setting

This study used archival data where the participants for the study were drawn from a sample of prospective students accepted to a faith-based institution located in southcentral Virginia for each fall semester from 2013 through 2017. All students who apply to the university are entered into the database. The application process was completed either electronically through a web portal or by hand on a paper form. Information gathered from the application was either downloaded, in the case of electronic data, or physically keyed by an employee and entered into the student information system database. All information, whether gathered electronically or entered by hand, represented the entirety of the applicant data pool. The pool was further reduced for this study by selecting only those applicants who were granted admission to the university. The dataset, totaling 26,671 records, included demographic and academic variables for admitted students regardless of whether the admit status was fully accepted or accepted on an academic cautionary status. The participants varied by academic indicators of HS GPA and SAT score, as well as ethnicity, EFC, geographic origin, and religious affiliation.

During review of the data set for the population, records for which a data element was missing were removed to create a sample of records that contained all relevant data. Some of the records contained no data for the region code and were thus removed. This may be due to a coding error in the student information system or that the students in question hail from areas outside the defined region zones. An example would be a child of missionaries coming to the university from a foreign field and listing that area as the home address. Additionally, some number would be accounted for by students coming to the university from United States

territories or possessions as well as military dependents coming from overseas duty stations.

From the academic data a number of records were found to have no test score. This is not surprising as the institution being studied allows for more than one test type to be submitted for consideration in the admission decision process. Finally, a number of records were found to not contain a value for the expected family contribution field. This could be accounted for by families failing to submit the FAFSA which generates the EFC value used in this study. Overall, the total number of records removed was 9,826, leaving a result of 16,845 records for study.

For this study, the number of participants sampled was 16,845 which exceeds the required minimum for a medium effect size. According to Gall et al. (2007) 66 students is the required minimum for a medium effect size with statistical power of .7 at the .05 alpha level. However, Gall et al. (2007) also cited a minimum of 15 participants for each predictor variable studied which suggests a minimum of 90 participants be sampled. The number of participants also exceeds this minimum threshold.

The sample was fairly evenly distributed across all five fall term cohorts represented in the study. Additionally, the sample consisted of 7,544 males and 9,301 females. The sample was also somewhat ethnically diverse, consisting of persons who self-identify: 1,117 Hispanic or Latino, 13,694 Non-Hispanic or Latino, and 2,034 Unknown/No answer. Spatial diversity was limited as the South was by far the most predominant region represented. The sample consisted of 4,140 Northeast, 11,227 South, 649 Midwest, and 829 West region students.

Additionally, while heavily tilted toward one specific religious affiliation, the group overall was spread out across a broad spectrum of religious denominations including: 5 African Methodist Episcopal, 34 Anglican, 340 Assembly of God, 4,227 Baptist: Other, 781 Baptist: Southern Baptist, 262 Bible, 98 Brethren, 1 Buddhist, 209 Catholic, 114 Christian Missionary

Alliance, 0 Christian Science, 149 Church of Christ, 148 Church of God, 16 Eastern Christian Orthodox, 38 Episcopal, 341 Evangelical, 185 Evangelical Free, 24 Free-Will Baptist, 0 Hindu, 47 Independent, 50 Independent Baptist, 44 Interdenominational/Bible, 5 Jewish, 0 Latter-Day Saints, 95 Lutheran, 12 Lutheran (Missouri Synod), 40 Mennonite, 385 Methodist, 1 Mormon, 1 Muslim, 85 Nazarene, 2,803 Non-denominational, 15 None, 31 No Religious Preference, 1,335 Other, 280 Pentecostal/Charismatic, 424 Presbyterian, 194 Protestant, 5 Quaker/Society of Friends, 60 Reformed, 81 Roman Catholic, 13 Seventh-Day Adventist, 3 United Church of Christ, 3,787 Unreported, and 77 Wesleyan.

Since the sample consisted only of first-time freshman, much of the group was 18 years of age, therefore this variable was not accounted for in the study. Additionally, another area of great interest in the study of enrollment phenomena is that or resilience or grit however, this study cannot properly evaluate the impact of these factors as there were a lack of variables within the data set that could stand as representative of these elements and therefore were not included in this analysis.

Instrumentation

Measurement of the Predictor Variables

The predictor variables chosen for this study were: HS GPA, SAT score, ethnicity, EFC, geographic origin, and religious affiliation. As a result of using archival data in this study, the student application for admittance to the university was used for data collection of a majority of the predictor variables. Additional data elements were gathered from supporting documents submitted by applicants in the enrollment process. These documents included the official high school transcript, official score report from the College Board, and the FAFSA. All data elements were keyed into a student information system utilized by the university by employees

of the institution.

At the beginning of each recruitment year, high school students seeking admission to the institution filled out the application and submitted it to the admissions office. All data elements from the application were then data entered directly into the student information system, creating an electronic record for the prospective student. Data elements relevant to this study that were derived from the application for admission included ethnicity, geographic origin, and religious affiliation.

Once an electronic record was created in the student information system, additional records were requested from the prospective student to render an admission decision on the student record. The documents most relevant to this study were the high school transcript and the official test score report from the College Board. Once received from the secondary institution, the university computed a grade point average by calculating a numeric value for each letter grade earned during the high school career. For example, a course where a student received the letter grade of "A" would receive 4 grade points in the calculation. No concern or weight was given to the institutional setting where the grade was earned, for example home school versus public school. This method was used to create as simple a method of calculation as possible. While it is likely that academic rigor differed from school to school, there was no standard, objective measure with which to hold each secondary school accountable to any other since standards differ from state to state. The institution studied relies on the completion of the high school diploma or its equivalent to derive some sense of similarity across diplomas earned. However, due to the differences in curriculum standards, no true equivalence exists thus this element was not addressed in this study.

Once all courses were converted to a numeric equivalent the total number of points

accumulated was divided by the total number of credits earned to derive a grade point average. The name of the high school and the calculated grade point average were data entered in the student information system. The grade point average was the pertinent data element used in this study.

The official test score report was usually received as an electronic data file directly from the College Board and so the test scores from the report were loaded into the student information system through an automated process. The scores recorded that inform the admission committee regarding an admit decision were the score from the critical reading and mathematics batteries. The two scores were on a scale of 200 to 800 and were combined to create a composite score ranging from 400 to 1600. While the scores were recorded separately in the student information system, when extracted from the system, the two scores were combined to derive the composite. For example, a student with a recorded score of 540 on the critical reading portion and a 500 on the mathematics portion would receive a composite score of 1040 when being reviewed by the admission committee. The composite score was the pertinent element used in this study.

High school grade point average. High school grade point average is federally defined by the NCES (2011) as representing the average number of grade points earned for each high school course that grants credit toward graduation. The scale of measurement for this element range, in possibility, from zero to four. Students admitted to the institution studied, tended to meet a minimum of a "C" average over the course of their high school career. Due to the limitation placed on the population that it only include admitted students, the range of possibility only extended from a minimum of two to a maximum of four. A score of two represents the equivalent of a letter grade of "C," while a score of four represents the letter grade of "A." Thus the higher the score, the better score that student received on the cumulative view of their high

school course work. GPA has been used in numerous studies over the past half century (e.g., Baird & Richards, 1968; Price & Kim, 1976; Noble & Sawyer, 2002; Scannell, 1960; Weitzman, 1982).

Scholastic Aptitude Test. Scholastic Aptitude Test score is defined by the College Board, the administrator of the test, as a globally recognized college admission test that measures knowledge of reading, writing, and mathematics (College Board, 2015). The scale of measurement for this element ranged in possibility from 400 to 1,600. Due to the limitation placed on the population that it only includes admitted students, the range of possibility only extended from a minimum of 600 to a maximum of 1,600. A score of 600 represented minimal preparedness in the subject matter tested and would yield an academic caution decision, while a score at the other end of the spectrum represented a student who is extremely well prepared for the academic rigors of college. The SAT has been used in numerous studies (e.g., Espenshade & Chung, 2005; Paulsen, 1990; Rothstein, 2004).

Ethnicity. Ethnicity is federally defined as a person's origin and specifically excludes race as a consideration (CDC, 2015). The scale of measurement for this variable was such that a student could only identify with one ethnicity or none at all. The application contained the following choices for ethic group; Hispanic or Latino, Not Hispanic or Latino, or None. Ethnicity has been used in numerous studies (e.g., Flores & Park, 2013; Posselt et al., 2012).

Expected Family Contribution. Expected Family Contribution (EFC) is federally defined as a measure of a family's financial strength and ability to pay for college (Federal Aid, n.d.). Only students who completed the FAFSA received a computed score for EFC. This score determines demonstrated need according to federal calculations. The scale ranges from 0 to 999,999. The smaller the score, the greater the federally calculated need for financial assistance.

Scores close to zero enable students to receive federal funds such as the Federal PELL grant, while scores on the opposite end of the scale result in a determination of zero need for federal aid. Expected Family Contribution has been used in numerous studies (e.g., Curs & Singell, 2010; Rubin, 2011; Spaulding & Olswang, 2005).

Geographic origin. Geographic origin is defined as one of four geographic regions: Northeast, Midwest, South, and West (USCB, 2015). This element was derived from the home state indicated on the application for admission and then categorized based on the regions designated by the Census Bureau. While culture can vary even within a sovereign state, collectively the states within a geographic region are presumed to have similarities that make them stand out from other regions. Geographic origin has been used in numerous studies (e.g., Markiewicz, 2004; Smith, Spinelli, & Zhou, 2002).

Religious affiliation. Religious affiliation is not defined by the government or other universally accepted entities in the United States. Since adherence to any religious practice is voluntary, the term is self-defined. The scale of measurement for this variable was such that a student could only select one affiliation or leave the data element as unreported. A score on anything other than "unreported" meant that the student self-identifies with one of the religious groups presented as a choice on the admission application. The religions presented on the application were: African Methodist Episcopal, Anglican, Assembly of God, Baptist: Other, Brethren, Baptist: Southern Baptist, Bible, Buddhist, Catholic, Christian Missionary Alliance, Christian Science, Church of Christ, Church of God, Eastern Christian Orthodox, Episcopal, Evangelical, Evangelical Free, Free-Will Baptist, Hindu, Independent, Independent Baptist, Interdenominational/Bible, Jewish, Latter-Day Saints, Lutheran, Lutheran (Missouri Synod), Mennonite, Methodist, Mormon, Muslim, Nazarene, Non-denominational, None, No Religious

Preference, Other, Pentecostal/Charismatic, Presbyterian, Protestant, Quaker/Society of Friends, Reformed, Roman Catholic, Seventh-Day Adventist, United Church of Christ, Unreported, and Wesleyan. Because of the voluntary nature of this data element, this topic has not been widely studied in the past but has gained traction in recent studies (e.g., Bowman & Denson, 2014; Bowman & Small, 2012; Bowman & Toms Smedley, 2013).

Measurement of the Criterion Variable

As a result of using archival data in this study, the student information system was used for data collection of the criterion variable as all applicant data resided therein. The criterion variable chosen for this study was enrollment yield. Enrollment yield is a commonly referenced term in higher education settings and is defined by Antons and Maltz (2006) thusly, "An institution's yield is the percentage of admitted students who will actually enroll" (p. 69). This definition is further supported in the literature by Supplee (2014) and Duniway (2012) to name a few. Enrollment at the institution that was the subject of this study was typically measured in credit hour units. A student was considered enrolled once they entered a payment plan to pay for the credit hour units. This payment plan was called financial check-in and the percentage of students who completed the payment plan attended at a rate of nearly 100%. At the institution that was the subject of this study, this measure is what was used in this study to equate to the term enrolled. The scale of measurement for the criterion variable, enrollment yield, was a dichotomous value, either enrolled or not enrolled. Those who enrolled are in the numerator of the equation while the denominator consists of both enrolled and not enrolled students to produce the resulting yield rate. For example, 100 students were admitted to the university but only 45 actually enrolled resulting in an enrollment yield of 45%.

Procedures

Applicable sections of the Institutional Review Board (IRB) application were completed to include obtaining necessary signatures. The application was then submitted to IRB via email to irb@liberty.edu (see Appendix A for IRB Exemption Letter). Upon approval of the study, the next step was to access the student information system. Access was through password protected login. Permission for access to the institutional data was requested and granted via the IRB application. Additionally, informal written request for use of data was sent to the institutions information technology department for mining of the data set. Once the student information system had been accessed, historical data sets were retrieved by information technology and downloaded to the researcher's computer. Data on the computer was password protected for privacy and security reasons.

During the informal written request process, an operational definition discussion was convened with an information technology representative to properly identify all necessary data fields and to ascertain how much data conversion could be accomplished through the automated download process and which fields would need further coding or filtering after download. This discussion concluded with agreement that information technology would strip out individually identifying information such as student identification number as well as conversion of state of residence codes to the proper region code specified in the study. Additionally, rather than rely on a date field to determine whether an individual actually enrolled, a readily identifiable field already existed in the student information system with the dichotomous values necessary to ease the process of running data through SPSS.

The process of defining fields and data values available within the student information system was undertaken in a thoughtful and organized manner so as not to improperly include or exclude any record from the resultant sample. Data fields that were necessary included: Term

code (only those with the values “201340” for fall 2013 cohort, “201440” for fall 2014 cohort, “201540” for fall 2015 cohort, “201640” for fall 2016 cohort, and “201740” for fall 2017 cohort were selected), Student type (only those with an N were selected), US Citizen (only those with a Y indicator were selected), Gender, Decision code (only those with an AC, AK, AP, or AW were selected), Enrolled status (regardless of whether the value was “0” for not enrolled or “1” for enrolled), HS GPA (regardless of whether a null value existed or not), SAT (regardless of whether a null value existed or not), Ethnicity (regardless of whether a null value existed or not), EFC (regardless of whether a null value existed or not), Region (regardless of whether a null value existed or not), Religion (regardless of whether a null value existed or not).

During the archival data download process, a filtering process was begun to remove unnecessary data fields of student type and citizenship status. For clarification, the gender field was kept in the data set as it was used for demographic reporting purposes only since it was not one of the predictor variables under study. An unanticipated issue that was revealed during review of the data was that a large number of the fall 2017 cohort only had SAT scores from the post-March 2016 test dates. This is important to note because College Board, the company that creates and administers the test, made a conscious decision to update their entire test and the new version was rolled out in March 2016. While the scale used to score the test remained the same, there was a natural shift upward in scores due to the difference in the nature of questions both pre and post change. Since the group of records effected by this change was exclusive to the fall 2017 cohort, the researcher deemed it impractical to ignore those records as it may result in skewed results. Therefore, a conversion scale provided by College Board was used to recode the post-March 2016 scores to pre-March 2016 score equivalencies. This was done in an effort to normalize the data and reduce the probability of skewed results. Once data download and

conversion was complete, the file was loaded into SPSS to run appropriate logistic regression tests.

Data Analysis

Due to the dichotomous nature of the criterion variable (Gall et al., 2010), data analysis used in this study was a logistic regression. The regression was tested at the 95% confidence interval. A Wald ratio was inspected to review the logistic regression model for significance on each predictor variable. Cox and Snell's along with Nagelkerke's pseudo-R values were also used to measure the strength of prediction for the model. Logistic regression does not require restrictive assumptions as compared to other general linear models (e.g., discriminant analysis, multiple linear regression). Assumptions for logistic regression include: making sure the outcome variable is dichotomous, scores on the outcome variable must be statistically independent of each other, the model should include all relevant predictors, and the categories on the outcome variable are assumed to be exhaustive and mutually exclusive (Peng, Lee, & Ingersoll, 2002; Warner, 2013).

In the study, the only categorical variable was the criterion or outcome variable. According to Warner (2013), one of the most important issues in logistic regression is the distribution of scores on the criterion variable. In the study, the only possible values the outcome variable could take was "1" for enrolled or "0" for not enrolled. Meaningful results may not be obtained if the proportion of the two groups in the criterion variable deviate greatly from a 50/50 split and if the total number of participants is too small. The data set used for this study met this parameter.

Another pitfall may have been the data outliers on the quantitative predictor variables in the study. To seek and handle outliers, a baseline model that encompassed all cases was run.

Then a second model was run excluding cases where the absolute value of the standardized residual was greater than 2.0. Comparing the baseline model's classification accuracy rate to the second model's classification accuracy rate, the model with the better rate, in this case – the second model, was used.

In SPSS, there are three general options for entering explanatory variables into the model. For the study, the "Enter" method was used to minimize Type I error. Statistical methods using predictor variable selection such as the forward or backward regression can substantially increase the risk of Type I error (Warner, 2013, p. 1038).

CHAPTER FOUR: FINDINGS

Overview

This chapter provides details regarding the descriptive statistics of the data studied for this research. For purposes of context, the research question and null hypothesis are provided below. Further understanding of the research is informed by the result set provided.

Research Question

RQ1: How accurately can enrollment yield of students at a faith-based institution be predicted from a linear combination of student attributes (High School Grade Point Average, Scholastic Aptitude Test score, Ethnicity, Expected Family Contribution, Geographic origin, and Religious affiliation)?

Null Hypothesis

$H_0$1: There is no predictive relationship between the criterion variable (enrollment yield) and the predictor variables (High School Grade Point Average (HS GPA), Scholastic Aptitude Test (SAT) score, Ethnicity, Expected Family Contribution (EFC), Geographic origin, and Religious affiliation).

Descriptive Statistics

Data for this study consisted of 16,845 admitted students across the fall 2013 through fall 2017 cohorts. The dependent variable roughly met the 50/50 split criteria necessary for conducting logistic regression analysis (see Table 1 for frequency counts and percentages). The academic predictor variables of HS GPA and test score (SAT), were fairly tightly distributed about the mean, with median values in close proximity to the mean values. The mean HS GPA was 3.45, while the mean SAT was 1061. The median HS GPA was 3.53, while the median SAT was 1050. The standard deviation for HS GPA was 0.46, while the standard deviation for SAT

was 162.65. These figures indicate a cohort that was fairly academically prepared for college and not dispersed greatly across the possible score ranges for these variables. Additionally, from a demographic perspective, the sample was heavily tilted toward the South region. A full two-thirds of the sample cited the South as their region of origin (N = 11,227), while the Northeast was the second most popular choice at 24.6% (N = 4,140). The remaining two regions only account for 8.8% of the sample, with the West accounting for 4.9% (N = 829) and the Midwest accounting for 3.9% (N = 649).

Table 1

Enrollment Status

Scale	Frequency	Percent
Not Enrolled	7237	43.0
Enrolled	9608	57.0
Total	16845	100.0

Results

Data Screening

Prior to analysis in SPSS, the data file was examined for missing data, abnormalities and factors that may cause a participant to be disqualified or damage the integrity of the data. Each variable was assessed for integrity, and deemed intact, with the exception of fields where missing data was detected. Records for which a data element was missing were removed to create a sample of records that contained all relevant data. Some of the records (N < 500) contained no data for the region code and were thus removed. This may be due to a coding error in the student information system or that the students in question hail from areas outside the defined region zones. An example would be a child of missionaries coming to the university from a foreign

field and listing that area as the home address. Additionally, some number would be accounted for by students coming to the university from United States territories or possessions as well as military dependents coming from overseas duty stations.

From the academic data a number of records were found to have no test score. This is not surprising as the institution being studied allows for more than one test type to be submitted for consideration in the admission decision process. Finally, a number of records were found to not contain a value for the expected family contribution field. This could be accounted for by families failing to submit the FAFSA which generates the EFC value used in this study. The criterion variable of enrollment status was then coded as 0 – Not enrolled, and 1 – Enrolled.

Assumptions

Logistic regression requires a limited set of assumption tests prior to analyzing the data set. Assumptions for logistic regression include: making sure the outcome variable is dichotomous, scores on the outcome variable must be statistically independent of each other, the model should include all relevant predictors, and the categories on the outcome variable are assumed to be exhaustive and mutually exclusive (Peng et al., 2002; Warner, 2013).

Due to the binary nature of the criterion variable of interest in this study, either enrolled or not enrolled, the first, second, and last assumptions were met. The third assumption regarding relevant predictors has been met as only those elements from the data set that could stand as representative of the cultural fitness factors being studied by the researcher are included in this study.

Hypothesis

A logistic regression analysis was run to predict enrollment yield of students at a faith-based institution from a linear combination of student attributes (HS GPA, SAT score, Ethnicity,

EFC, Geographic origin, and Religious affiliation) at the 95% confidence level. The results of the logistic regression for the Null Hypothesis were determined to be statistically significant, X^2 (1) = 567.904, p = .000. See Table 2 for the Omnibus Tests of Model Coefficients.

Table 2

Omnibus Tests of Model Coefficients

Step 1	Chi-square	df	Sig.
Step	567.904	49	.000
Block	567.904	49	.000
Model	567.904	49	.000

The strength of the association between the predictor variables (HS GPA, SAT, EFC, Ethnicity, Religion, and Region) and enrollment was determined to be weak according to Cox and Snell's R^2 (.033) and Nagelkerke's R^2 (.044). This result provides evidence that despite the significant result, less than .04% of the variance in the criterion variable is being affected by the linear combination of the predictor variables. The Model Summary can be found in Table 3. The model was further analyzed for predictive significance using the Wald chi-squared test and the odds ratios produced from the analysis. The odds ratios were examined to measure association between the predictor and criterion variables.

Table 3

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	22449.386[a]	.033	.044

[a] Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Each predictor variable in the study displayed significance ($p < .05$) with the notable exception of HS GPA. Within the categories for each variable, very little significance, from an odds ratio standpoint, was found. For example, both SAT and EFC showed essentially no effect as the Exp(B) was .999 for SAT and 1.000 for EFC. This means there was virtually no positive or negative relation to enrollment from these two variables. Like HS GPA, the variable for the West region and for the value where Ethnicity was not provided showed no significance. Conversely, the variables for the Northeast and South regions as well as the Ethnicity value of Not Hispanic or Latino all showed positive relation in odds ratio with Exp(B) of 1.251 for the Northeast region, 1.285 for the South region, and 1.258 for the Not Hispanic or Latino Ethnicity. This means that in all three cases, these students were 1.25 times more likely to enroll.

The variable of religion showed overall significance, however only two specific categories rendered individual significance in terms of odds ratio calculation. Exp(B) for religion of no preference was 0.226 and for religion of Roman Catholic was 0.218, indicating that the odds of enrollment for students from these two groups was 0.2 times less likely than that of other religious preferences. These differences are considered statistically significant as demonstrated by the significant Wald chi-squared test. Table 4 provides summary data for the Wald chi-squared statistics, odds ratios, and 95% confidence interval.

Table 4

Variables in the Equation

							95% C.I.for EXP(B)	
Step 1[a]	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Region			28.307	3	.000			
Region(1)	.224	.087	6.681	1	.010	1.251	1.056	1.482
Region(2)	.251	.083	9.090	1	.003	1.285	1.092	1.512
Region(3)	-.088	.107	.681	1	.409	.915	.742	1.129
HSGPA	.054	.041	1.744	1	.187	1.056	.974	1.144
SAT	-.001	.000	61.850	1	.000	.999	.999	.999
EFC	.000	.000	226.236	1	.000	1.000	1.000	1.000
Ethnicity			18.076	2	.000			
Ethnicity(1)	.230	.064	12.793	1	.000	1.258	1.109	1.427
Ethnicity(2)	.076	.082	.846	1	.358	1.079	.918	1.267
Religion			132.384	41	.000			
Religion(1)	-1.229	1.095	1.259	1	.262	.293	.034	2.503
Religion(2)	-1.270	.700	3.296	1	.069	.281	.071	1.106
Religion(3)	-.707	.613	1.332	1	.249	.493	.148	1.639
Religion(4)	-.452	.739	.373	1	.541	.637	.150	2.710
Religion(5)	-.428	.670	.408	1	.523	.652	.175	2.424
Religion(6)	-.525	.604	.755	1	.385	.592	.181	1.933
Religion(7)	-.295	.617	.229	1	.633	.745	.222	2.495
Religion(8)	-.960	.637	2.267	1	.132	.383	.110	1.336
Religion(9)	-21.931	40192.970	.000	1	1.000	.000	.000	.
Religion(10)	-1.106	.619	3.192	1	.074	.331	.098	1.113
Religion(11)	-.696	.632	1.210	1	.271	.499	.144	1.723
Religion(12)	-1.145	.626	3.346	1	.067	.318	.093	1.085
Religion(13)	-1.061	.626	2.873	1	.090	.346	.102	1.180
Religion(14)	-.618	.788	.615	1	.433	.539	.115	2.525
Religion(15)	-1.246	.688	3.284	1	.070	.288	.075	1.107
Religion(16)	-.639	.613	1.087	1	.297	.528	.159	1.755
Religion(17)	-.464	.622	.556	1	.456	.629	.186	2.128
Religion(18)	-.594	.673	.779	1	.377	.552	.147	2.066
Religion(19)	-.566	.678	.697	1	.404	.568	.150	2.143
Religion(20)	.421	1.273	.110	1	.741	1.524	.126	18.457
Religion(21)	-.758	.639	1.408	1	.235	.469	.134	1.639
Religion(22)	-1.228	.844	2.114	1	.146	.293	.056	1.533
Religion(23)	-.150	.694	.047	1	.829	.861	.221	3.353
Religion(24)	-1.037	.612	2.869	1	.090	.355	.107	1.177

Religion(25)	20.282	40192.969	.000	1	1.000	643356047.300	.000	.
Religion(26)	-22.012	40192.970	.000	1	1.000	.000	.000	.
Religion(27)	-.422	.644	.431	1	.511	.655	.186	2.313
Religion(28)	-.546	.604	.816	1	.366	.579	.177	1.894
Religion(29)	-1.037	.796	1.697	1	.193	.354	.074	1.688
Religion(30)	-1.488	.712	4.374	1	.037	.226	.056	.911
Religion(31)	-.630	.606	1.083	1	.298	.532	.162	1.745
Religion(32)	-.692	.615	1.267	1	.260	.500	.150	1.670
Religion(33)	-.719	.611	1.385	1	.239	.487	.147	1.614
Religion(34)	-.633	.621	1.039	1	.308	.531	.157	1.793
Religion(35)	-.238	1.098	.047	1	.828	.788	.092	6.785
Religion(36)	-1.523	.647	5.535	1	.019	.218	.061	.776
Religion(37)	-.948	.660	2.065	1	.151	.388	.106	1.412
Religion(38)	-.280	.608	.211	1	.646	.756	.230	2.490
Religion(39)	-22.084	23170.980	.000	1	.999	.000	.000	.
Religion(40)	-.471	.605	.606	1	.436	.625	.191	2.043
Religion(41)	-.665	.646	1.057	1	.304	.514	.145	1.826
Constant	1.036	.624	2.756	1	.097	2.817		

[a] Variable(s) entered on step 1: Region, HS GPA, SAT, EFC, Ethnicity, Religion.

CHAPTER FIVE: CONCLUSIONS

Overview

This chapter provides a view of the statistical analysis results from the research data set. The purpose of the study is discussed along with how the results inform regarding the research question. Finally, conclusions are drawn from the data analysis results and areas for suggested future research are delineated.

Discussion

The purpose of this quantitative, correlational study was to evaluate predictors of enrollment yield at a faith-based institution. The criterion variable was enrollment yield which is defined by Antons and Maltz (2006) as the percentage of admitted students who persist from admittance to matriculation at an institution. The predictor variables were student attributes relating to cultural fit, academic preparedness, ethnicity, and socio-economic status. Cultural fit, as defined by Bowman and Denson (2014), includes not only how the student fits into institutional culture from the perspective of social and academic parameters but also on a spiritual plane. The variables chosen to represent cultural fit for this study were religious affiliation and geographic origin. Academic preparedness is viewed as the ability to successfully complete college level work as described by performance in the classroom and on standardized tests (Gardner, 1983). The variables that were used in this study to represent academic preparedness are the HS GPA and the SAT score. Ethnicity is federally defined as a person's origin and specifically excludes race as a consideration (CDC, 2015). The variable selected to represent ethnicity for this study was the self-reported ethnic group information taken from the application for admission. Socioeconomic status (SES) is generally defined by measures of aggregate income, education level and occupation of the head of household (White, 1982). The

variable selected to represent SES for this study was the EFC that was generated from the FAFSA. The population studied were domestic applicants to the resident campus of a large, faith-based institution in south central Virginia.

The research question attempted to define how accurately enrollment yield of students at a faith-based institution can be predicted from a linear combination of student attributes (HS GPA, SAT score, Ethnicity, EFC, Geographic origin, and Religious affiliation). While the study found significance in the model, the strength of the association between the predictor variables (HS GPA, SAT, EFC, Ethnicity, Religion, and Region) and enrollment was determined to be weak according to Cox and Snell's R^2 (.033) and Nagelkerke's R^2 (.044) yielding a medium effect size. This result provides evidence that despite the significant result, less than .04% of the variance in the criterion variable is being affected by the linear combination of the predictor variables. Additionally, the model only improved the predictive value from 57.0% to 59.1%.

Almost all of the predictor variables showed a significant result in this study. This result supports the plethora of researchers and theorists who state that cultural fit of student to institution is a key ingredient of retention, and by extension, enrollment (Baird & Richards, 1968; Bowman & Denson, 2014; Bowman & Small, 2010; Bowman & Small, 2012; Bowman & Toms Smedley, 2013; Cabrera & La Nasa, 2001; Cabrera et al., 2006; Chen & DesJardins, 2010; Curs & Singell, 2010; D'Lima et al., 2014; Duckworth & Quinn, 2009; Duckworth & Seligman, 2005; Flores & Park, 2013; Gardner, 1983; Harper, 2012; Harper & Kuykendall, 2012; Hurtado & Carter, 1997; Kim & Hargrove, 2013; Noble & Sawyer, 2002; Perna, 2000; Posselt et al., 2012; Price & Kim, 1976; Reid & Moore, 2008; Rojas et al., 2012; Rothstein, 2004; Rubin, 2011; Scannell, 1960; Strayhorn, 2013; Tierney, 1999; Tinto, 1987, 1993, 2006; Weitzman,

1982; White, 1982). Additionally, the significant result supports ongoing study of these factors for future enrollment yield studies.

One surprising result of the study was the lack of significance on the predictor variable of HS GPA. This result runs counter to current practice in higher education which holds high regard for the grade point average earned across the four years of high school. Additionally, debate regarding HS GPA and SAT does not center on whether either holds significance but which is the more substantial. This has led to the test optional movement in recent years where some institutions place so much emphasis on the HS GPA that they disregard the SAT and other standardized tests altogether. The logic for this stems from the idea that a access to post-secondary education will be improved by eliminating an unnecessary barrier to entry and that the more privileged among us have better access to tutoring services and the ability to take tests numerous times and therefore it is unfair to those in lower socio-economic strata (Belasco, Rosinger, & Hearn, 2015). Further study is necessary to investigate the curious result from this study. One possible explanation may be that at the institution that is the subject of this study, HS GPA standards for admission have risen over time and since the data set includes students from five cohorts, the broad range of scores represented may have confused the model and therefore showed no significance. This is pure speculation on the part of the researcher, however, and so further study is recommended to verify the result.

Implications

The researchers view is that this study validates the need for further research along the lines of cultural fit and particularly those items related to religiously affiliated institutions. The rationale is that the model, though combining a number of factors linearly rather than addressing each on its own merit, did provide a statistically significant result. The fact that the strength of

the result was muted lends credibility to the idea that there could be additional strength found from dissecting the model further and evaluating each component of cultural fit independently. A study, or series of studies, along this thought path could help isolate or eliminate the noise potentially caused by mixing such broadly diverse factors into one study.

Limitations

Due to the highly institution-specific nature of this study, the ability to extrapolate the findings to other faith-based institutions is limited. While, in general, faith-based institutions have similar demographic underpinnings, each approaches matters of faith differently and the path to enrollment at the university which is the subject of this study is quite unique among higher education institutions in general, let alone, the faith-based subset.

Additionally, internal validity may be threatened by the low record count on several individual factors (e.g., Muslim admits). Also, surprising results regarding geographic diversity may lead the institution to reevaluate its efforts regarding recruitment outside of its home region as both the West and Midwest regions showed very low totals for admitted students. Both of these internal factors lead to muted ability to extrapolate to other faith-based institutions nationwide as it appears the demographics of the admitted population at the institution studied is not as broad as presumed prior to the study.

Recommendations for Future Research

1. Since significance was found in this study, additional study regarding secular institutions, both public and private, should be conducted regarding these same cultural factors, specifically the self-identified religious denomination of the student.
2. Consider the non-cognitive measure of GRIT, as proposed by Duckworth and others. This concept was not addressed in the current study as the criterion variables established

for this research were all cognitive measures. This aspect should be addressed precisely because there is a lack of research on this front as it relates to enrollment yield.

3. Age was not a variable under consideration for this cohort, since the sample consisted only of first-time freshman, the clear majority of the group was 18 years of age. However, age should be considered for further study to verify if there is a difference in the behavior of traditional age students versus non-traditional age populations.
4. An additional area of potential study can be found in the predominant race of the institution and whether that impacts a student's decision to attend. While many studies have been conducted by Harper and others regarding historically Black colleges and universities (HBCU) and predominantly White institutions (PWI), the combination of race along with self-identified religious denomination may prove informative. The combination of these factors has not been discussed in the literature reviewed for this study.
5. Further interest for potential study can be found in the combination of various predictor variables. For example, a study could be conducted that related HS GPA to SES and ethnicity related to whether that impacts a student's decision to attend. While many studies have concluded that higher HS GPA is linked to SES, as students are considered more advantaged if the SES is high, perhaps more can be gleaned as it relates to enrollment yield when adding in the factor of ethnicity. The combination of other predictor variables should be considered as well to suit the interest of the researcher and any additional gaps they identify in the literature.
6. Since the individual element of HS GPA showed no significance in the study, it is suggested that further research be undertaken to ascertain the cause for this finding.

Possible areas for this study to take could be:

a. The wide dispersion of HS GPA evident in this study. With over 16,000 individual data points, some attempt to standardize into deciles or some other more restrictive mode may yield more significant result. Suggestion in this area would be to limit the cohorts to a range where the admission standard was stable across each incoming class of students.
b. To address lack of standardization of high school curriculum and the potential impact of relying on GPA as a factor to measure academic fit.

7. Since the researcher rejected the null, further study at other faith-based institutions should be conducted to verify whether the model improves prediction of enrollment yield.

REFERENCES

Alridge, D. P. (2006). The limits of master narratives in history textbooks: An analysis of representations of Martin Luther King, Jr. *Teachers College Record, 108*(4), 662–686.

Alexander, K., & Alexander, M. (2012). *American public school law* (8th ed.). Belmont, CA: Wadsworth Cengage Learning

Antons, C. M., & Maltz, E. N. (2006). Expanding the role of institutional research at small private universities: A case study in enrollment management using data mining. *New Directions for Institutional Research*, *2006*(131), 69–81. doi:10.1002/ir.188

Astin, A. W., & Lee, C. (1972). *The invisible colleges: A profile of small, private colleges with limited resources.* New York: McGraw-Hill.

Baird, L. L., & Richards Jr, J. M. (1968). The effects of selecting college students by various kinds of high school achievement. Retrieved from ERIC database. (ED017966).

Belasco, A. S., Rosinger, K. O., & Hearn, J. C. (2015). The test-optional movement at America's selective liberal arts colleges: A boon for equity or something else? *Educational Evaluation and Policy Analysis, 37*(2), 206-223.

Berry, T. R., & Candis, M. R. (2013). Cultural identity and education: A critical race perspective. *The Journal of Educational Foundations, 27*(3/4), 43-64.

Bowman, N. A., & Denson, N. (2014). A missing piece of the departure puzzle: Student-institution fit and intent to persist. *Research in Higher Education, 55*(2), 123-142. http://dx.doi.org/10.1007/s11162-013-9320-9

Bowman, N. A., & Small, J. L. (2010). Do college students who identify with a privileged religion experience greater spiritual development? Exploring individual and institutional dynamics, *Research in Higher Education*, *51*(7), 595–614.

Bowman, N. A., & Small, J. L. (2012). Exploring a hidden form of minority status: College students' religious affiliation and well-being. *Journal of College Student Development, 53*(4), 491-509. Retrieved from http://muse.jhu.edu/journal/238

Bowman, N. A., & Toms Smedley, C. (2013). The forgotten minority: Examining religious affiliation and university satisfaction. *Journal of Higher Education*, *65*(6), 745-760. doi:10.1007/s10734-012-9574-8

Cabrera, A. F., & La Nasa, S. M. (2001). On the path to college: Three critical tasks facing America's disadvantaged. *Research in Higher Education, 42*(2), 119-149.

Cabrera, A. F., Deil-Amen, R., Prabhu, R., Terenzini, P. T., Chul, L., & Franklin, R. E., Jr. (2006). Increasing the college preparedness of at-risk students. *Journal of Latinos & Education*, *5*(2), 79-97. doi:10.1207/s1532771xjle0502_2

Centers for Disease Control and Prevention. (2015). *Race and ethnic standards for federal statistics and administrative reporting.* Retrieved from http://wonder.cdc.gov/wonder/help/populations/bridged-race/Directive15.html

Chabotar, K. J. (2010, July). What about the rest of us? *Change*, *42*, 6-12.

Chen, R., & DesJardins, S. L. (2010). Investigating the impact of financial aid on student dropout risks: Racial and ethnic differences. *The Journal of Higher Education, 81*(2), 179-208. doi:10.1353/jhe.0.0085

College Board. (2015). *About the SAT: What is the SAT*? Retrieved from https://sat.collegeboard.org/about-tests/sat

Cornell, F. G. (1947). Sample plan for a survey of higher education enrollment. *The Journal of Experimental Education, 15*(3), 213-218. doi:10.1080/00220973.1947.11010358

Curs, B. R., & Singell, L. D., Jr. (2010). Aim high or go low? Pricing strategies and enrollment effects when the net price elasticity varies with need and ability. *The Journal of Higher Education, 81*(4), 515-543.

Davidson, A. (2015, September 13). A matter of degrees. *The New York Times Magazine,* MM25.

Deegan, M. B., & Deegan, J. (2014). Unfunded tuition discount rate and net operating revenue: A balancing act. *College and University, 89*(3), 55-59.

Deem, R. (1998). "New managerialism" and higher education: The management of performances and cultures in universities in the United Kingdom. *International Studies in Sociology of Education, 8*(1), 47-70.

Demski, J. (2011). Shining a light on retention. *Campus Technology, 24*(7), 43-46.

Derrico, C. M., Tharp, J. L., & Schreiner, L. A. (2015). Called to make a difference: The experiences of students who thrive on faith-based campuses. *Christian Higher Education, 14*(5), 298-321. doi:10.1080/15363759.2015.1079750

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 48*(2), 147-160.

D'Lima, G. M., Winsler, A., & Kitsantas, A. (2014). Ethnic and gender differences in first-year college students' goal orientation, self-efficacy, and extrinsic and intrinsic motivation. *The Journal of Educational Research, 107*(5), 341-356. doi:10.1080/00220671.2013.823366

Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 92*(6), 1087–1101. doi:10.1037/0022-3514.92.6.1087

Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the short grit scale (GRIT-s). *Journal of Personality Assessment, 91*(2), 166–174. doi: 10.1080/00223890802634290

Duckworth, A.L., & Seligman, M.E.P. (2005). Self-discipline outdoes IQ in predicting academic performance in adolescents. *Psychological Science, 16,* 939–944.

Duniway, R. L. (2012). Benchmarking and enrollment management. New Directions for Institutional Research, *156*, 25–36. doi:10.1002/ir.20028

Dyce, C. M., Albold, C., & Long, D. (2013). Moving from college aspiration to attainment: Learning from one college access program. *The High School Journal, 96*(2), 152-165. doi:10.1353/hsj.2013.0004

Espenshade, T. J., & Chung, C. Y. (2005). The opportunity cost of admission preferences at elite universities*. *Social Science Quarterly*, *86*(2), 293-305.

Exworthy, M., & Halford, S. (Eds.). (1998). *Professionals and the new managerialism in the public sector*. Philadelphia: Open University Press.

Federal Student Aid. (n.d.). *Expected family contribution.* Retrieved from https://fafsa.ed.gov/help/fftoc01g.htm

Feng, P. (n.d.). Executive order 9981: Integration of the armed forces. Retrieved from https://armyhistory.org/executive-order-9981-integration-of-the-armed-forces/

Flores, S. M., & Park, T. J. (2013). Race, ethnicity, and college success examining the continued significance of the minority-serving institution. *Educational Researcher, 42*(3), 115-128. https://doi.org/10.3102/0013189X13478978

Franklin, R. S. (2013). The roles of population, place, and institution in student diversity in American higher education. *Growth and Change, 44*(1), 30-53.

Frempong, G., Ma, X., & Mensah, J. (2012). Access to postsecondary education: Can schools compensate for socioeconomic disadvantage? *Higher Education, 63*(1), 19.

Fuller, M. B. (2014). A history of financial aid to students. *Journal of Student Financial Aid, 44*(1), Article 4.

Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: An introduction* (8th ed.). Boston, MA: Pearson Education Inc.

Gall, M. D., Gall, J. P., & Borg, W. R. (2010). *Applying educational Research: How to read, do, and use research to solve problems of practice* (6th ed.). Boston, MA: Pearson Education Inc.

Gardner, D. P. (1983). *A nation at risk*. Washington, DC: The National Commission on Excellence in Education, US Department of Education.

Glanzer, P. L., Carpenter, J. A., & Lantinga, N. (2011). Looking for god in the university: Examining trends in Christian higher education. *Higher Education, 61*(6), 721+. Retrieved from https://link.springer.com/journal/10734

Guramatunhu-Mudiwa, P. (2015). The gender shift in enrollment patterns in higher education: A case study of a school administration program. *Advancing Women in Leadership, 35*, 120-133.

Harper, S. R. (2012). *Black male student success in higher education: A report from the national Black male college achievement study*. Philadelphia: University of Pennsylvania, Center for the Study of Race and Equity in Education.

Harper, S. R., & Kuykendall, J. A. (2012). Institutional efforts to improve Black male student achievement: A standards-based approach. *Change*, *44*(2), 23-29. doi:10.1080/00091383.2012.655234

Hayes, J. B., Price, R. A., & York, R. P. (2013). A simple model for estimating enrollment yield from a list of freshman prospects. *Academy of Educational Leadership Journal*, *17*(2), 61+. Retrieved from https://www.abacademies.org/journals/academy-of-educational-leadership-journal-home.html

Hossler, D., Bontrager, B., & Associates. (2015). *Handbook of strategic enrollment management.* San Francisco, CA: Jossey-Bass.

Hu, S., & Wolniak, G. C. (2013). College student engagement and early career earnings: Differences by gender, race/ethnicity, and academic preparation. *Review of Higher Education*, *36*(2), 211-233.

Hurtado, S., & Carter, D. F. (1997). Effects of college transition and perceptions of the campus racial climate on Latino college students' sense of belonging. *Sociology of Education*, *70*(4), 324–345. http://doi.org/10.2307/2673270

Johnston, R. B. (1958, January). A geographic approach to prediction of college freshman enrollment. *Indiana Academy of Science, 68*, 289-291.

Julian, T. (2012). *Work-life earnings by field of degree and occupation for people with a bachelor's degree: 2011* (American Community Survey Briefs, ACSBR 11-04). Retrieved from http://www.census.gov

Karlin-Neumann, P., & Sanders, J. (2013). Bringing faith to campus: Religious and spiritual space, time, and practice at Stanford University. *Journal of College and Character, 14*(2), 125-132.

Kim, E., & Hargrove, D. T. (2013). Deficient or resilient: A critical review of black male academic success and persistence in higher education. *The Journal of Negro Education, 82*(3), 300-311,356. Retrieved from http://www.journalnegroed.org/

Kinzie, J., Palmer, M., Hayek, J., Hossler, D., Jacob, S. A., & Cummings, H. (2004). *Fifty years of college choice: Social, political and institutional influences on the decision-making process. Lumina Foundation for Education: New Agenda Series, 5*(3). Retrieved from https://folio.iupui.edu/bitstream/handle/10244/263/Hossler.pdf?sequence=1

Maguire, J. (1976). To the organized, go the students. *Bridge Magazine, 39*(1), 6-10.

Markiewicz, M. R. (2004). Enrollment, cost, and academic admission criteria of U.S. Dental schools by geographic region and institution type. *Journal of Dental Education, 68*(11), 1133-1138.

Marsden, G. M. (1994). *The soul of the American university: From Protestant establishment to established nonbelief.* New York, NY: Oxford University Press.

McCarthy, M., Cambron-McCabe, N., & Eckes, S. (2014). *Public school law: Teachers' and students' rights* (7th ed.). Boston, MA: Pearson Education Inc.

Morris, J. M., Smith, A. B., & Cejda, B. D. (2003). Spiritual integration as a predictor of persistence at a Christian institution of higher education. *Christian Higher Education, 2*(4), 341-351. doi:10.1080/15363750390246105

National Center for Education Statistics. (2011). *How is grade point average calculated?* Retrieved from http://nces.ed.gov/nationsreportcard/hsts/howgpa.aspx

National Center for Education Statistics. (2015). *Fast facts: Enrollment.* Retrieved from http://nces.ed.gov/fastfacts/display.asp?id=98

Noble, J., & Sawyer, R. (2002). *Predicting different levels of academic success in college using high school GPA and ACT composite score*. Retrieved from ERIC database. (ED469746).

Paulsen, M. B. (1990). *College choice: Understanding student enrollment behavior*. Retrieved from ERIC database. (ED333854).

Peng, C. Y. J., Lee, K. L., & Ingersoll, G. M. (2002). An introduction to logistic regression analysis and reporting. *The Journal of Educational Research, 96*(1), 3-14.

Perna, L. W. (2000). Differences in the decision to attend college among African Americans, Hispanics, and Whites. *The Journal of Higher Education, 71*(2), 117-141.

Pfeffer, J., & Salanick, G. (1978). *The external control of organizations: A resource dependence perspective.* Stanford, CA: Stanford University Press.

Posselt, J. R., Jaquette, O., Bielby, R., & Bastedo, M. N. (2012). Access without equity longitudinal analyses of institutional stratification by race and ethnicity, 1972–2004. *American Educational Research Journal*, *49*(6), 1074-1111.

Price, F. W., & Kim, S. H. (1976). The association of college performance with high school grades and college entrance test scores. *Educational and Psychological Measurement, 36*(4), 965-970. doi:10.1177/001316447603600422

Reid, M. J., & Moore, J. L. (2008). College readiness and academic preparation for postsecondary education oral histories of first-generation urban college students. *Urban Education*, *43*(2), 240-261.

Rios-Ellis, B., Rascon, M., Galvez, G., Inzunza-Franco, G., Bellamy, L., & Torres, A. (2015). Creating a model of Latino peer education: Weaving cultural capital into the fabric of

academic services in an urban university setting. *Education and Urban Society, 47*(1), 33-55.

Rojas, J. P., Reser, J. A., Usher, E. L., & Toland, M. D. (2012). *Psychometric properties of the academic grit scale* [Brochure]. Lexington, KY: University of Kentucky.

Rothstein, J. M. (2004). College performance predictions and the SAT. *Journal of Econometrics, 121*(1), 297-317.

Rubin, R. B. (2011). The Pell and the poor: A regression-discontinuity analysis of on-time college enrollment. *Research in Higher Education, 52*(7), 675-692. http://dx.doi.org/10.1007/s11162-011-9215-6

Scannell, D. P. (1960). Prediction of college success from elementary and secondary performance. *Journal of Educational Psychology, 51*(3), 130-134. http://dx.doi.org/10.1037/h0046292

Smith, B. W., Spinelli, J. G., & Zhou, Y. (2002). Geographic patterns of student enrollment in Ohio's state-assisted universities. *The Ohio Journal of Science, 102*(3), 34+. Retrieved from http://www.ohiosci.org/the-ohio-journal-of-science/

Spaulding, R., & Olswang, S. (2005). Maximizing enrollment yield through financial aid packaging policies. *Journal of Student Financial Aid, 35*(1), 27-38.

Stoddard, C. (2009). Why did education become publicly funded? Evidence from the nineteenth-century growth public primary schooling in the United States. *The Journal of Economic History, 69*(1), 172-201.

Strayhorn, M. (2013). What role does grit play in the academic success of black male collegians at predominantly white institutions? *Journal of African American Studies, 2014*(18), 1-10. doi:10.1007/s12111-012-9243-0

Supiano, B. (2010). Christian colleges make Hispanic education part of their mission; Evangelical institutions join forces in an effort to raise enrollment. *The Chronicle of Higher Education*, *57*(11), 16-17. Retrieved from https://www.chronicle.com/

Supplee, J. L. (2014). Enrollment pathways to financial sustainability: Choosing the road less traveled. *Christian Higher Education, 13*(4), 250-265. doi:10.1080/15363759.2014.924889

Tierney, W. G. (1992). An anthropological analysis of student participation in college. *The Journal of Higher Education, 63*(6), 603–618. http://doi.org/10.2307/1982046

Tierney, W. G. (1999). Models of minority college-going and retention: Cultural integrity versus cultural suicide. *The Journal of Negro Education, 68*(1), 80-91. Retrieved from http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/222079102?accountid=12085

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*, 89-125.

Tinto, V. (1987). *Leaving college: Rethinking the cause and cures of student's attrition*. Chicago: Univ. of Chicago Press.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition research* (2nd ed.). Chicago: University of Chicago.

Tinto, V. (2006). Research and practice of student retention: what next? *Journal of College Student Retention: Research, Theory & Practice*, *8*(1), 1-19.

United States Census Bureau. (2015). *Geographic terms and concepts - census divisions and census regions.* Retrieved from https://www.census.gov/geo/reference/gtc/gtc_census_divreg.html?cssp=SERP

U.S. Department of Veterans Affairs. (n.d.). *Veteran's benefits administration: Education and training: History and timeline.* Retrieved from http://www.benefits.va.gov/gibill/history.asp#top

Virginia Historical Society. (n.d.). *Civil rights movement in Virginia*. Retrieved from http://www.vahistorical.org/collections-and-resources/virginia-history-explorer/civil-rights-movement-virginia/

Warner, R. (2013). *Applied statistics: From bivariate through multivariate techniques* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Weitzman, R. A. (1982). The prediction of college achievement by the Scholastic Aptitude Test and the high school record. *Journal of Educational Measurement,* (19), 179–191. doi:10.1111/j.1745-3984.1982.tb00126

White, K. R. (1982). The relation between socioeconomic status and academic achievement. *Psychological Bulletin, 91*(3), 461.

Wilson, P. F., Dell, L. D., & Anderson, G. F. (1993). *Root cause analysis: A tool for total quality management*. Milwaukee, WI: ASQ Quality Press.

Zhan, M., & Sherraden, M. (2007). Assets and liabilities, race/ethnicity, and children's college education. *Children and Youth Services Review,* (33), 2168-2175.

Zhao, C., & Kuh, G. (2004). Adding value: Learning communities and student engagement. *Research in Higher Education, 45*(2).

APPENDIX A: IRB Exemption Letter

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

April 3, 2018

Timothy Edward Rees
IRB Exemption 3184.040318: Predicting Enrollment Yield at a Faith-Based Institution: A Correlational Study

Dear Timothy Edward Rees,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(4), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

> (4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
The Graduate School

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